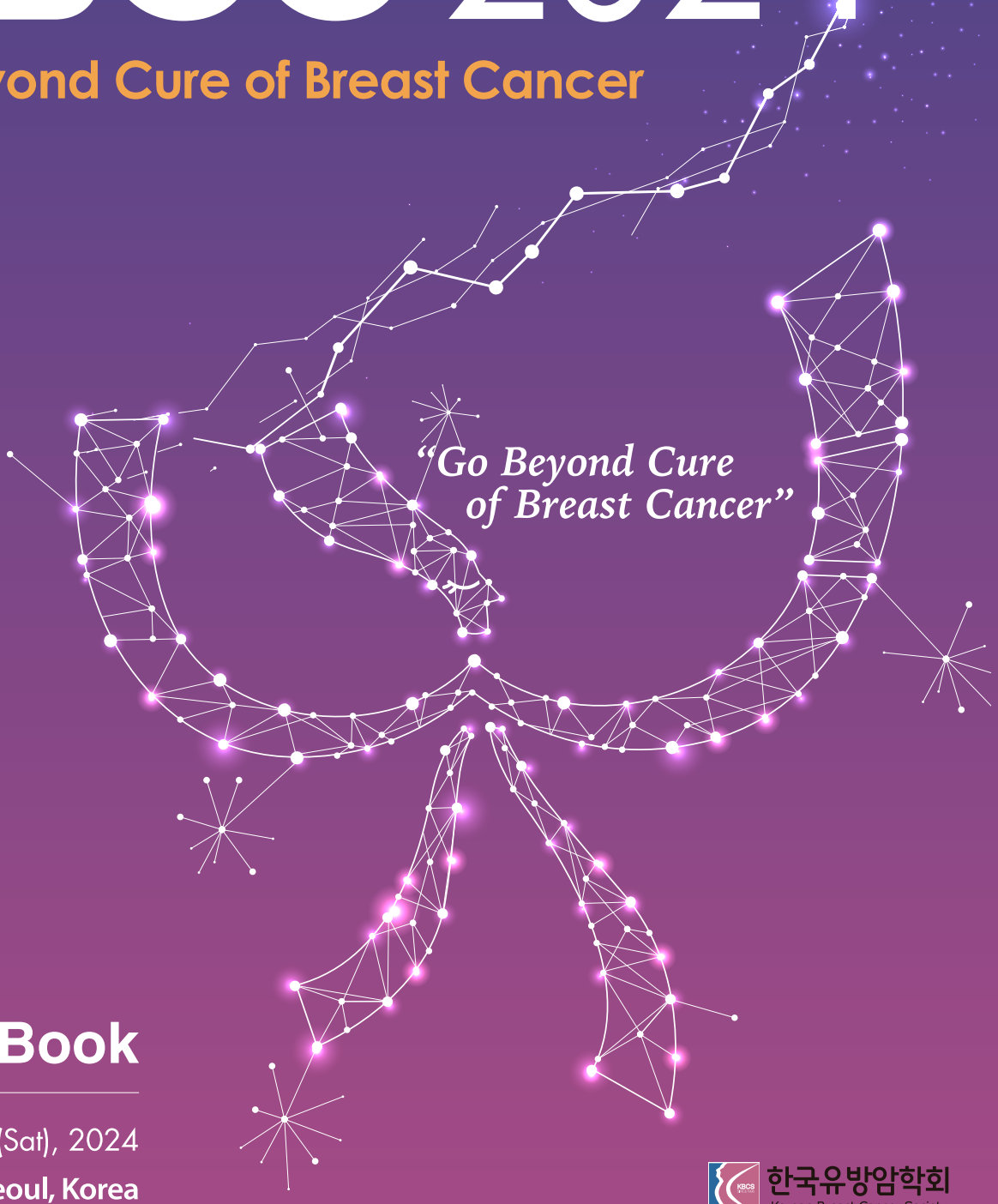
www.gbcc.kr

eISSN 2508-1624
GBCC Abstract Book

Global Breast Cancer Conference 2024
in conjunction with IERBS 2024

GBCC 2024

Go Beyond Cure of Breast Cancer



Abstract Book

April 25 (Thu) – 27 (Sat), 2024

Grand Walkerhill Seoul, Korea

한국유방암학회
Korean Breast Cancer Society

Table of Contents

Program at a Glance

April 25 Thu

Time	Room 1 (B2, Vista 1+2)	Room 2 (B1, Grand 1)	Room 3 (1F, Walker 1)	Room 4 (1F, Walker 2)	Room 5 (4F, Art Hall)	Room 6 (B1, Grand 4)
08:00–08:45						
08:45–09:00	Opening Ceremony					
09:00–10:15	Symposium 1 States-of-the-Art: Personalized Surgery in Breast Cancer	Panel Discussion 1 Optimizing Treatment Sequence After CDK4/6 Inhibitors	Symposium 2 Artificial Intelligence: Past, Present and Future	IERBS 2024 1 Current Status and Issues for Robotic and Endoscopic NSM	GBCC-TBCS Joint Session Asian Premenopausal Women with Breast Cancer	Oral Presentation 1
10:15–10:30	Break					
	[1F, Amber] Tea with Master (Dennis Slamon) 10:15–10:35					
10:30–11:45	Symposium 3 The New Frontier of Endocrine Treatment for Breast Cancer	Panel Discussion 2 Surgical Controversies Before and After Neoadjuvant Chemotherapy in the Era of Targeted Therapy	Education Session 1 What Radiologists Should Know for Optimal Interpretation in Patients Treated with NAC	IERBS 2024 2 Initiation and Troubleshooting of Robotic and Endoscopic NSM	Special Session GBCC-IBGS Exploring the Significance of GBC in Asia and Opportunities for Collaboration	Oral Presentation 2
11:45–12:00	Break					
12:00–12:45	Plenary Lecture 1 Inhibition of the CDK4/6/Rb/Cyclin D Pathway in ER+/HER2− Breast Cancer	Plenary Lecture 1				
12:45–13:00	Break					
13:00–13:45	Satellite Symposium1 ENHERTU, Unlocking New Frontiers in mBC Treatment	Satellite Symposium 1				
13:45–14:00	Break					
14:00–14:45	Plenary Lecture 2 Evidence-Based Breast Radiotherapy: Canadian Experiences	Plenary Lecture 2		IERBS 2024 3 Debate: Does Robot-Assisted NSM Have a Role Outside of Clinical Trials?		
14:45–15:00	Break					
	[1F, Amber] Tea with Master (Timothy Whelan) 14:45–15:05					
15:00–16:15		Panel Discussion 3 Beyond Borders: Breaking Barriers of Subtypes	Education Session 2 Biomarkers Guided Treatment in ER+/HER2− Breast Cancer	IERBS 2024 4 PS Session	GBCC-SSO Joint Session Where We Are and Where We Go	Oral Presentation 3
16:15–16:30	Break					
16:30–17:45		Panel Discussion 4 Subtype-Based Optimization of Locoregional Treatments for Small Tumors	Education Session 3 The Power of Genomics for Breast Cancer	IERBS 2024 5 Consensus Meeting: Voting Session	ABCN Business Meeting (Invited Only)	Oral Presentation 4
17:45–18:00			KBCS General Assembly 17:45–19:00			
18:00–20:00	Welcome Dinner 18:00–20:00					

April 26 Fri

Time	Room 1 (B2, Vista 1+2)	Room 2 (B1, Grand 1)	Room 3 (1F, Walker 1)	Room 4 (1F, Walker 2)	Room 5 (4F, Art Hall)	Room 6 (B1, Grand 4)
08:00–08:45	Satellite Symposium 2 Ribociclib, Pushing the Boundary of CDK4/6 Inhibitor					
08:45–09:00	Break					
09:00–10:15	Symposium 4 Immunotherapy Going Beyond the Current Limits	Panel Discussion 5 Confronting Unique Deterioration Caused by Estrogen Deprivation Therapy	Symposium 5 Local Tumor Control in Metastatic Breast Cancer	Junior Doctors Forum 09:00–09:50 Break	Nursing Session 1 Present and Future of Breast Cancer Specialist Nurse	Oral Presentation 5
10:15–10:30	Break					
10:30–11:45	Symposium 6 Tumor Heterogeneity and Dynamics in Breast Cancer: Unveiling Insights through Tissue and Liquid Biopsies	Special Session Policy on Breast Cancer Bridging the Gap Between Guidelines and Real-World Practice	Education Session 4 Less is More in Breast Cancer: Radiation Oncologists' Perspective	Junior Doctors Debate 10:00–11:45	Nursing Session 2 Managements of Hair Loss and Skin Change for Breast Cancer Patients	Session on Digital Health The New Era of Digital Leading Innovation in Healthcare
11:45–12:00	Break					
12:00–12:45	Plenary Lecture 3 Lobular Carcinoma – Current Concepts and Controversies	Plenary Lecture 3				
12:45–13:00	Break					
	[1F, Amber] Tea with Master (Tari King) 12:45–13:05					
13:00–13:45	Satellite Symposium 3 The Promising Role of Pembrolizumab in Transforming the Landscape for eTNBC	Satellite Symposium 3				
13:45–14:00	Break					
14:00–14:45	Plenary Lecture 4 Origins, Evolution, and Clinical Implications of the Integrative Breast Cancer Subtypes	Plenary Lecture 4				
14:45–15:00	Break					
	[1F, Amber] Tea with Master (Christina Curtis) 14:45–15:05					
15:00–16:15	Symposium 7 Neoantigen-Based Personalized Therapy	Panel Discussion 6 Surgical Management for Individuals with Germline Mutation Carriers	Education Session 5 Toxicity of Novel Agents: A Call for Attention	Session on OPBS	GBCC-CACA Joint Session The Strategy of HER-2 Positive Breast Cancer or New Drugs of Metastatic Breast Cancer	
16:15–16:30	Break					
16:30–17:45	Symposium 8 Antibody Drug Conjugates: Reshaping the Landscape of Breast Cancer Treatment	Special Session Debate Session	Education Session 6 Estrogen, Obesity, and Sarcopenia: Biology and Life Style	Session on HBOC	GBCC-JBCS Joint Session Exploring Collaborative Research Opportunities	

April 27 Sat

Time	Room 1 (B2, Vista 1+2)	Room 2 (B1, Grand 1)	Room 3 (1F, Walker 1)	Room 4 (1F, Walker 2)
08:00–08:45	Satellite Symposium 4 The Effectiveness and Safety of Pyrotinib in Korean Female Patients with Breast Cancer – Clides but Goodes			
08:45–09:00	Break			
09:00–09:45	Plenary Lecture 5 Blood Biomarkers and Treatment Decisions in ER+ HER2− Metastatic Breast Cancer	Plenary Lecture 5		
09:45–10:00	Break			
	[1F, Amber] Tea with Master (François-Clément Bidard) 09:45–10:05			
10:00–11:15	GBCC's Pick & Outstanding Oral Presentation	Session on Survivorship Comprehensive Care for Breast Cancer	Breast Imaging Session 1 BI-RADS: Facts and Debates	Practicing Breast Surgeons Session 1 Breast Screening
11:15–11:35	Break			
11:35–12:50	Insights of GBCC 2024	Insights of GBCC 2024	Breast Imaging Session 2 New Trends of Imaging Modalities for Breast Cancer Screening	Practicing Breast Surgeons Session 2 Clinical Management of Benign Breast Disorder
12:50–13:00	Break			
13:00–13:30	Closing Ceremony			
13:30–14:00	Break			
14:00–15:20			Session for Breast Cancer Survivors 1	
15:20–15:30	Break			
15:30–17:05			Session for Breast Cancer Survivors 2	

*ePoster Zone: Passage between Grand Hall and Ida (Speaker's Lounge & Preview Room)
*Exhibition: Vista 3+Hall Lobby (B2), Grand 2+3 (B1)

🎧 한국어 통역이 제공되는 세션입니다.
Session marked with video icon will be live-streamed in other rooms.
KOR Korean Session (발표언어: 한국어)
KOR-ENG-VIET Korean Session-English, Vietnamese Simultaneous Interpretation to be Provided. (발표언어: 한국어 | 영어, 베트남어 동시통역 제공)

Day 1 April 25 (Thu.)

09:00-10:15 **Symposium 1** **RM 1 (Vista 1+2)**

States-of-Art: Personalized Surgery in Breast Cancer

Moderator **Andrea Barrio**
Memorial Sloan Kettering Cancer Center, U.S.A.

Moderator **Byung Ho Son**
ASAN Medical Center, Korea

Speaker **Sung Gwe Ahn** 8
RE-THINKING SURGICAL MANAGEMENT IN IPSILATERAL BREAST TUMOR RECURRENCE
Gangnam Severance Hospital, Korea

Speaker **Andrea Barrio** 9
TAILORED AXILLARY SURGERY IN AXILLARY NODE-POSITIVE BREAST CANCER
Memorial Sloan Kettering Cancer Center, U.S.A.

Speaker **Tomomi Fujisawa** 10
OMISSION OF BREAST SURGERY IN PATIENTS WITH EXCEPTIONAL RESPONSE TO NEOADJUVANT SYSTEMIC THERAPY
Gunma Prefectural Cancer Center, Japan

09:00-10:15 **Panel Discussion 1** **RM 2 (Grand 1)**

Optimizing Treatment Sequence After CDK4/6 Inhibitors

Moderator **Yoon-Sim Yap**
National Cancer Centre Singapore, Singapore

Moderator **In Hae Park**
Korea Univ. Guro Hospital, Korea

Speaker **Dennis Slamon** 34
RESISTANCE MECHANISM OF CDK4/6 INHIBITOR: PRIMARY OR ACQUIRED
Univ. of California, Los Angeles, U.S.A.

Speaker **Yoon-Sim Yap** 35
WHAT IS THE OPTIMAL TREATMENT STRATEGY AFTER THE FIRST LINE CDK4/6 INHIBITOR?
National Cancer Centre Singapore, Singapore

Speaker **In Hae Park** 36
ANTIBODY DRUG CONJUGATE FOR HR+HER2- MBC
Korea Univ. Guro Hospital, Korea

09:00-10:15 **Symposium 2** **RM 3 (Walker Hall 1)**

Artificial Intelligence: Past, Present and Future

Moderator **Bo Kyoung Seo**
Korea Univ. Ansan Hospital

Moderator **Won Hwa Kim**
Kyungpook National Univ. Hospital, Korea

Speaker **Thijs Kooi** 11
PRACTICAL CONSIDERATIONS AND THE IMPLEMENTATION OF AI TOOLS FOR BREAST CANCER RISK PREDICTION
Lunit Inc., Korea

Speaker **Won Hwa Kim** 12
ARTIFICIAL INTELLIGENCE IN REAL-WORLD EXPERIENCES: PERSPECTIVES OF RADIOLOGISTS
Kyungpook National Univ. Hospital, Korea

Day 1 April 25 (Thu.)

Speaker **Miseon Lee** *13*
ARTIFICIAL INTELLIGENCE IN BREAST PATHOLOGY: CURRENT LANDSCAPE AND FUTURE PROSPECTS
The Catholic Univ. of Korea, Seoul St. Mary's Hospital, Korea

09:00-10:15 IERBS 2024 1 RM 4 (Walker Hall 2)

Current Status and Issues for Robotic and Endoscopic NSM

Moderator **Antonio Toesca**
Candiolo Cancer Institute, Italy

Moderator **Ku Sang Kim**
Kosin Univ. Gospel Hospital, Korea

Speaker **Sae Byul Lee** *76*
PATIENTS SELECTION OF ROBOTIC AND ENDOSCOPIC NSM FOR BEGINNERS
Univ. of Ulsan College of Medicine, Korea

Speaker **Chi Wei Mok** *77*
ONGOING STUDIES OF ROBOTIC OR ENDOSCOPIC NSM
Changi General Hospital, Singhealth Duke-NUS Breast Centre, Singapore

Speaker **Deborah Farr** *78*
CURRENT APPLICATION OF ROBOTIC AND ENDOSCOPIC NSM FOR HIGH RISK OF BREAST CANCER PATIENTS
UT Southwestern Harold C. Simmons Cancer Center, U.S.A.

09:00-10:15 GBCC-TBCS Joint Session RM 5 (Art Hall)

Asian Premenopausal Women with Breast Cancer

Moderator **Fang-Ming Chen**
Kaohsiung Municipal Ta-Tung Hospital, Taiwan

Moderator **Byung Joo Chae**
Samsung Medical Center, Korea

Speaker **Ching-Hung Lin** *132*
EPIDEMIOLOGY AND CHARACTERISTICS OF YOUNG PATIENTS WITH BREAST CANCER IN ASIAN COUNTRIES
National Taiwan Univ. Hospital, Taiwan

Speaker **Jai Min Ryu** *133*
SURGICAL MANAGEMENT OF BREAST CANCER IN YOUNG ASIAN PATIENTS AND PERSPECTIVES IN CLINICAL RESEARCH
Samsung Medical Center, Korea

Speaker **Chi-Cheng Huang** *134*
MEDICAL MANAGEMENT OF BREAST CANCER IN YOUNG ASIAN PATIENTS AND PERSPECTIVES IN CLINICAL RESEARCH
Taipei Veterans General Hospital, Taiwan

09:00-10:15 Oral Presentation 1 RM 6 (Grand 4)

Moderator **Jeeyeon Lee**
Kyungpook National Univ. Chilgok Hospital, Korea

Moderator **Tae-In Yoon**
Dongnam Institute of Radiological & Medical Sciences, Korea

Day 1 April 25 (Thu.)

Presenter **Chihwan Cha** *179*
EFFECT OF BRCA 1/2 MUTATION ON THE LONG-TERM ONCOLOGIC OUTCOME OF BREAST CANCER PATIENTS WHO UNDERWENT BREAST-CONSERVING SURGERY (KOREA-BSG 06)
Hanyang Univ. College of Medicine, Korea

Presenter **Jijung Jung** *180*
SUMMARIZING PATIENT MEDICAL RECORDS FOR ACCURATE PHYSICIAN COMMUNICATION: A COMPARISON OF HUMAN VS. AI-BASED APPROACHES
Seoul National Univ., Korea

Presenter **Myoung Kyoung Kim** *181*
LOW DOSE BREAST CT USING DEEP LEARNING-BASED TECHNIQUE FOR NOISE REDUCTION
Samsung Medical Center, Korea

Presenter **Ikbeom Shin** *182*
PREOPERATIVE IMPACTING FACTORS ON TUMOR GROWTH DURING THE WAIT TIME FOR BREAST CANCER SURGERY
Seoul National Univ., Korea

Presenter **Thi Xuan Mai Tran** *183*
A COHORT ON HEALTH-RELATED QUALITY OF LIFE AND PSYCHOLOGICAL HEALTH OF LONG-TERM BREAST CANCER SURVIVORS IN KOREA
Hanyang Univ. College of Medicine, Vietnam

Presenter **Young-Jin Lee** *184*
A RANDOMIZED CONTROLLED TRIAL INVESTIGATING CLINICAL EFFICACY OF MHEALTH APPS IN BREAST CANCER SURVIVORS
ASAN Medical Center, Korea

Presenter **Litang Chen** *185*
ESTABLISHING AN ADVANCED PRACTICE NURSE (APN)-LED BREAST CANCER SURVIVORSHIP CLINIC AT THE NATIONAL UNIVERSITY CANCER INSTITUTE (NCIS): A YEAR'S EXPERIENCE
National Univ. Cancer Institute, Singapore, Singapore

10:30-11:45 **Symposium 3** **RM 1 (Vista 1+2)**

The New Frontier of Endocrine Treatment for Breast Cancer

Moderator **Yen-Shen Lu**
National Taiwan Univ. Hospital, Taiwan

Moderator **Yeon Hee Park**
Samsung Medical Center, Korea

Speaker **Gun Min Kim** *14*
ORAL SERDS AND NOVEL ENDOCRINE THERAPY AGENTS
Yonsei Univ. College of Medicine, Korea

Speaker **Yen-Shen Lu** *15*
TARGETING PI3K-AKT-MTOR PATHWAY IN HR+ BREAST CANCER
National Taiwan Univ. Hospital, Taiwan

Speaker **Yeon Hee Park** *16*
NEW TARGETS IN HORMONE RECEPTOR POSITIVE BREAST CANCER
Samsung Medical Center, Korea

Day 1 April 25 (Thu.)

10:30-11:45 **Panel Discussion 2** **RM 2 (Grand 1)**

Surgical Controversies Before and After Neoadjuvant Chemotherapy in the Era of Targeted Therapy

Moderator **Stephanie M. Wong**
Jewish General Hospital Segal Cancer Centre, Canada

Moderator **Woochul Noh**
Konkuk Univ. Medical Center, Korea

Speaker **Tari King** 37
NEED TO COMPLETE REMOVAL OF RESIDUAL MICROCALCIFICATIONS? - IN CASE HIGHLY SUGGESTIVE OF CLINICAL PCR IN MRI AND WITH RESIDUAL DIFFUSE MICROCALCIFICATION IN MAMMOGRAM
Dana-Farber Brigham Cancer Center, U.S.A.

Speaker **Stephanie M. Wong** 38
INFLAMMATORY BREAST CANCER: ARE WE READY TO DE-ESCALATE LOCAL THERAPY?
Jewish General Hospital Segal Cancer Centre, Canada

Speaker **Hideko Yamauchi** 39
YOUNG AGE BREAST CANCER WITH CT1-3NX, LOW GRADE, ER+ TUMOR - UPFRONT SURGERY OR NEOADJUVANT CHEMOTHERAPY?
Univ. of Hawai'i Cancer Center, U.S.A.

10:30-11:45 **Education Session 1** **RM 3 (Walker Hall 1)**

What Radiologists Should Know for Optimal Interpretation in Patients Treated with NAC

Moderator **Joon Jeong**
Gangnam Severance Hospital, Korea

Moderator **Woo Kyung Moon**
Seoul National Univ. Hospital, Korea

Speaker **Joon Jeong** 54
SYNERGY FROM SURGICAL VIEWPOINT: A HOLISTIC IMAGING INTERPRETATION WITH INTRAOPERATIVE EXPERIENCE
Gangnam Severance Hospital, Korea

Speaker **Jae-Joon Kim** 55
SYNERGY FROM ONCOLOGICAL VIEWPOINT: EXPLORING CURRENT TRENDS AND PRINCIPLES OF CHEMOTHERAPY
Pusan National Univ. Yangsan Hospital, Korea

Speaker **Kazunori Kubota** 56
CONTEMPORARY IMAGING INSIGHTS AND INTERPRETATION CONSIDERATIONS FOR PATIENTS UNDERGOING NEOADJUVANT SYSTEMIC THERAPY
Dokkyo Medical Univ. Saitama Medical Center, Japan

10:30-11:45 **IERBS 2024 2** **RM 4 (Walker Hall 2)**

Initiation and Troubleshooting of Robotic and Endoscopic NSM

Moderator **Hung-Wen Lai**
Changhua Christian Hospital, Taiwan

Moderator **Hyukjai Shin**
Myongji Hospital, Korea

Day 1 April 25 (Thu.)

Speaker **Jeffrey Johnson** *79*
IMPLICATION OF DRY AND CADAVERIC SKILL LABS FOR ROBOTIC AND ENDOSCOPIC NSM
Mayo Clinic, U.S.A.

Speaker **Wen-Ling Kuo** *80*
ROBOTIC AND ENDOSCOPIC NSM IN LARGE & PTOTIC PATIENTS
Chang Gung Memorial Hospital, Taiwan

Speaker **Eisuke Fukuma** *81*
MANAGING POSTOP-COMPLICATIONS OF ROBOTIC AND ENDOSCOPIC NSM COMPARED TO OPEN NSM
Kameda Medical Center, Japan

10:30-11:45 **Special Session** **RM 5 (Art Hall)**

GBCC-BIG25: Exploring the Significance of BIG in Asia and Opportunities for Collaboration

Moderator **Giuseppe Curigliano**
European Institute of Oncology and Univ. of Milano, Italy

Moderator **Sung-Bae Kim**
ASAN Medical Center, Korea

Speaker **David Cameron**
ASIA IN BREAST STUDY GROUP (BIG)
The Univ. of Edinburgh, United Kingdom

Speaker **Sung-Bae Kim** *97*
COLLABORATION EXPERIENCE WITH BIG
ASAN Medical Center, Korea

Speaker **Carmela Caballero** *98*
BIG PATIENT PARTNERSHIP INITIATIVE: DEVELOPING CLINICAL TRIALS THROUGH PATIENT PARTNERSHIP
Breast International Group, Belgium

Speaker **Janice Tsang** *99*
WOMEN FOR ONCOLOGY THROUGH BIG-ASIA
The Univ. of Hong Kong, Hong Kong

10:30-11:45 **Oral Presentation 2** **RM 6 (Grand 4)**

Moderator **Su-Jin Koh**
Ulsan Univ. Hospital, Korea

Moderator **Eun Young Kim**
Kangbuk Samsung Hospital, Korea

Presenter **Jyoti Bajpai** *186*
EVALUATION OF COMPLIANCE TO ADJUVANT ENDOCRINE THERAPY (ET) IN HORMONE RECEPTOR-POSITIVE (HR+) EARLY BREAST CANCER IN YOUNG WOMEN (Y-EBC) FROM A TERTIARY CARE CANCER CENTER IN INDIA
Tata Memorial Center, India

Presenter **Sarah Alsafi** *187*
THE IMPACT OF ADDING GONADOTROPHIN-RELEASING HORMONE AGONIST TO ADJUVANT ENDOCRINE THERAPY IN PREMENOPAUSAL WITH SMALL NODE NEGATIVE HORMONE RECEPTOR-POSITIVE BREAST CANCER ON SURVIVAL AND DISEASE RECURRENCE
Al Adan Hospital, Ministry of Health, Kuwait, Kuwait

Day 1 April 25 (Thu.)

Presenter **Jijung Jung** *188*
COMPARATIVE ONCOLOGICAL OUTCOMES OF PREMENOPAUSAL WOMEN WITH OVARIAN FUNCTION SUPPRESSION AND POSTMENOPAUSAL WOMEN IN ER+/HER2- BREAST CANCER
Seoul National Univ., Korea

Presenter **Akihiko Shimomura** *189*
A PHASE III TRIAL COMPARING T-DM1 WITH HPD IN OLDER PATIENTS WITH METASTATIC HER2-POSITIVE BREAST CANCER
National Center for Global Health and Medicine, Japan

Presenter **Yan Yang** *190*
DYNAMIC IMPACT OF CLINICOPATHOLOGICAL FEATURES AND TREATMENTS ON SURVIVAL IN PATIENTS WITH SURGICAL BREAST CANCER: A RETROSPECTIVE POPULATION-BASED COHORT STUDY
Suining Central Hospital, China

Presenter **Byeongkwan Park** *191*
NO SURVIVAL DIFFERENCE BETWEEN INITIAL INFILTRATING BREAST CANCERS EITHER DEVELOPING METACHRONOUS CONTRALATERAL BREAST CANCER OR NOT
The Catholic Univ. of Korea, St. Vincent's Hospital, Korea

Presenter **Juan Adrian Wiranata** *192*
SOCIODEMOGRAPHIC, CLINICAL, AND BIOMARKER PREDICTORS OF CHEMOTHERAPY-INDUCED PERIPHERAL NEUROPATHY IN PATIENTS WITH BREAST CANCER: A CLASSIFICATION AND REGRESSION TREE (CART) ANALYSIS
Faculty Of Medicine, Public Health And Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

Presenter **Woochan Park** *193*
PROGNOSTIC ANALYSIS ACCORDING TO ADJUVANT CHEMOTHERAPY AND ANTI-HER2 THERAPY FOLLOWING SURGERY IN T1A/B HER2-POSITIVE BREAST CANCER
Seoul National Univ. Hospital, Korea

Presenter **Dakyung Seo** *194*
CLINICAL OUTCOMES AND PROGNOSTIC FACTORS OF PATIENTS WITH EARLY METAPLASTIC BREAST CANCER
Univ. of Ulsan College of Medicine, Korea

12:00-12:45 Plenary Lecture 1 RM 1 (Vista 1+2)

Moderator **Seock-Ah Im**
Seoul National Univ. Hospital, Korea

Speaker **Dennis Slamon** *44*
INHIBITION OF THE CDK4/6/RB/CYCLIND PATHWAY IN ER+/HER2- BREAST CANCER
Univ. of California, Los Angeles, U.S.A.

13:00-13:45 Satellite Symposium 1 RM 1 (Vista 1+2)

Moderator **Sang Seol Jung**
Kyung Hee Univ. Medical Center, Korea

Speaker **Jieun Lee** *2*
ENHERTU, UNLOCKING NEW FRONTIERS IN MBC TREATMENT
The Catholic Univ. of Korea, Seoul St. Mary's Hospital, Korea

Day 1 April 25 (Thu.)

14:00-14:45 **Plenary Lecture 2** **RM 1 (Vista 1+2)**

Moderator **Mison Chun**
Ajou Univ. Hospital, Korea

Speaker **Timothy Whelan** 3
EVIDENCE-BASED BREAST RADIOTHERAPY: CANADIAN EXPERIENCES
McMaster Univ., Canada

14:00-14:45 **IERBS 2024 3** **RM 4 (Walker Hall 2)**

Debate: Does Robot-Assisted NSM Have a Role Outside of Clinical Trials?

Moderator **Andrea Barrio**
Memorial Sloan Kettering Cancer Center, U.S.A.

Moderator **Hyung Seok Park**
Yonsei Univ. College of Medicine, Korea

Speaker **Antonio Toesca** 82
PROS
Candiolo Cancer Institute, Italy

Speaker **Andrea Barrio** 83
CONS
Memorial Sloan Kettering Cancer Center, U.S.A.

15:00-16:15 **Panel Discussion 3** **RM 2 (Grand 1)**

Beyond Borders: Breaking Barriers of Subtypes

Moderator **Giuseppe Curigliano**
European Institute of Oncology and Univ. of Milano, Italy

Moderator **Keun Seok Lee**
National Cancer Center, Korea

Speaker **Giuseppe Curigliano** 40
TUMOR AGNOSTIC TRIALS ACROSS SUBTYPES IN METASTATIC BREAST CANCER
European Institute of Oncology and Univ. of Milano, Italy

Speaker **Janice Tsang** 41
BEYOND THE GUIDELINES: CLINICAL INVESTIGATOR PERSPECTIVES ON THE MANAGEMENT OF HER2-LOW BREAST CANCER
The Univ. of Hong Kong, Hong Kong

Speaker **Hee Kyung Ahn** 42
IDENTIFYING BIOLOGICAL ENTITY THAT IS SENSITIVE TO IMMUNE CHECKPOINT INHIBITORS
Gachon Univ. Gil Medical Center, Korea

15:00-16:15 **Education Session 2** **RM 3 (Walker Hall 1)**

Biomarkers Guided Treatment in ER+HER2- Breast Cancer

Moderator **Masakazu Toi**
Tokyo Metropolitan Cancer and Infectious Disease Center Komagome Hospital, Japan

Moderator **Heung Kyu Park**
Gachon Univ. Gil Medical Center, Korea

Day 1 April 25 (Thu.)

Speaker **Jisun Kim** *57*
LIQUID BIOPSIES GUIDED TREATMENT IN ER+HER2- BREAST CANCER
ASAN Medical Center, Korea

Speaker **Masakazu Toi** *59*
MULTIGENE ASSAYS BASED DECISION FOR EXTENDED ENDOCRINE THERAPY
Tokyo Metropolitan Cancer and Infectious Disease Center Komagome Hospital, Japan

Speaker **Hyun Jo Youn** *60*
BIOMARKERS FOR NEOADJUVANT ENDOCRINE THERAPY
Jeonbuk National Univ., Korea

15:00-16:15 IERBS 2024 4 RM 4 (Walker Hall 2)

PS Session

Moderator **Byung-Joon Jeon**
Samsung Medical Center, Korea

Moderator **Hyun Ho Han**
ASAN Medical Center, Korea

Speaker **Hyun Ho Han** *84*
ROBOT ASSISTED BREAST RECONSTRUCTION: WHICH OPTIONS CAN WE HAVE?
ASAN Medical Center, Korea

Speaker **Dong-Won Lee** *85*
IMMEDIATE BREAST RECONSTRUCTION FOLLOWED BY ROBOT-ASSISTED NIPPLE-SPARING MASTECTOMY
Yonsei Univ., Korea

Speaker **Hiroki Mori** *86*
AUTOLOGOUS BREAST RECONSTRUCTION - JAPANESE TREND AND OUR STRATEGY
Tokyo Medical and Dental Univ., Japan

15:00-16:15 GBCC-SSO Joint Session RM 5 (Art Hall)

Where We Are and Where We Go

Moderator **Tari King**
Dana-Farber Brigham Cancer Center, U.S.A.

Moderator **Yoo Seok Kim**
Chosun Univ. Hospital, Korea

Speaker **Tari King** *136*
SENTINEL LYMPH NODE BIOPSY IN UPFRONT SURGERY
Dana-Farber Brigham Cancer Center, U.S.A.

Speaker **Jeong Eon Lee** *137*
SENTINEL LYMPH NODE BIOPSY AFTER NEOADJUVANT CHEMOTHERAPY
Samsung Medical Center, Korea

Speaker **Ko Un Clara Park** *138*
SENTINEL LYMPH NODE BIOPSY IN IPSILATERAL BREAST TUMOR RECURRENCE
Dana-Farber Brigham Cancer Center, U.S.A.

Day 1 April 25 (Thu.)

15:00-16:15 Oral Presentation 3 RM 6 (Grand 4)

Moderator **Eun Sook Ko**
Samsung Medical Center, Korea

Moderator **Young-Joon Kang**
The Catholic Univ. of Korea, Incheon St. Mary's Hospital, Korea

Presenter **Leah Kim** 195
INTRAOPERATIVE SUPINE MRI FOR BREAST CONSERVING THERAPY: FINAL RESULTS OF AMIGO (ADVANCED MULTI-MODALITY IMAGE GUIDED OPERATING SUITE) PHASE II CLINICAL TRIAL
Yale Univ. School of Medicine, U.S.A.

Presenter **Xueer Wang** 196
THE OPTIMAL TIMING OF BREAST CANCER SURGERY AFTER COVID-19 INFECTION: AN OBSERVATIONAL STUDY
Shandong Cancer Hospital & Institute, China

Presenter **Asuka Kawabata** 197
A COMPARATIVE STUDY OF LOCAL RECURRENCE AND PROGNOSIS OF MULTIPLE BREAST CONSERVING SURGERY VERSUS MASTECTOMY IN PATIENTS WITH MULTIPLE IPSILATERAL BREAST CANCER
St. Luke's International Hospital, Japan

Presenter **Zhiqiang Shi** 198
MINIMALLY INVASIVE BIOPSY TECHNIQUE PREDICTING BREAST PATHOLOGICAL COMPLETE RESPONSE AFTER NEOADJUVANT CHEMOTHERAPY FOR BREAST CANCER
Shandong Cancer Hospital & Institute, China

Presenter **Jong-Ho Cheun** 199
IMPACT OF UNILATERAL MASTECTOMY WITH OR WITHOUT IMMEDIATE BREAST RECONSTRUCTION ON VERTEBRAL ALIGNMENT
SMG-SNU Boramae Medical Center, Korea

Presenter **Damiano Gentile** 200
TO DISSECT OR NOT TO DISSECT? PREDICTING ≥ 4 AXILLARY LYMPH NODE METASTASES IN EARLY-STAGE BREAST CANCER FROM A SURGEON'S VIEWPOINT
IRCCS Humanitas Research Hospital, Italy

Presenter **Dong Seung Shin** 201
ANALYSIS THE NUMBER OF ADDITIONAL NON-SENTINEL LYMPH NODE METASTASIS WHEN ONLY MICROMETASTASIS WAS DETECTED IN THE SENTINEL LYMPH NODE BIOPSY IN FROZEN SECTION AFTER NEOADJUVANT CHEMOTHERAPY FOLLOWED
Samsung Medical Center, Korea

Presenter **Eunju Shin** 202
EVALUATING THE SURVIVAL OUTCOMES IN CLINICAL N2-3 BREAST CANCER PATIENTS AFTER NEOADJUVANT CHEMOTHERAPY: SENTINEL LYMPH NODE BIOPSY ALONE VS. AXILLARY LYMPH NODE DISSECTION
ASAN Medical Center, Korea

16:30-17:45 Panel Discussion 4 RM 2 (Grand 1)

Subtype-Based Optimization of Locoregional Treatments for Small Tumors

Moderator **Marios Konstantinos Tasoulis**
The Royal Marsden NHS Foundation Trust, United Kingdom

Moderator **Hyun-Ah Kim**
Korea Cancer Center Hospital, Korea

Day 1 April 25 (Thu.)

Speaker **Marios Konstantinos Tasoulis** *43*
TREATMENT APPROACH IN SMALL HER2+ OR TNBC: UPFRONT SURGERY VS NEOADJUVANT CHEMOTHERAPY?
The Royal Marsden NHS Foundation Trust, United Kingdom

Speaker **Tadahiko Shien** *44*
SMALL LUMINAL A BREAST CANCER IN POSTMENOPAUSAL WOMEN: SLNB OMISSION VS RT OMISSION?
Okayama Univ. Hospital, Japan

Speaker **Bum-Sup Jang** *45*
SMALL LUMINAL A BREAST CANCER IN POSTMENOPAUSAL WOMEN: TAILORED APPROACH OF RADIOTHERAPY
Seoul National Univ. Hospital, Korea

16:30-17:45 Education Session 3 RM 3 (Walker Hall 1

The Power of Genomics for Breast Cancer

Moderator **Pedram Razavi**
Memorial Sloan Kettering Cancer Center, U.S.A.

Moderator **Jin-Hee Ahn**
ASAN Medical Center, Korea

Speaker **In Hye Song** *61*
TECHNOLOGY OF GENOMIC PROFILING IN BREAST CANCER: HOW TO INTERPRET GENOMIC TESTING
ASAN Medical Center, Korea

Speaker **Pedram Razavi** *62*
TUMOR VS CFDNA ANALYSIS IN BREAST CANCER
Memorial Sloan Kettering Cancer Center, U.S.A.

Speaker **Min Hwan Kim** *63*
ACTIONABLE MUTATIONS IN BREAST CANCER: MOLECULAR INSIGHTS AND THERAPEUTIC APPROACHES
Yonsei Univ. College of Medicine, Korea

16:30-17:45 IERBS 2024 5 RM 4 (Walker Hall 2)

Consensus Meeting: Voting Session

Moderator **Chi Wei Mok**
Changi General Hospital, Singhealth Duke-NUS Breast Centre, Singapore

Moderator **Jai Min Ryu**
Samsung Medical Center, Korea

Speaker **Hung-Wen Lai** *87*
INTRODUCTION CONSENSUS MEETING OF IERBS & SUMMARY OF PREVIOUS CONSENSUS MEETING OF IERBS
Changhua Christian Hospital, Taiwan

Panelist **Hung-Wen Lai**
Changhua Christian Hospital, Taiwan

Panelist **Wen-Ling Kuo**
Chang Gung Memorial Hospital, Taiwan

Day 1 April 25 (Thu.)

Panelist **Eisuke Fukuma**
Kameda Medical Center, Japan

Panelist **Antonio Toesca**
Candiolo Cancer Institute, Italy

Panelist **Jeffrey Johnson**
Mayo clinic, U.S.A.

Panelist **Hyung Seok Park**
Yonsei Univ. College of Medicine, Korea

Panelist **Min Hyuk Lee**
Soonchunhyang Univ. Hospital Seoul, Korea

Panelist **Hyukjai Shin**
Myongji Hospital, Korea

Panelist **Seung Yong Song**
Yonsei Univ. College of Medicine, Korea

16:30-17:45 **ABCN Business Meeting** **RM 5 (Art Hall)**

Opening Remarks & Introduction

Moderator **Sung-Bae Kim**
ASAN Medical Center, Korea

Speaker **Giuseppe Curigliano**
SHARING WISDOM, SHARING STRENGTH: MY PERSONAL LEADERSHIP ACADEMY EXPERIENCE
European Institute of Oncology and Univ. of Milano, Italy

Discussion

Facilitator **Hee Kyung Ahn**
Gachon Univ. Gil Medical Center, Korea

Facilitator **Jae Ho Jeong**
ASAN Medical Center, Korea

Speaker **Sarat Chandarlapaty**
SHARING WISDOM, SHARING STRENGTH: MY PERSONAL LEADERSHIP EXPERIENCE FOR TRANSLATIONAL RESEARCH
Memorial Sloan Kettering Cancer Center, U.S.A.

Discussion

Facilitator **Jeeyeon Lee**
Kyungpook National Univ. Chilgok Hospital, Korea

Facilitator **Heejung Chae**
National Cancer Center, Korea

Speaker **Sung Gwe Ahn**
HR+HER2- CLINICALLY NODE-POSITIVE BREAST CANCER: WHAT TO DO FIRST?
Gangnam Severance Hospital, Korea

General Discussion & Wrap-up

Day 1 April 25 (Thu.)

16:30-17:50 **Oral Presentation 4** **RM 6 (Grand 4)**

Moderator **Hee Jin Lee**
ASAN Medical Center, Korea

Moderator **Eun-Shin Lee**
Korea Univ. Anam Hospital, Korea

Presenter **Seock-Ah Im** 203
NEOADJUVANT PEMBROLIZUMAB OR PLACEBO PLUS CHEMOTHERAPY FOLLOWED BY ADJUVANT PEMBROLIZUMAB OR PLACEBO FOR EARLY-STAGE TNBC: UPDATED EVENT-FREE SURVIVAL RESULTS FROM THE PHASE 3 KEYNOTE-522 STUDY
Seoul National Univ. Hospital, Korea

Presenter **Yeon Hee Park** 205
NEOADJUVANT PEMBROLIZUMAB OR PLACEBO+CHEMOTHERAPY FOLLOWED BY ADJUVANT PEMBROLIZUMAB OR PLACEBO+ENDOCRINE THERAPY FOR EARLY-STAGE HIGH-RISK ER+/HER2- BREAST CANCER: RESULTS FROM THE KEYNOTE-756 STUDY
Samsung Medical Center, Korea

Presenter **Dae-Won Lee** 207
IMMUNE MARKER EXPRESSION AND PROGNOSIS OF EARLY BREAST CANCER EXPRESSING HER3
Seoul National Univ. Hospital, Korea

Presenter **Young-Jin Lee** 208
THE IMPACT OF TREATMENT DELAY ON SURVIVAL OF BREAST CANCER PATIENTS: A NATIONWIDE DATA OF SOUTH KOREA
ASAN Medical Center, Korea

Presenter **Young-Won Lee** 209
CLINICAL-PATHOLOGICAL CHARACTERISTICS ASSOCIATED WITH MULTIGENE ASSAY RISK SCORES, AND PROGNOSTIC IMPACT OF MULTIGENE RISK SCORES IN PATIENTS WITH INVASIVE LOBULAR CARCINOMA
ASAN Medical Center, Korea

Presenter **Eunhye Kang** 210
PREDICTION OF PATHOLOGICAL COMPLETE RESPONSE IN ESTROGEN RECEPTOR POSITIVE, HER2 NEGATIVE BREAST CANCER FOLLOWING NEOADJUVANT CHEMOTHERAPY USING THE IHC4 EQUATION
Seoul National Univ. Hospital, Korea

Presenter **Yeonjin Jeon** 211
PROTEOMIC ANALYSIS IDENTIFIES ASSOCIATION OF PERIOSTIN, A MATRICELLULAR PROTEIN, WITH HIGH TUMOR STROMA AND IMMUNE EXCLUSION IN TRIPLE NEGATIVE BREAST CANCER
ASAN Medical Center, Korea

Presenter **Youngji Kwak** 212
WHOLE-GENOME SEQUENCING OF GERMLINE BRCA1/2 SEQUENCING-NEGATIVE BREAST CANCER PATIENTS
Chung-Ang Univ. Hospital, Korea

Presenter **Chun-Yu Liu** 213
CLINICAL AND BIOLOGICAL SIGNIFICANCE OF T-CELL RECEPTOR REPERTOIRE IN PATIENTS WITH BREAST CANCER
Taipei Veterans General Hospital, Taiwan

Presenter **Yuk-Kwan Chang** 214
BREAST CANCER CHARACTERISTICS AND MANAGEMENT IN ELDERLY BRCA MUTATION CARRIERS IN HONG KONG
Queen Mary Hospital, Hong Kong

Day 2 April 26 (Fri.)

08:00-08:45 Satellite Symposium 2 RM 1 (Vista 1+2)

Moderator **Jung Han Yoon**
Gwangju Hyundai Hospital, Korea

Speaker **Soo Jung Lee** 164
RIBOCICLIB, PUSHING THE BOUNDARY OF CDK4/6 INHIBITOR
Kyungpook National Univ. Chilgok Hospital, Korea

09:00-09:50 Junior Doctors Forum RM 4 (Walker Hall 2)

Moderator **Han-Byoel Lee**
Seoul National Univ. Hospital, Korea

Speaker **Yazan Masannat** 149
EXPERIENCES WITH SUCCESSFULLY ORGANIZING AND OPERATING EDUCATION PROGRAMS
Broomfield Hospital, United Kingdom

Speaker **Woochul Noh** 150
FIFTEEN-YEAR JOURNEY OF ASTRRA TRIAL
Konkuk Univ. Medical Center, Korea

09:00-10:15 Symposium 4 RM 1 (Vista 1+2)

Immunotherapy Going Beyond the Current Limits

Moderator **Soo-Chin Lee**
National Univ. Cancer Institute, Singapore (NCIS), Singapore

Moderator **Kyung Hae Jung**
ASAN Medical Center, Korea

Speaker **Sung Hoon Sim** 17
TAILORING POST-NEOADJUVANT TREATMENT IN TNBC-CURRENT TREATMENT AND FUTURE PERSPECTIVES
National Cancer Center, Korea

Speaker **Soo-Chin Lee** 18
OVERCOMING RESISTANCE OF IMMUNOTHERAPY IN TNBC - MECHANISM AND NOVEL TREATMENT
National Univ. Cancer Institute, Singapore (NCIS), Singapore

Speaker **Jee Hyun Kim** 19
EXPANDING IMMUNOTHERAPY BEYOND TNBC - NEW STRATEGY IN HER2 AND ER POSITIVE BREAST CANCER
Seoul National Univ. Bundang Hospital, Korea

09:00-10:15 Panel Discussion 5 RM 2 (Grand 1)

Confronting Unique Deterioration Caused by Estrogen Deprivation Therapy

Moderator **Matteo Lambertini**
Univ. of Genova - IRCCS Policlinico San Martino Hospital, Italy

Moderator **Beomseok Ko**
ASAN Medical Center, Korea

Speaker **Tara Sanft** 46
ADDRESSING SEXUAL HEALTH DISTURBANCE DURING ENDOCRINE THERAPY: UNIQUE CHALLENGES AMONG VARIOUS AGE GROUPS
Yale School of Medicine, U.S.A.

Day 2 April 26 (Fri.)

Speaker **Matteo Lambertini** *47*
CURRENT THERAPEUTIC OPTIONS FOR FERTILITY PRESERVATION: CHALLENGES AHEAD
Univ. of Genova - IRCCS Policlinico San Martino Hospital, Italy

Speaker **So-Youn Jung** *48*
LEVERAGING BONE HEALTH ISSUE IN WOMEN RECEIVING ENDOCRINE THERAPY: PRACTICAL APPLICATIONS AND FUTURE PERSPECTIVES
National Cancer Center, Korea

09:00-10:15 Symposium 5 RM 3 (Walker Hall 1)

Local Tumor Control in Metastatic Breast Cancer

Moderator **Jee Suk Chang**
Yonsei Cancer Center, Korea

Moderator **Kyubo Kim**
Seoul National Univ. Bundang Hospital, Korea

Speaker **Jee Suk Chang** *20*
ROLE OF SBRT IN OLIGOMETASTASIS AND OLIGOPROGRESSION
Yonsei Cancer Center, Korea

Speaker **Haeyoung Kim** *21*
TAILORED RADIOTHERAPY OF THE PRIMARY SITE IN METASTATIC BREAST CANCER
Samsung Medical Center, Korea

Speaker **Yutaro Koide** *22*
OPTIMAL RT APPROACH FOR INTRACRANIAL METASTASIS
Aichi Cancer Center Hospital, Japan

09:00-10:15 Nursing Session 1 RM 5 (Art Hall)

Present and Future of Breast Cancer Specialist Nurse

Moderator **Mi Young Kang**
Daerim St. Mary's Hospital, Korea

Moderator **In Jeong Cho**
Wonju Severance Christian Hospital, Korea

Speaker **Insook Lee** *153*
THE EXPERIENCE OF BREAST CANCER PRACTICE NURSES' JOB PERFORMANCE
Changwon National Univ., Korea

Speaker **Jayoung Ahn** *154*
PRESENT AND FUTURE OF SPECIALIST BREAST CANCER CARE NURSES
ASAN Medical Center, Korea

Speaker **Byonghee Jeon** *156*
BEST PRACTICE OF ADVANCED NURSE PRACTITIONER IN BREAST CANCER PATIENT CARE
Yonsei Univ. Severance Hospital, Korea

09:00-10:15 Oral Presentation 5 RM 6 (Grand 4)

Moderator **Suungmin Park**
Chungbuk National Univ. Hospital, Korea

Moderator **Hae Jin Park**
Hanyang Univ. College of Medicine, Korea

Day 2 April 26 (Fri.)

Presenter **Enver Ozkurt** *215*
VITAMIN D SUPPLEMENTATION HAS A POSITIVE EFFECT ON PATHOLOGIC COMPLETE RESPONSE: A PROSPECTIVE RANDOMISED STUDY
Istanbul Demiroglu Bilim Univ., Republic of Turkiye

Presenter **Masato Takahashi** *216*
RFA FOR EARLY BREAST CANCER, WHICH HAS RECENTLY BECOME COVERED BY MEDICAL INSURANCE IN JAPAN
Hokkaido Univ. Hospital, Japan

Presenter **Tae Hyun Kim** *217*
ASSESSING THE CUMULATIVE INCIDENCE OF CARDIAC EVENTS AND MAJOR ADVERSE CARDIAC EVENTS IN BREAST CANCER PATIENTS AFTER RADIATION THERAPY
Seoul National Univ. College of Medicine, Korea

Presenter **Soon Woo Hong** *218*
RELATIONSHIP OF IMMEDIATE BREAST RECONSTRUCTION AND THE DEVELOPMENT OF LYMPHEDEMA IN BREAST CANCER PATIENTS WITH RADIOTHERAPY
Seoul National Univ. Hospital, Korea

Presenter **Tae Hoon Lee** *219*
COMPARISON OF POST-RADIOTHERAPY SIDE EFFECTS BETWEEN MODERATELY HYPOFRACTIONATED AND ULTRA-HYPOFRACTIONATED WHOLE-BREAST IRRADIATION FOR BREAST CANCER: AN ANALYSIS OF A PROSPECTIVE COHORT STUDY
Samsung Medical Center, Korea

Presenter **Hyeonseok Choi** *220*
ASSOCIATION BETWEEN GENOMIC FEATURES AND RADIATION RESPONSE IN METASTATIC BREAST CANCER PATIENTS UNDERGOING PALLIATIVE RADIOTHERAPY
Seoul National Univ. Hospital, Korea

Presenter **Eunju Shin** *221*
BREAST OUTCOMES OF REPEAT LUMPECTOMY IN PATIENTS WITH IPSILATERAL BREAST TUMOR RECURRENCE (IBTR) WITH OR WITHOUT RADIOTHERAPY: A COMPREHENSIVE ANALYSIS
ASAN Medical Center, Korea

Presenter **Jung Bin Park** *222*
EFFICACY AND SAFETY OF RESPIRATORY MOTION MANAGEMENT USING CONTINUOUS POSITIVE AIRWAY PRESSURE IN RADIOTHERAPY FOR BREAST CANCER : A PROSPECTIVE TRIAL
Seoul National Univ. Hospital, Korea

Presenter **Je Hyun Chin** *223*
CLINICOPATHOLOGICAL CHARACTERISTICS AND PROGNOSTIC IMPLICATIONS OF SUBTYPES IN DUCTAL CARCINOMA IN SITU: A RETROSPECTIVE ANALYSIS
The Catholic Univ. of Korea, Seoul St. Mary's Hospital, Korea

10:05-11:45 Junior Doctors Debate RM 4 (Walker Hall 2)

Moderator **Tristen Park**
Yale School of Medicine, U.S.A.

Moderator **Han-Byoel Lee**
Seoul National Univ. Hospital, Korea

[PART 1: VOTING BY ROCHE (SPONSOR OF THE JDF/JDD SESSION)]
PATIENT CENTRICITY, VALUE OF TIME FOR THE PATIENTS

Day 2 April 26 (Fri.)

Team 1 vs. Team 2
[PART 2: DEBATE ON TOPIC #1]
CAN WE OMIT RADIATION THERAPY FOR STAGE I, LUMINAL-TYPE BREAST CANCER UNDERGOING A BREAST-CONSERVING SURGERY?

Team 3 vs. Team 4
[PART 3: DEBATE ON TOPIC #2]
SHOULD CONTRALATERAL RISK-REDUCING MASTECTOMY BE OFFERED FOR ALL BREAST CANCER PATIENTS WITH A PATHOLOGIC BRCA MUTATION?

10:30-11:45 Symposium 6 RM 1 (Vista 1+2)

Tumor Heterogeneity and Dynamics in Breast Cancer: Unveiling Insights through Tissue and Liquid Biopsies

Moderator **Christina Curtis**
Stanford Univ., U.S.A.

Moderator **Hyeong-Gon Moon**
Seoul National Univ. Hospital, Korea

Speaker **Gordon Mills** 23
THERAPY INDUCED TUMOR EVOLUTION REPRESENTS A NOVEL THERAPEUTIC TARGET
Oregon Health Sciences Univ., U.S.A.

Speaker **Christina Curtis** 24
SPATIAL AND TEMPORAL DYNAMICS IN THE TUMOR MICROENVIRONMENT THROUGH IMMUNOTHERAPY
Stanford Univ., U.S.A.

Speaker **Pedram Razavi** 25
SERIAL CIRCULATING TUMOR DNA LANDSCAPE PORTRAYING CLONAL EVOLUTION
Memorial Sloan Kettering Cancer Center, U.S.A.

10:30-11:45 Special Session RM 2 (Grand 1)

Policy on Breast Cancer: Bridging the Gap Between Guidelines and Real-World Practice

Moderator **Benjamin Anderson**
Univ. of Washington, U.S.A.

Moderator **Jeong Eon Lee**
Samsung Medical Center, Korea

Speaker **Benjamin Anderson** 100
OVERVIEW ON THE TREATMENT DIVERSITY FOR BREAST CANCER WORLDWIDE (WHO)
Univ. of Washington, U.S.A.

Speaker **Takashi Ishikawa** 101
ASIAN DATA ON THE TREATMENT DIVERSITY
Tokyo Medical Univ., Japan

Speaker **Mei Ling Yap** 102
CLOSING THE GAP IN RADIOTHERAPY ACCESS IN ASIA
Univ. of New South Wales, Australia

Speaker **Hee Jeong Kim** 104
AGE AND NATIONAL DISPARITIES IN THE DECISION-MAKING PROCESS OF BREAST CANCER PATIENTS
ASAN Medical Center, Korea

Day 2 April 26 (Fri.)

10:30-11:45 **Education Session 4** **RM 3 (Walker Hall 1)**

Less is More in Breast Cancer: Radiation Oncologists' Perspective

Moderator **Isabelle Kindts**
AZ Groeninge, Belgium

Moderator **Jin Hee Kim**
Keimyung Univ. Dongsan Medical Center, Korea

Speaker **Timothy Whelan** 65
RT OMISSION IN LOW-RISK ELDERLY PATIENTS
McMaster Univ., Canada

Speaker **Jeanny Kwon** 66
RNI ISSUES IN YPN0
Chungnam National Univ. Hospital, Korea

Speaker **Isabelle Kindts** 67
TUMOR BED BOOST - WHEN AND HOW
AZ Groeninge, Belgium

10:30-11:45 **Nursing Session 2** **RM 5 (Art Hall)**

Managements of Hair Loss and Skin Change for Breast Cancer Patients

Moderator **Eun-Young Jun**
Daejeon Univ., Korea

Moderator **Hyungran Lee**
Kyung Hee Univ., Korea

Speaker **Kyungmin Na** 157
MANAGEMENT OF SKIN CHANGES IN BREAST CANCER PATIENTS
Daerim St. Mary's Hospital, Korea

Speaker **Juhee Cho** 158
EFFECTIVENESS OF COOLING CAP TO PREVENT PERSISTENT CHEMOTHERAPY-INDUCED ALOPECIA AMONG PATIENTS WITH BREAST CANCER: A RANDOMIZED CONTROLLED TRIAL
SAIHST, Sungkyunkwan Univ., Korea

Speaker **Nayeon Kim** 159
EXPERIENCE OF SCALP COOLING AMONG BREAST CANCER
Samsung Medical Center, Korea

10:30-11:45 **Session on Digital Health** **RM 6 (Grand 4)**

The New Era of Digital Leading Innovation in Healthcare

Moderator **Hyun Jo Youn**
Jeonbuk National Univ., Korea

Moderator **Eunsu Park**
Lunit Care, Korea

Speaker **Eunsu Park** 127
TECH & PATIENT-CENTRIC CANCER CARE
Lunit Care, Korea

Speaker **Soo-Yong Shin** 128
HRS: STANDARD-BASED MULTI-INSTITUTIONAL RESEARCH PLATFORM
Kakao Healthcare, Korea

Day 2 April 26 (Fri.)

Speaker **Koon-Ho Rha** 129
DIGITAL HEALTHCARE 2024: AGE OF GENERATIVE AI
Naver Healthcare, Korea

12:00-12:45 **Plenary Lecture 3** **RM 1 (Vista 1+2)**

Moderator **Wonshik Han**
Seoul National Univ. Hospital, Korea

Speaker **Tari King** 4
LOBULAR CARCINOMA - CURRENT CONCEPTS AND CONTROVERSIES
Dana-Farber Brigham Cancer Center, U.S.A.

13:00-13:45 **Satellite Symposium 3** **RM 1 (Vista 1+2)**

Moderator **Jin Seok Ahn**
Samsung Medical Center, Korea

Speaker **Dae-Won Lee** 166
THE PROMISING ROLE OF PEMBROLIZUMAB IN TRANSFORMING THE LANDSCAPE FOR ETNBC
Seoul National Univ. Hospital, Korea

14:00-14:45 **Plenary Lecture 4** **RM 1 (Vista 1+2)**

Moderator **Dong-Young Noh**
CHA Gangnam Medical Center, Korea

Speaker **Christina Curtis** 5
ORIGINS, EVOLUTION, AND CLINICAL IMPLICATIONS OF THE INTEGRATIVE BREAST CANCER SUBTYPES
Stanford Univ., U.S.A.

15:00-16:15 **Symposium 7** **RM 1 (Vista 1+2)**

Neoantigen-Based Personalized Therapy

Moderator **Eui-Cheol Shin**
KAIST, Korea

Moderator **Hee Jin Lee**
ASAN Medical Center, Korea

Speaker **Sangwoo Kim** 26
NEOANTIGEN ANALYSIS
Yonsei Univ. College of Medicine, Korea

Speaker **Soonmyung Paik** 27
NEOANTIGEN-TARGETED VACCINE
Theragen Bio, Korea

Speaker **Hee Jin Lee** 29
NEOANTIGEN-TARGETED CELL THERAPY
ASAN Medical Center, Korea

Day 2 April 26 (Fri.)

15:00-16:15 **Panel Discussion 6** **RM 2 (Grand 1)**

Surgical Management for Individuals with Germline Mutation Carriers

Moderator **Isabel T. Rubio**
Clinica Universidad de Navarra, Spain

Moderator **Sang Uk Woo**
Korea Univ. Guro Hospital, Korea

Speaker **Tristen Park** 49
BREAST CONSERVING SURGERY IN BREAST CANCER WITH BRCA1/2 MUTATION CARRIERS
Yale School of Medicine, U.S.A.

Speaker **Isabel T. Rubio** 50
IS ALL UNILATERAL BREAST CANCER WITH BRCA1/2 MUTATION CARRIERS RECOMMENDED CONTRALATERAL RISK REDUCING MASTECTOMY?
Clinica Universidad de Navarra, Spain

Speaker **Sung-Won Kim** 51
RISK REDUCING MASTECTOMY BEYOND BRCA1/2 MUTATION CARRIERS
Daerim St. Mary's Hospital, Korea

15:00-16:15 **Education Session 5** **RM 3 (Walker Hall 1)**

Toxicity of Novel Agents: A Call for Attention

Moderator **Janice Tsang**
The Univ. of Hong Kong, Hong Kong

Moderator **Mastura Md Yusof**
Pantai Hospital Kuala Lumpur, Malaysia

Speaker **Janice Tsang** 68
ANTIBODY DRUG CONJUGATES
The Univ. of Hong Kong, Hong Kong

Speaker **Yoon-Sim Yap** 69
TARGETED THERAPEUTICS IN HORMONE POSITIVE BREAST CANCERS
National Cancer Centre Singapore, Singapore

Speaker **Kyoung Eun Lee** 70
IMMUNOTHERAPIES: SHORT AND LONG TERM
Ewha Womans Univ. Mokdong Hospital, Korea

15:00-16:15 **Session on OPBS** **RM 4 (Walker Hall 2)**

Moderator **Tomoyuki Yano**
Cancer Institute Hospital, Japan

Moderator **Ho Yong Park**
Kyungpook National Univ. Chilgok Hospital, Korea

Speaker **Mee Hoong See** 111
THE FUTURE OF ONCOPLASTIC SURGERY: INNOVATIONS AND CHALLENGES IN THE AGE OF PERSONALIZED BREAST CANCER SURGERY
Universiti Malaya, Malaysia

Speaker **Jeeyeon Lee** 112
ONCOPLASTIC SURGERY IN THE MODERN ERA: BALANCING SURGICAL OUTCOMES WITH PATIENT SATISFACTION
Kyungpook National Univ. Chilgok Hospital, Korea

Day 2 April 26 (Fri.)

Speaker **Tomoyuki Yano** *113*
CONSIDERATIONS FOR IMMEDIATE BREAST RECONSTRUCTION IN PATIENTS AT HIGH RISK OF RADIATION THERAPY
Cancer Institute Hospital, Japan

Speaker **Hyun Ho Han** *115*
SURGICAL DIFFICULTY OF NIPPLE-SPARING MASTECTOMY AND RECONSTRUCTION BASED ON MASTECTOMY INCISION LOCATION
ASAN Medical Center, Korea

15:00-16:15 GBCC-CACA Joint Session RM 5 (Art Hall)

The Strategy of HER-2 Positive Breast Cancer or New Drugs of Metastatic Breast Cancer

Moderator **Peng Yuan**
National Cancer Center, Cancer Hospital, Chinese Academy of Medical Sciences, China

Moderator **Airi Han**
Yonsei Univ. Wonju College of Medicine, Korea

Speaker **Pengfei Qiu** *140*
ADVANCEMENTS IN TARGETED THERAPIES: MANAGING HER2+ METASTATIC BREAST CANCER IN CHINESE PATIENTS
Shandong Cancer Hospital and Institute, China

Speaker **Koung Jin Suh** *141*
EXPLORING EMERGING STRATEGIES: ADDRESSING TRIPLE-NEGATIVE METASTATIC BREAST CANCER IN KOREAN PATIENTS
Seoul National Univ. Bundang Hospital, Korea

Discussion

Panelist **Huihua Xiong**
Tongji Hospital, Tongji Medical College, Huazhong Univ. of Science and Technology, China

Panelist **Lingzhi Xu**
The Second Affiliated Hospital of Dalian Medical Univ., China

Panelist **Hongyan Zhang**
The Third Medical Center of PLA General Hospital, China

Panelist **Soo Jung Lee**
Kyungpook National Univ. Chilgok Hospital, Korea

Panelist **Heejung Chae**
National Cancer Center, Korea

Panelist **Sang Yull Kang**
Jeonbuk National Univ. Hospital, Korea

Panelist **Chang Ik Yoon**
The Catholic Univ. of Korea, Seoul St. Mary's Hospital, Korea

16:30-17:45 Symposium 8 RM 1 (Vista 1+2)

Antibody Drug Conjugates: Reshaping the Landscape of Breast Cancer Treatment

Moderator **Sarat Chandarlapaty**
Memorial Sloan Kettering Cancer Center, U.S.A.

Moderator **Kyong Hwa Park**
Korea Univ. Anam Hospital, Korea

Day 2 April 26 (Fri.)

Speaker **Kyong Hwa Park** *30*
ANTIBODY-DRUG CONJUGATES: THE EVOLUTION OF DEVELOPMENT AND CURRENT LANDSCAPE IN BREAST CANCER
Korea Univ. Anam Hospital, Korea

Speaker **Chun-Yu Liu** *31*
UNRESOLVED PROBLEM IN REAL-WORLD PRACTICE: TOXICITIES AND MANAGEMENT OF BRAIN METASTASES
Taipei Veterans General Hospital, Taiwan

Speaker **Sarat Chandarlapaty** *32*
FUTURE DIRECTIONS: RESISTANCE MECHANISM OF ADCS AND STRATEGIES TO OVERCOME
Memorial Sloan Kettering Cancer Center, U.S.A.

16:30-17:45 **Special Session** **RM 2 (Grand 1)**

Debate Session

Moderator **Jae Ho Jeong**
ASAN Medical Center, Korea

Panelist **Seock-Ah Im**
Seoul National Univ. Hospital, Korea

Panelist **Yeon Hee Park**
Samsung Medical Center, Korea

Panelist **Matteo Lambertini**
Univ. of Genova - IRCCS Policlinico San Martino Hospital, Italy

Panelist **Soo-Chin Lee**
National Univ. Cancer Institute, Singapore (NCIS), Singapore

Speaker **Jee Hung Kim**
DO WE REALLY NEED TO USE NEOADJUVANT IO IN ER+, EBC?
Gangnam Severance Hospital, Korea

Speaker **Dae-Won Lee**
DO WE REALLY NEED TO USE NEOADJUVANT IO IN ER+, EBC?
Seoul National Univ. Hospital, Korea

Discussion 1

Speaker **Jee Hung Kim**
WHAT IS THE ROLE OF ADJUVANT IO AFTER ACHIEVING PCR IN ETNBC FOLLOWING NEOADJUVANT IO TREATMENT?
Gangnam Severance Hospital, Korea

Speaker **Dae-Won Lee**
WHAT IS THE ROLE OF ADJUVANT IO AFTER ACHIEVING PCR IN ETNBC FOLLOWING NEOADJUVANT IO TREATMENT?
Seoul National Univ. Hospital, Korea

Discussion 2

16:30-17:45 **Education Session 6** **RM 3 (Walker Hall 1)**

Estrogen, Obesity, and Sarcopenia: Biology and Life Style

Moderator **Yen-Shen Lu**
National Taiwan Univ. Hospital, Taiwan

Day 2 April 26 (Fri.)

Moderator **Seeyoun Lee**
National Cancer Center, Korea

Speaker **Jennifer Ligibel** 71
OBESITY, BREAST CANCER, AND THE POTENTIAL MEDIATING EFFECT OF ESTROGEN
Dana-Farber Cancer Institute, U.S.A.

Speaker **Young-Jin Suh** 72
EFFECT OF ADJUVANT TREATMENT ON OBESITY, SARCOPENIA IN BREAST CANCER PATIENTS
The Catholic Univ. of Korea, St. Vincent's Hospital, Korea

Speaker **Yen-Shen Lu** 74
THE ROLE OF OBESITY AND SARCOPENIA IN ANTI-CANCER IMMUNOTHERAPY
National Taiwan Univ. Hospital, Taiwan

16:30-17:45 Session on HBOC — RM 4 (Walker Hall 2)

Moderator **Ava Kwong**
The Univ. of Hong Kong, Hong Kong

Moderator **Tae Hyun Kim**
Inje Univ. Busan Paik Hospital, Korea

Speaker **Ava Kwong** 117
LONG-TERM OUTCOME OF BRCA1/2 MUTATION WITH BREAST CANCER IN ASIA
The Univ. of Hong Kong, Hong Kong

Speaker **Seigo Nakamura** 119
IS IT TIME BRCA1/2 GENETIC TEST AS A COMPANION DIAGNOSIS OF BREAST CANCER?
Showa Univ. School of Medicine, Japan

Speaker **Yoon Young Choi** 120
GASTRIC CANCER RISK AND MANAGEMENT IN BRCA1/2 MUTATION
Soonchunhyang Univ. Hospital Bucheon, Korea

16:30-17:45 GBCC-JBCS Joint Session — RM 5 (Art Hall)

Exploring Collaborative Research Opportunities

Moderator **Shigehira Saji**
Fukushima Medical Univ., Japan

Moderator **Jong Han Yu**
Samsung Medical Center, Korea

Speaker **Kazuki Nozawa** 143
DE-ESCALATION THERAPY FOR LOW-RISK HER2-POSITIVE EARLY-STAGE BREAST CANCER
Aichi Cancer Center Hospital, Japan

Speaker **Yuko Takahashi** 144
PROGNOSTIC IMPACT OF ADJUVANT ENDOCRINE THERAPY BY AGE FOR PATIENTS WITH T1A/BN0M0 ER-POSITIVE AND HER2-NEGATIVE BREAST CANCER
Okayama Univ. Hospital, Japan

Speaker **Chihwan Cha** 146
COHORT STUDY OF ASIAN BREAST CANCER PATIENTS WITH BRCA 1/2 MUTATION (KOREA-BSG 06)
Hanyang Univ. College of Medicine, Korea

Day 2 April 26 (Fri.)

Speaker **Sung Gwe Ahn** *147*
PROSPECTIVE SINGLE-ARM STUDY OF ENDOCRINE THERAPIES WITH OVARIAN FUNCTION SUPPRESSION IN PREMENOPAUSAL NODE-POSITIVE EARLY BREAST CANCER PATIENTS WITH LOW GENOMIC RISK (INTERSTELLAR TRIAL, KBCSG-25)
Gangnam Severance Hospital, Korea

Panelist **Takashi Ishikawa**
Tokyo Medical Univ., Japan

Panelist **Young-Jin Lee**
ASAN Medical Center, Korea

Panelist **Airi Han**
Yonsei Univ. Wonju College of Medicine, Korea

Day 3 April 27 (Sat.)

08:00-08:45 Satellite Symposium 4 RM 1 (Vista 1+2)

Moderator **Kweon Cheon Kim**
Chosun Univ. Hospital, Korea

Speaker **Anbok Lee** 168
THE EFFECTIVENESS AND SAFETY OF PEGFILGRASTIM IN KOREAN FEMALE PATIENTS WITH BREAST CANCER – OLDIES BUT GOODIES
Chung-ang Univ. Gwangmyeong Hospital, Korea

09:00-09:45 Plenary Lecture 5 RM 1 (Vista 1+2)

Moderator **Joohyuk Sohn**
Yonsei Univ. College of Medicine, Korea

Speaker **François-Clément Bidard** 6
BLOOD BIOMARKERS AND TREATMENT DECISIONS IN ER+ HER2- METASTATIC BREAST CANCER
Institut Curie, France

10:00-11:15 Special Session RM 1 (Vista 1+2)

GBCC's Pick & Outstanding Oral Presentation

Moderator **Seho Park**
Severance Hospital, Korea

Moderator **In Hae Park**
Korea Univ. Guro Hospital, Korea

Presenter **Rajendra A Badwe** 105
PERI-OPERATIVE INTERVENTION IN EARLY BREAST CANCER
Tata Memorial Centre, India

Presenter **Ming-Shen Dai** 106
HEALTH-RELATED QUALITY OF LIFE (HRQOL) IN THE EVER-132-002 STUDY OF SACITUZUMAB GOVITECAN (SG) VS TREATMENT OF PHYSICIAN'S CHOICE (TPC) IN ASIAN PATIENTS WITH HR+/HER2- MBC
Tri-Service General Hospital, Taiwan

Presenter **Yong Bae Kim** 107
STEREOTACTIC PARTIAL BREAST IRRADIATION FOR EARLY STAGE BREAST CANCER IN KOREA: AN UPDATED PERSPECTIVE WITH 1009 PATIENTS
Yonsei Cancer Center, Korea

Presenter **Dong Seung Shin** 108
MACHINE LEARNING-BASED RISK PREDICTION MODEL FOR LATE DISTANT RECURRENCE AND DECISION OF ENDOCRINE THERAPY EXTENSION IN YOUNG WOMEN WITH ER-POSITIVE/HER2-NEGATIVE BREAST CANCER
Samsung Medical Center, Korea

Presenter **Yireh Han** 109
IS CLINICAL TREATMENT SCORE POST 5-YEARS (CTS5) A PROGNOSTIC FACTOR IN PREMENOPAUSAL BREAST CANCER PATIENTS IN ASTRRA TRIAL?
Korea Cancer Center Hospital, Korea

Discussant **In Hae Park**
DISCUSSION FOR ABSTRACT AAA003 AND AAA004
Korea Univ. Guro Hospital, Korea

Day 3 April 27 (Sat.)

10:00-11:15 Session on Survivorship — RM 2 (Grand 1)

Comprehensive Care for Breast Cancer

Moderator **Etienne Brain**
Institut Curie, France

Moderator **Min-Ho Park**
Chonnam National Univ. Hwasun Hospital, Korea

Speaker **Tara Sanft** *122*
INTERVENTION FOR COGNITIVE DYSFUNCTION AND FATIGUE MANAGEMENT IN WOMEN WITH BREAST CANCER
Yale School of Medicine, U.S.A.

Speaker **Etienne Brain** *123*
INTEGRATIVE ONCOLOGY IN BREAST CANCER PATIENTS
Institut Curie, France

Speaker **Young Ju Jeong** *124*
INCORPORATING COMPREHENSIVE AND INTEGRATIVE MEDICINE
Daegu Catholic Univ. School of Medicine, Korea

10:00-11:15 Breast Imaging Session 1 — RM 3 (Walker Hall 1)

BI-RADS: Facts and Debates

Moderator **Wendy DeMartini**
Stanford Univ., U.S.A.

Moderator **Sung Hun Kim**
The Catholic Univ. of Korea, Seoul St. Mary's Hospital, Korea

Speaker **Wendy DeMartini** *89*
NEW BI-RADS: RECENT UPDATES AND IMPLICATIONS
Stanford Univ., U.S.A.

Speaker **Ei Ueno** *90*
NON-MASS LESIONS IN ULTRASOUND: VARIOUS VOICES FROM KOREA AND JAPAN
Tsukuba International Breast Clinic, Japan

Speaker **Su Min Ha** *91*
IMAGING BIOMARKERS IN BREAST IMAGING: BREAST DENSITY, GLANDULAR TISSUE COMPONENT, AND BACKGROUND PARENCHYMAL ENHANCEMENT
Seoul National Univ. Hospital, Korea

10:00-11:15 Practicing Breast Surgeons Session 1 (Kor.) — RM 4 (Walker Hall 2)

Breast Screening

Moderator **Tae Ik Eom**
Hiu Breast & Thyroid Clinic, Korea

Speaker **Dongwon Kim**
HIGH RISK PATIENT BREAST SCREENING POLICY AND CONSULTATION
Daerim St. Mary's Hospital, Korea

Speaker **Heeboong Park**
AI ULTRASOUND & MAMMOGRAM
Park Surgical Clinic, Korea

Day 3 April 27 (Sat.)

Speaker **Jung Min Chang**
3D MAMMOGRAM SCREENING FOR DENSE BREAST WOMEN
Seoul National Univ. Hospital, Korea

11:35-12:50 **Special Session** **RM 1 (Vista 1+2)**

Insights of GBCC 2024

Moderator **Sung Yong Kim**
Soonchunhyang Univ. Hospital Cheonan, Korea

Moderator **Joon Jeong**
Gangnam Severance Hospital, Korea

Speaker **Wonshik Han**
SURGERY
Seoul National Univ. Hospital, Korea

Speaker **Sung-Bae Kim**
EARLY BREAST CANCER
ASAN Medical Center, Korea

Speaker **Shigehira Saji**
ADVANCED BREAST CANCER
Fukushima Medical Univ., Japan

Speaker **Sarat Chandarlapaty**
TRANSLATIONAL RESEARCH
Memorial Sloan Kettering Cancer Center, U.S.A.

11:35-12:50 **Breast Imaging Session 2** **RM 3 (Walker Hall 1)**

New Trends of Imaging Modalities for Breast Cancer Screening

Moderator **Janice Sung**
Memorial Sloan Kettering Cancer Center, U.S.A.

Moderator **Sun Mi Kim**
Seoul National Univ. Bundang Hospital, Korea

Speaker **Janice Sung** *92*
CONTRAST-ENHANCED MAMMOGRAPHY: FROM EXAMINATION TECHNIQUES TO FUTURE PROSPECTS
Memorial Sloan Kettering Cancer Center, U.S.A.

Speaker **Sun Mi Kim** *93*
AUTOMATED BREAST ULTRASOUND: FROM EXAMINATION TECHNIQUES TO PEARLS FROM EXPERIENCES
Seoul National Univ. Bundang Hospital, Korea

Speaker **Llewellyn Sim** *94*
ABBREVIATED BREAST MRI: UNVEILING RECENT RESEARCH INSIGHTS AND REAL-WORLD CLINICAL PERFORMANCE
Singapore General Hospital, Singapore

Day 3 April 27 (Sat.)

11:35-12:50 **Practicing Breast Surgeons Session 2 (Kor.)** **RM 4 (Walker Hall 2)**

Clinical Management of Benign Breast Disorder

Moderator **Sang Hoon Hahn**
Venus and Thyroid Clinic, Korea

Speaker **Hye Jin Kim**
IMAGING AND MANAGEMENT OF FIVROEPITHELIAL LESIONS OF THE BREAST : RADIOLOGIC-PATHOLOGIC CORRELATION
Seoul S Breast & Thyroid Clinic, Korea

Speaker **Jun Ho Kim**
UTILITY OF NONMASS LIKE LESION BY VACUUM ASSISTED BREAST BIOPSY
Joeun Breast Clinic, Korea

Speaker **Tae Ik Eom**
MANAGEMENT OF BREAST INFLAMMATORY DISEASE: GRANULOMATOUS MASTITIS, LACTATIONAL MASTITIS. DUCT OF ZUSKA?
Hiu Breast & Thyroid Clinic, Korea

14:00-15:20 **Special Session** **RM 3 (Walker Hall 1)**

Session for Breast Cancer Survivors 1

Moderator **Jun Won Min**
Dankook Univ. Hospital, Korea

Moderator **Nayeon Kim**
Samsung Medical Center, Korea

Speaker **Sue Kim**
LIKE A RIVER'S FLOW: HEREDITARY BREAST CANCER AND FAMILY FUTURES
Yonsei Univ., Korea

Speaker **Hyungran Lee**
BEYOND CANCER, HEALTH LIFE FOR BREAST CANCER TREATMENT
Kyung Hee Univ., Korea

Speaker **Sanghee Kim**
A SYMPHONY OF LOVE: NAVIGATING THE JOURNEY OF SEXUALITY IN BREAST CANCER PATIENTS
Samsung Medical Center, Korea

Speaker **Hee Jeong Kim**
YOUNG BLOSSOMS, DIFFERENT BLOOMS: EXPLORING BREAST CANCER IN YOUNG WOMEN
ASAN Medical Center, Korea

15:30-17:05 **Special Session** **RM 3 (Walker Hall 1)**

Session for Breast Cancer Survivors 2

Moderator **Il-Yong Chung**
ASAN Medical Center, Korea

Moderator **So-Youn Jung**
National Cancer Center, Korea

Day 3 April 27 (Sat.)

Speaker **Shinji Ohno**
CAPTURING EMOTIONS: NAVIGATING BREAST CANCER JOURNEY WITH ANTIHORMONAL THERAPY
Sagara Hospital, Japan

Speaker **Kyung-Hun Lee**
OUR SONG: THE TYPES AND ANTICANCER TREATMENT OF BREAST CANCER
Seoul National Univ. Hospital, Korea

Speaker **Seockhoon Chung**
SLEEPLESS NIGHTS IN THE RAIN
ASAN Medical Center, Korea

Speaker **Hyo-Won Kim**
THE TOUCH OF LOVE: PARENTING STRESS IN BREAST CANCER PATIENTS
ASAN Medical Center, Korea

Speaker **Han-Byoel Lee**
SCULPTING HOPE: THE ARTISTRY OF BREAST CANCER SURGERY
Seoul National Univ. Hospital, Korea

Oral Presentation

Oral Presentation

Oral Presentation

Oral Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

Poster Presentation

- **GBCC ABSTRACT BOOK**
- **GBCC PUBLICATION COMMITTEE**

- **EDITOR-IN-CHIEF**: SO YEON PARK
- **VOL. 08**
- **EDITORIAL OFFICE**
  KOREAN BREAST CANCER SOCIETY
  GWANGHWAMOON OFFICIA 2024, SAEMUNAN-RO 92, JONGNO-GU, SEOUL, KOREA
  TEL: +82-2-3461-6060, FAX: +82-2-3461-6061
  E-MAIL: GBCC@INTERCOM.CO.KR
- **eISSN:** 2508-1624

GBCC 2024

in conjunction with IERBS 2024

Abstract Book

GLOBAL BREAST CANCER CONFERENCE SECRETARIAT

CORE PCO I INTERCOM CONVENTION SERVICES, INC.
6TH FL., SQUAREME BLDG., 225 BONGEUNSA-RO,
GANGNAM-GU, SEOUL 06109, KOREA
T. +82-2-3452-7291
F. +82-2-565-2434
E. GBCC@INTERCOM.CO.KR

www.gbcc.kr

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

Plenary Lecture

"Go Beyond Cure of Breast Cancer"

INHIBITION OF THE CDK4/6/RB/CYCLIND PATHWAY IN ER+/HER2- BREAST CANCER

Dennis Slamon

Univ. of California, Los Angeles, Department of Medical Oncology, U.S.A.

The cyclin dependent kinases (CDKs) comprise a family of molecules that have enzymatic activities that play critical roles in governing both normal and cancer cell proliferation. Through their interaction with cyclins, these proteins regulate important and specific steps in cell cycle pathway regulating cell division. Early attempts at using CDKs as therapeutic targets were problematic in that early agents were nonspecific pan-CDK inhibitors resulting in significant toxicity profiles. The subsequent development of specific CDK inhibitors circumvented this problem. Specific inhibitors of CDK-4/6 (CDK-4/6i) were among the first to be developed and tested clinically for inhibition of the CDK4/6:cyclinD:Rb pathway. These were initially developed for hematologic malignancies and certain sarcomas based on mutations in cyclin-D (the CDK-4/6 partner) where they had limited activity. However, additional preclinical research showed CDK-4/6i's had significant growth inhibitory activity in hormone receptor-positive, HER2-negative (HR+/HER2-) breast cancer cells. These findings were then translated into clinical studies assessing the efficacy and safety of CDKi's plus hormonal blockade for HR+/HER2- breast cancers. The results from these clinical studies showed marked improvements in progression-free survival from all three approved CDKi's well as overall survival for two of them. They have also now been evaluated in the early breast cancer setting where they have yielded significant improvements in invasive disease-free survival. While all three currently approved CDKi's share the same major target, there are unique aspects of each that likely account for some observed differences in clinical efficacy and safety profiles.

EVIDENCE-BASED BREAST RADIOTHERAPY: CANADIAN EXPERIENCES

Timothy Whelan

McMaster Univ., Department of Radiation Oncology, Canada

Over the last 35 years, the Canadian Cancer Trials Group and the Ontario Clinical Oncology Group have performed a number of practice changing trials in breast radiotherapy. The goal of these studies has been to evaluate innovative approaches to radiotherapy to improve outcomes for women with breast cancer and to evaluate the role of biomarkers to guide radiotherapy decision making. This session will review key trials such as the Canadian Hypofractionation trial, the RAPID partial breast irradiation trial, and the recent LUMINA trial of omission of breast radiotherapy following breast conserving surgery. In addition, the presentation will review new trials of ultra-hypofractionation for regional radiotherapy, the RAPID2 trial evaluating external beam partial breast irradiation of 5 fractions given once daily, and the MA.39 trial of omission of regional radiotherapy in biomarker low-risk breast cancer. The presentation will highlight lessons learned and unanswered questions regarding the local treatment of early stage breast cancer.

LOBULAR CARCINOMA - CURRENT CONCEPTS AND CONTROVERSIES

Tari King

Dana-Farber Brigham Cancer Center, Department of Surgery, U.S.A.

Infiltrating lobular carcinoma (ILC) and lobular carcinoma in situ (LCIS) were first described in the1940s by two Memorial Hospital pathologists, Foote and Stewart. They were most intrigued by the infiltrative appearance of these lobular cancers which they described as demonstrating large numbers of isolated, loose or dyscohesive cells of rather uniform size but of varying shape. We now recognize that this dyscohesive growth pattern is the result of loss of a functional e-cadherin protein; a distinguishing feature between ILC and invasive ductal carcinoma (IDC).

Several studies comparing clinical features and outcomes between ILC and IDC have generated consistent findings. Lobular cancers are more likely to be ER+, larger, lower grade, less likely to be detected on MMG and more likely to have positive margins at breast conserving surgery (BCS), or to require mastectomy. Yet importantly, if BCS is successful, local recurrence and rates of contralateral breast cancer are equal for ILC and IDC.

Although lobular cancers represents only 5-15% of all breast cancer, notably the incidence of ILC rose sharply in the late 80s throughout the 90s, and it has become clear that there is a strong relationship between ILC and hormone replacement therapy.

Perhaps the "strongest" risk factor for ILC, is LCIS. Classic LCIS is an incidental finding there are no pathognomonic features on breast imaging or gross examination of tissue. On microscopic examination it is often multicentric and bilateral. Although originally considered a precursor to ILC and treated with mastectomy, over the years it was realized that rates of ipsilateral cancer in women who were not treated for LCIS were lower than expected and were quite similar to rates of contralateral breast cancer and this combined with the fact that only 50% of the cancers were of the lobular phenotype led to a movement to consider LCIS as a high risk lesion. Contemporary data continue to support this management approach as rates of cancer development in women with a diagnosis of LCIS are consistently reported at 1-2% per year and the risk is conferred bilaterally, with a slightly higher representation of ILC in the ipsilateral breast.

On IHC staining the majority of ILC are estrogen receptor (ER) positive and similarly in studies assessing gene expression, ILC are predominately luminal A subtype. The hallmark of lobular lesions, both pre-invasive and invasive cancers, is loss of e-cadherin protein expression. E-cadherin is an important cell-cell adhesion protein and its absence in lobular lesions is responsible for the distinct growth pattern in ILC. Despite their distinct growth pattern, there is no data that margin guidelines for ILC should differ from those used for IDC, and as such the definition of a negative margin is no tumor on ink. Patterns of metastatic disease do differ between ILC and IDC, with ILC having a predilection for the bones, peritoneum, ovaries, and GI tract; and pts with ILC are much less likely to develop lung metastases.

In this presentation we will also review areas of clinical controversy, including the use of MRI, the role of neoadjuvant chemotherapy and the utility of genomic assays in patients with ILC.

ORIGINS, EVOLUTION, AND CLINICAL IMPLICATIONS OF THE INTEGRATIVE BREAST CANCER SUBTYPES

Christina Curtis

Stanford Univ., U.S.A.

BLOOD BIOMARKERS AND TREATMENT DECISIONS IN ER+ HER2- METASTATIC BREAST CANCER

François-Clément Bidard

Institut Curie, Department of Medical Oncology, France

Using liquid biomarkers could greatly improve treatment decision and management of cancer treatments. We conducted the first two positive clinical trials with blood biomarkers: PADA-1 for ctDNA (Lancet Oncol 2022) and STIC for CTC (JAMA Oncol 2021, J Clin Oncol 2023), which both showed that taking into account liquid biomarkers improved the patient outcomes. We will review the design and main results of these two seminal trials and discuss the future of these new strategies in the currently evolving treatment landscape of HR+ HER2- mBC.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

Symposium

"Go Beyond Cure of Breast Cancer"

RE-THINKING SURGICAL MANAGEMENT IN IPSILATERAL BREAST TUMOR RECURRENCE

Sung Gwe Ahn

Gangnam Severance Hospital, Department of Surgery, Korea

In the context of ipsilateral breast tumor recurrence (IBTR), surgical intervention necessitates meticulous consideration, particularly concerning the feasibility of repeated breast radiotherapy and systemic therapy. A significant proportion of IBTR cases have previously undergone whole breast irradiation during the initial surgical intervention. However, recent advancements in partial breast irradiation (PBI) have expanded the therapeutic options, enabling the utilization of repeated lumpectomy coupled with re-irradiation targeting the tumor bed in instances of IBTR.

Furthermore, the surgeon's decision-making process extends to the management of axillary surgery. Current guidelines recommend axillary staging with or without sentinel lymph node biopsy (SLNB) in cases of locally recurrent breast cancer, akin to protocols observed in primary breast cancer cases. While the precise role of SLNB in IBTR remains uncertain, emerging evidence suggests its potential utility in such scenarios.

Moreover, the surgeon must also deliberate on the appropriate systemic treatments following local interventions. It is essential to acknowledge that the prognosis of IBTR is considerably inferior to that of primary tumors, underscoring the importance of strategic planning regarding the administration of systemic therapies subsequent to local therapy. Thus, surgeons are tasked with navigating a multifaceted decision-making process aimed at optimizing patient outcomes in the challenging landscape of IBTR management.

TAILORED AXILLARY SURGERY IN AXILLARY NODE-POSITIVE BREAST CANCER

Andrea Barrio

Memorial Sloan Kettering Cancer Center, Department of Surgery, U.S.A.

Management of the axilla has evolved significantly over time, with a trend toward less extensive axillary surgery. While historically, all patients underwent axillary lymph node dissection (ALND) due to the Halstedian belief that ALND was essential for the cure of breast cancer, advances in systemic therapy, radiotherapy, and understanding of tumor biology have resulted in the abandonment of ALND for a large proportion of patients having upfront surgery with limited nodal disease, and in those with no residual nodal disease after neoadjuvant systemic therapy.

Currently, in clinically node-positive patients, achieving nodal pathologic complete response is the only way to avoid ALND. Given that most breast cancers are luminal, neoadjuvant chemotherapy (NAC) is not indicated for a considerable proportion of clinically node-positive patients with low genomic risk, and therefore should not be used for surgical downstaging. In addition, for those luminal cancer patients in whom NAC is indicated, reported nodal pathologic complete response (pCR) rates are low (approximately 20-30%). While rates of nodal pCR are higher for triple negative and HER2 positive subtypes, approximately 40% of patients with responsive subtypes do not achieve nodal pCR. Therefore, there remains a large proportion of patients in whom ALND is still indicated. In this talk, we will discuss novel strategies to minimize ALND in clinically node-positive patients including an ongoing investigator initiated trial evaluating SLNB feasibility in patients with hormone receptor positive (HR+) human epidermal growth factor receptor negative (HER2-) clinically node positive breast cancer, trials of radiotherapy (in place of ALND) in patients with residual nodal disease after NAC, and finally the concept of tailored axillary surgery (TAS) as a method to reduce the nodal burden in clinically node-positive patients having upfront surgery or with residual disease after NAC.

When considering alternative strategies to ALND in clinically node-positive patients, it is important to remember that trials of surgical de-escalation currently do not include patients with locally advanced breast cancer, where ALND is still recommended after NAC irrespective of response to treatment.

As we move away from ALND in low-risk scenarios where data from randomized and prospective trials have demonstrated oncologic safety, we await results from ongoing clinical trials to provide us with high-level evidence regarding the safety of omission of ALND in high-risk patients with more extensive nodal disease.

OMISSION OF BREAST SURGERY IN PATIENTS WITH EXCEPTIONAL RESPONSE TO NEOADJUVANT SYSTEMIC THERAPY

Tomomi Fujisawa[1], Hideo Shigematsu[2], Taro Shibata[3], Keita Sasaki[3], Tadahiko Shien[4], Hiroji Iwata[5]

[1]Gunma Prefectural Cancer Center, Department of Surgery, Japan, [2]Hiroshima Univ. Hospital, Department of Surgery, Japan, [3]National Cancer Center Hospital, Department of Japan Clinical Oncology Group Data Center/operations Office, Japan, [4]Okayama Univ. Hospital, Department of Surgery, Japan, [5]Aichi Cancer Center, Department of Surgery, Japan

Background: The standard treatment for early breast cancer (EBC) involves surgery after primary systemic therapy (PST). HER2(+) breast cancer often achieves a pathological complete response (pCR) with HER2 inhibitors during PST. However, there are limited evidences for non-surgical therapy in EBC with complete clinical response (cCR) after PST. To address the lack of evidence for non-surgical options, a single-arm confirmatory study was planned to assess the efficacy and safety of non-surgical therapy for HER2(+) EBC with cCR following PST.

Methods: The key eligibility criteria are as follows: 1) Histologically confirmed as invasive ductal carcinoma of the breast, HER2(+). 2) cT1-2, N0, M0 (UICC 8th). 3) No ipsilateral breast cancer. 4) Women aged 20-74 years. 5) ECOG performance status 0 or 1. 6) Adequate organ function. 7) Ejection fraction as cardiac function is over 50%. 8) Written informed consent. Eligible patients undergo dual HER2 inhibitors and chemotherapy as PST, with cCR assessed through imaging (breast ultrasonography and enhanced MRI) and examination. Needle biopsy was performed to rule out the residual disease. In case of cCR, patients receive radiotherapy, followed by pertuzumab and trastuzumab. Surgical resection is reserved for non-cCR cases. The primary endpoint is distant metastasis-free (DMFS) survival at 3 years. The secondary endpoints include disease-free survival, overall survival, relapse-free survival, local relapse proportion, and cosmetic outcomes. Given that the threshold and expected DMFS at 3-year is 93% and 98% with a significance level of 2.5% (one-sided) and 80% power, 170 cCR cases are required. Assuming half of the HER2 pts reach cCR, 350 pts are required as the sample size started PST. The trial was initiated in November 2019, and patient accrual was completed in March 2023 with 353 patients. Primary analysis is planned for March 2026.

The study is registered as jRCTs031190129 at the Japan Registry of Clinical Trials.

PRACTICAL CONSIDERATIONS AND THE IMPLEMENTATION OF AI TOOLS FOR BREAST CANCER RISK PREDICTION

Thijs Kooi

Lunit Inc., Department of Cancer Screening, Korea

Breast cancer screening has been shown to reduce mortality, but cancers are still missed. Computational/AI tools like computer aided detection (CAD) are used to improve detection and risk assessment tools are used to tailor screening recommendations in the form of additional examinations or a reduced screening interval.

Recently, image based AI solutions for risk assessment have been developed and shown to greatly outperform traditional methods like the Gail and Tyrer-Cuzick model. However, the development and clinical implementation of these tools still have challenges. In this talk, we will give a brief overview of challenges and provide an outlook for the future.

ARTIFICIAL INTELLIGENCE IN REAL-WORLD EXPERIENCES: PERSPECTIVES OF RADIOLOGISTS

Won Hwa Kim

Kyungpook National Univ. Hospital, Korea

ARTIFICIAL INTELLIGENCE IN BREAST PATHOLOGY: CURRENT LANDSCAPE AND FUTURE PROSPECTS

Miseon Lee

The Catholic Univ. of Korea, Seoul St. Mary's Hospital, Korea

ORAL SERDS AND NOVEL ENDOCRINE THERAPY AGENTS

Gun Min Kim

Yonsei Univ. College of Medicine, Department of Medical Oncology, Korea

The treatment landscape for hormone receptor-positive, HER2-negative metastatic breast cancer is rapidly evolving with the introduction of novel endocrine therapies, particularly oral selective estrogen receptor degraders (SERDs). These advancements offer promising alternatives to traditional therapies, with the potential to overcome resistance mechanisms that often limit the efficacy of long-term endocrine treatment.

Oral SERDs such as elacestrant, camizestrant, and imlunestrant have emerged as front-line contenders in overcoming resistance to endocrine therapy. These agents are designed to degrade the estrogen receptor, thereby inhibiting the receptor's signaling and tumor-promoting effects in breast cancer.

Elacestrant has demonstrated significant efficacy in the EMERALD trial, notably improving progression-free survival (PFS) compared to standard endocrine therapies like aromatase inhibitors and fulvestrant, especially in patients with ESR1 mutations. Camizestrant showed promising results in the SERENA-2 trial, offering superior PFS over fulvestrant across various dosages, illustrating the potential for dose optimization based on patient response and tolerability. Imlunestrant is being evaluated for its dual role in direct estrogen receptor degradation and potential combination benefits with CDK4/6 inhibitors, reflecting an integrated approach to therapy that targets multiple aspects of tumor growth and survival mechanisms.

Understanding the mechanisms behind resistance to endocrine therapy, including genetic mutations and changes in tumor signaling pathways, is crucial for developing more effective treatment strategies.

The development of novel agents such as the AKT inhibitor capivasertib represents a strategic expansion in the breast cancer treatment paradigm, addressing specific genetic alterations associated with resistance to first-line therapies. Capivasertib, combined with fulvestrant in the CAPItello-291 trial, substantially extended PFS in patients with alterations in the PIK3CA, AKT1, or PTEN genes, underscoring the importance of targeted therapy based on tumor genomics. Combination therapies featuring imlunestrant with abemaciclib or alpelisib point towards a future where endocrine therapy is part of a broader, more aggressive treatment regimen aimed at multiple pathways involved in cancer progression and resistance.

The advancement of oral SERDs and novel endocrine therapy agents significantly enriches the therapeutic options available for managing HR+/HER2- MBC. These developments not only offer the potential for better patient outcomes through increased efficacy and personalized treatments but also reflect a deeper understanding of breast cancer biology. As these therapies progress from clinical trials to clinical practice, they are setting the stage for more tailored, effective, and long-term management of breast cancer.

TARGETING PI3K-AKT-MTOR PATHWAY IN HR+ BREAST CANCER

Yen-Shen Lu

National Taiwan Univ. Hospital, Department of Medical Oncology, Taiwan

The PI3K/AKT/mTOR pathway has long been known to play a major role in the growth and survival of cancer cells. Breast tumors often harbor PIK3CA gene alterations, which therefore constitute a rational drug target. However, it has taken many years to demonstrate clinically-relevant efficacy of PI3K/Akt inhibition and eventually attain regulatory approvals. As data on PI3K/Akt inhibitors continue to mature, this review updates and summarizes the current state of the science, including: the prognostic role of PIK3CA alterations in breast cancer; the evolution of PI3K/Akt/mTOR inhibitors; the clinical utility of the first-in-class oral selective PI3Kα inhibitor, as well as AKT inhibitor; PIK3CA mutation detection techniques; and adverse effect management. PIK3CA-mutated breast carcinomas predict survival benefit from PI3K/Akt inhibitor therapy. PI3K/Akt inhibitors plus endocrine therapy shows promising efficacy for treating premenopausal women with HR+/HER2– advanced breast cancer. Available evidence supporting using these inhibitors after disease progression on first-line endocrine therapy with or without CDK4/6 inhibitors, justifies PIK3CA mutation testing upon diagnosing HR+/HER2– advanced breast cancer, which can be done using either circulating tumor DNA or (more advantageously) next generation sequencing. With appropriate toxicity management and patient selection using validated testing methods, all eligible patients can potentially benefit from this new treatment. Further clinical trials to assess combinations of hormone therapy with PI3K, AKT, mTOR, or CDK 4/6 inhibitors, or studies in men and women with other breast subtypes are ongoing.

NEW TARGETS IN HORMONE RECEPTOR POSITIVE BREAST CANCER

Yeon Hee Park

Samsung Medical Center, Department of Medical Oncology, Korea

Although CDK4/6 inhibitor combination endocrine therapy have improved clinical outcomes remarkably including overall survival (OS) benefits in HR+/HER2- breast cancers from metastatic advanced to early breast cancers, the development of resistance remains a significant challenge and the detailed mechanisms, and potential therapeutic targets in advanced breast cancer yet to be revealed.

Oral SERD and other estrogen degraders, PI3Km/AKT/mTOR pathway targeted agents, and ADCs have been developed and shown meaningful clinical activities, which have contributed to improve clinical outcomes.

Recently, cyclin-dependent kinase 2 hyperactivation has been associated with clinical resistance to CDK4/6 inhibitor plus ET combinations. CDK2 targeting has been identified as a clinically actionable vulnerability across various CDK4/6i refractory preclinical breast cancer models. Activation of CDK2 and subsequent resistance to CDK4/6i occurs through diverse mechanisms including overexpression/amplification of CCNE1, MYC activation, PTEN loss, RB1 loss, and CDKN1A activity.

KAT6 inhibitor is a potent and selective catalytic inhibitor of KAT6 histone acetyltransferases, KAT6A and KAT6B as evidenced by its potent biochemical inhibition of both enzymes. Acetylation of histones is catalyzed by KATs or other HATs. KAT6A and KAT6B are part of MYST family of HATs composed of 5 HATs: KAT5, KAT6A, KAT6B, KAT7, KAT8. KAT6A and KAT6B are paralog genes are involved in fundamental cellular processes, including gene transcription, cellular senescence, tissue development, and maintenance of normal hematopoietic stem cells. KAT6A was also identified as part of the recurrently amplified 8p11-12 region found in 10 to 15% of breast cancers and shown to be a significant dependency in 8p11 amplified breast cancer cell lines overexpressing KAT6A, thus highlighting its oncogenic function. KAT6A shRNA-mediated knockdown reduced ESR1 mRNA and ERα protein levels in ER+ breast cancer cells. KAT6A is a direct transcriptional regulator of ESR1 and is localized to the gene promoter directly regulating its transcription. Overexpression of ESR1 partially rescued the growth defect caused by shRNA depletion of KAT6A. These findings indicated an important role of KAT6A in gene regulation of ESR1 required for growth of ER+ breast cancer cells.

Since a crosstalk between tumor and tumor microenvironment (TME) plays an important role to grow tumor and metastasis, this effect could serve as key regulators in the resistance of endocrine therapy and the transition of breast cancer cells to metastasis.

In this lecture, I have reviewed recent progress in endocrine therapy introducing several new targets including CDK4i, CDK2i, KAT6i, and the contribution of TME to ER positive breast cancer.

TAILORING POST-NEOADJUVANT TREATMENT IN TNBC-CURRENT TREATMENT AND FUTURE PERSPECTIVES

Sung Hoon Sim[1,2]

[1]National Cancer Center, Department of Medical Oncology, Korea, [2]National Cancer Center, Department of Research Institute, Anticancer Resistance Branch, Korea

Recent advancements in early triple-negative breast cancer (TNBC) treatment have significantly improved survival, highlighting the crucial role of pathological complete response (pCR) as a prognostic indicator for long-term outcomes. Achieving pCR is strongly correlated with enhanced event-free survival (EFS) and overall survival (OS), underscoring the need for treatment regimens that increase pCR rates. The current preferred regimen includes anthracycline followed by taxanes, optionally enriched with platinum and immune checkpoint inhibitors (ICIs), demonstrating significant impacts on pCR and survival.

For patients not achieving pCR, post-neoadjuvant strategies involve pembrolizumab, capecitabine, and olaparib, tailored to specific patient subsets. While long-term data on pembrolizumab's continuation, especially in non-pCR patients, are awaited, combining pembrolizumab with capecitabine or olaparib may be considered for high-risk TNBC patients despite the current lack of randomized clinical trial data.

Emerging treatments like antibody-drug conjugates (ADCs) and biomarkers, particularly circulating tumor DNA (ctDNA), promise to refine therapeutic adjustments and predict outcomes, endorsing the potential of precision medicine in TNBC treatment.

In conclusion, significant progress in neoadjuvant and post-neoadjuvant treatments for TNBC is driven by robust clinical evidence and novel therapeutic agents. However, challenges in treatment optimization, such as identifying reliable biomarkers and understanding TNBC's molecular intricacies, persist. Continued research, innovation, and adaptation of treatment paradigms are essential for advancing TNBC patient care, emphasizing a multidisciplinary approach and the integration of emerging therapies.

OVERCOMING RESISTANCE OF IMMUNOTHERAPY IN TNBC - MECHANISM AND NOVEL TREATMENT

Soo-Chin Lee

National Univ. Cancer Institute, Singapore (NCIS), Department of Medical Oncology, Singapore

Immunotherapy has revolutionized cancer treatment, yet its efficacy in TNBC remains limited due to intrinsic tumor characteristics leading to resistance. While checkpoint inhibitors in combination with chemotherapy have shown promise in TNBC treatment, the majority of TNBCs remain refractory to immunotherapy. Resistance mechanisms encompass both primary and acquired factors arising from tumor cells and the tumor microenvironment. Tumor molecular subtype and immune phenotype of TNBC has been shown to predict response to checkpoint inhibitor in randomized trials. Addressing the challenge of patient selection, refining biomarkers is imperative. Elevated PD-L1 expression beyond conventional thresholds may identify a subset of refractory TNBC patients who could benefit from pembrolizumab monotherapy. Furthermore, the germline APOBEC3B deletion variant emerges as a potential biomarker, predisposing TNBC patients to hypermutated tumors that are more sensitive to immunotherapy. Combination strategies are pivotal in overcoming resistance and expanding the utility of immunotherapy in TNBC. Efforts focus on transforming 'cold' tumors into 'hot' ones or reversing resistance mechanisms. Novel combinations under investigation include checkpoint inhibitors paired with antibody-drug conjugates, anti-angiogenic agents, PARP inhibitors or AKT/PTEN/PI3K inhibitors. Among these novel combinations, efficacy from checkpoint inhibitors paired with antibody-drug conjugates has been particularly encouraging and several phase III trials are now ongoing to evaluate these combinations as first-line palliative or neoadjuvant treatment. Such progress signifies promising avenues for TNBC therapy. Elucidating resistance mechanisms and identifying predictive biomarkers are crucial steps toward optimizing immunotherapy in TNBC. By integrating novel combination therapies targeting tumor and microenvironmental factors, the clinical landscape of TNBC treatment stands poised for significant advancements. These endeavors hold the potential to enhance patient outcomes and broaden the therapeutic arsenal against this aggressive breast cancer subtype.

EXPANDING IMMUNOTHERAPY BEYOND TNBC - NEW STRATEGY IN HER2 AND ER POSITIVE BREAST CANCER

Jee Hyun Kim

Seoul National Univ. Bundang Hospital, Department of Medical Oncology, Korea

Immunotherapy has become an important part in the treatment of cancer, however, breast cancer especially hormone receptor (HR) + HER2 - breast cancer were known to have less benefit from immune checkpoint inhibitors mainly due to immune suppressive tumor microenvironment. HR+ breast cancer generally has a low TMB, low PD-L1 expression, low number of tumor infiltrating lymphocytes (TILs) and abundance of immune suppressive tumor associated macrophages. Initial studies with immune checkpoint inhibitors (ICI) have reported little benefit and there are no approved ICIs for the treatment of HR+ breast cancer. Many ongoing trials are testing novel combinations of ICI plus other treatment modalities such as chemotherapy, hormone therapy, CDK 4/6 inhibitors, PARP inhibitors, and novel immunotherapy combinations. There are certain subpopulation of patients with HR+ breast cancer who respond well to immunotherapy and finding the right biomarker to select patients who can benefit most from immunotherapy are crucial.

Unlike HR+ HER2- breast cancer, HER2+ breast cancer share similarities with TNBC; have high number of TILs, high TMB and high PD-L1 expression therefore expected to have significant benefit from immunotherapy. The outcome of HER2+ breast cancer has dramatically improved due to the development of anti-HER2 targeted therapies such as trastuzumab, pertuzumab, and antibody-drug conjugates, which may be considered as effective passive immunotherapy. There are many ongoing attempts to improve the outcome of HER2+ breast cancer even further, by combining anti-HER2 treatment with immune checkpoint inhibitors and other immunotherapies. Novel approaches such as adoptive T-cell immunotherapies and tumor vaccines are also being studied.

In the meeting, evidence from recent studies on the immunotherapy of HR+ and HER2+ BC will be reviewed with discussion on the future perspectives.

ROLE OF SBRT IN OLIGOMETASTASIS AND OLIGOPROGRESSION

Jee Suk Chang

Yonsei Cancer Center, Department of Radiation Oncology, Korea

The prevailing notion that metastatic breast cancer (BC) is beyond cure, with treatment strategies primarily palliative in nature, is being rigorously questioned by the emergent concept of oligometastatic (OM)-BC. Despite a lack of consensus on a precise definition, the notion of OM-BCdefined most notably by ESMO, and supported by ESTRO and ASTRO guidelines as involving up to five metastatic lesions amenable to localized treatmentchallenges traditional paradigms in oncology.

This reevaluation gains complexity against the backdrop of ongoing debates about the real-world benefits of integrating locoregional treatment modalities within OM-BC management protocols. Although initial evidence suggested promising outcomes for patients treated with a multimodal approach, the phase 2R/3 NRG-BR002 trial highlighted that the addition of total metastasis ablation to standard systemic therapy does not enhance survival outcomes in a population largely characterized by hormone receptor positivity and HER2 negativity. This finding stresses the need for precision in selecting candidates for such interventions, underscoring the importance of rigorous clinical trials in identifying effective treatment strategies.

As the definition of OM-BC evolves toward a more molecularly informed paradigm, integrating clinical risk factors, tumor and host biology, and novel biomarkers like circulating tumor DNA (ctDNA), the potential to more accurately identify patients likely to benefit from localized treatments grows. ctDNA emerges as a particularly promising biomarker, offering insights into treatment response and disease progression that precede radiological evidence. With ongoing research efforts such as the STEREO-SEIN, OLIGOMA, and CLEAR trials, the focus remains on refining patient management strategies to effectively combine systemic and localized treatments. The path forward demands robust evidence from well-conducted clinical trials to enhance the therapeutic landscape for patients with oligometastatic BC, ultimately improving outcomes.

References

1. Guckenberger M, Lievens Y, Bouma A, et al. Characterisation and classification of oligometastatic disease: a European Society for Radiotherapy and Oncology and European Organisation for Research and Treatment of Cancer consensus recommendation Lancet Oncol. 2020 Jan;21(1):e18-e28
2. Lievens Y, Guckenberger M, Gomez D, et al. Defining oligometastatic disease from a radiation oncology perspective: An ESTRO-ASTRO consensus document. Radiother Oncol 2020 Jul:148:157-166
3. Chmura SJ, Winter KA, Woodward WA, et al. NRG-BR002: A phase IIR/III trial of standard of care systemic therapy with or without stereotactic body radiotherapy (SBRT) and/or surgical resection (SR) for newly oligometastatic breast cancer (NCT02364557). J Clin Oncol. 2022;40(suppl 16):1007. doi:10.1200/JCO.2022.40.16_suppl.1007
4. Chmura SJ. Management of oligometastatic breast cancer: implications of NRG BR002. Presented at: 40th Annual Miami Breast Cancer Conference®; March 2-5, 2023; Miami Beach, FL.

TAILORED RADIOTHERAPY OF THE PRIMARY SITE IN METASTATIC BREAST CANCER

Haeyoung Kim

Samsung Medical Center, Department of Radiation Oncology, Korea

Metastatic breast cancer (MBC) is a heterogeneous disease entity. Metastasis can be detected at the initial diagnosis of breast cancer, such as de novo stage IV breast cancer, which constitutes about 1-6% of all new cases of breast cancer. Additionally, recurrent breast cancer presenting as systemic metastasis is another feature of MBC. With advancements in systemic treatment for breast cancer, the survival of patients with MBC has improved. However, some patients with MBC experience local symptoms originating from uncontrolled breast masses. Moreover, there are patients with persistent breast tumors even after controlling the disease at distant sites following effective systemic therapies. In such cases, radiation therapy is a promising therapeutic option for improving local symptoms, decreasing tumor burden, and potentially improving survival rates. Since every patient presents with different clinical situations regarding prognosis, systemic disease burden, and proximity to radiotherapy centers, radiation therapy for the primary site should be tailored and individualized. There is limited data available on tailoring radiotherapy for the primary site in patients with MBC. In this symposium session, we aim to enhance knowledge about the current evidence on optimizing primary site radiotherapy in MBC.

OPTIMAL RT APPROACH FOR INTRACRANIAL METASTASIS

Yutaro Koide

Aichi Cancer Center Hospital, Department of Radiation Oncology, Japan

The traditional treatment approach for brain metastases has been predominantly focused on local therapies, such as surgery and radiation therapy, with a limited role in systemic therapy. Recent developments in local therapy include an increased reliance on stereotactic radiosurgery instead of whole-brain radiation. Even if whole-brain radiation is needed, hippocampal-avoidance whole-brain radiation has become an important option to preserve neurocognitive function. The motivation behind these shifts is the extended survival of patients with brain metastases due to advancements in systemic therapy, and the long-term preservation of neurologic and neurocognitive functions has become more important. Particularly in the case of HER2-positive breast cancer brain metastases, recent advances in systemic therapy have been remarkable. Instead of upfront local therapy, we have the option of upfront systemic therapy for patients with small asymptomatic brain metastases, predominantly based on the HER2CLIMB clinical trial, which established tucatinib, capecitabine, and trastuzumab. Also, a new antibody-drug conjugate, trastuzumab deruxtecan, is being established in this setting. On the other hand, there is still limited data on the efficacy and safety of local and systemic therapies in sequence or combination. Although further clinical trials in this area are needed, some recent retrospective data alert the increasing neurotoxicity caused by the concurrent use of this systemic therapy and stereotactic radiation. This presentation aims to discuss the optimal treatment approach for patients with breast cancer brain metastases by focusing on recent advances in both local therapies and systemic therapies.

THERAPY INDUCED TUMOR EVOLUTION REPRESENTS A NOVEL THERAPEUTIC TARGET

Gordon Mills

Oregon Health Sciences Univ., Department of Systems Biology, U.S.A.

Tumors evolve under therapeutic pressure both through rapid epigenomic mechanisms primarily at the protein network level and long term genomic evolution. The realization of the promise of personalized molecular medicine will require efficient development and implementation of effective combination therapies able to capitalize on or interdict tumor evolution under therapeutic pressure. While we are beginning to develop a series of biomarkers able to predict which patients will benefit from monotherapy, our ability to predict which combination therapies will be active in particular patients is in its infancy. Integration of spatially oriented DNA, RNA and protein information content as they change under therapeutic pressure has the potential to help identify patients likely to respond to combination therapy.

Therapy resistance can be pre-existing, adaptive, or acquired. Resistance can also occur through heterogenous molecular changes within the tumor and metastases. Adaptive resistance, which is the consequence of activation of homeostatic loops and phylogenetically conserved stress responses, provides a potential therapeutic liability that can be leveraged for rational combinatorial therapy. Thus, a comprehensive analysis of patient tumors before, during and after treatment should become the standard of practice to enable identification of mechanisms of resistance as well as to allow rapid evolution of patient therapy. Testing these precepts will require the development and implementation of novel biopsy driven trial designs and CLIA compliant analytics that can be deployed in real time to allow rapid evolution of therapeutic approaches. We have implemented a suite of biopsy driven trials linked to deep molecular analysis with the goal of rapid identification of tumor evolution to enable change in therapy to counter tumor evolution as it arises. We have implemented a series of studies based on PARP inhibitors as a backbone with the goal of increasing the depth and duration of response while at the same time extending the population of patients that benefit beyond those with homologous recombination defects.

SPATIAL AND TEMPORAL DYNAMICS IN THE TUMOR MICROENVIRONMENT THROUGH IMMUNOTHERAPY

Christina Curtis

Stanford Univ., Department of Oncology, Genetics, And Biomedical Data Science, U.S.A.

Immunotherapies have yielded a paradigm shift in the treatment of numerous cancers. However, our understanding as to why only certain patients benefit from these agents, as well as our ability to predict treatment response, remains limited. This is exacerbated by the complexity of the tumor microenvironment (TME), which contains cancer cells, immune cells, and stromal cells. These differing cell types can have context-dependent roles in either promoting or inhibiting anti-tumor immune responses, making it challenging to identify features which reliably correlate with patient outcome. In addition, the roles of these diverse cell types are often influenced by their location within the TME, meaning that assays without spatial information cannot fully resolve this complexity. To address these gaps, we mapped the spatial distribution and phenotype of 21 cell populations across 109 patients with metastatic triple negative breast cancer who received nivolumab (anti-PD1) in the phase II TONIC clinical trial (NCT02499367). Specifically, we profiled metastatic samples obtained prior to and during anti-PD1 treatment, as well as archival material from the original primary tumor for each patient via multiplexed spatial proteomic imaging on the MIBI (multiplex ion beam imaging) platform. Harnessing these data, we identified the location and phenotype of each cell, and quantified the spatial distribution, diversity, and functional marker status of all cell populations in the TME. These analyses revealed numerous features indicative of a productive immune response that correlated with patient survival, whereas features indicative of a suppressive microenvironment were negatively correlated with patient survival. Further, we observed significant temporal effects, in which pre-treatment predictive features which were not predictive on-treatment; similarly, many on-treatment predictive features had no predictive power prior to treatment. We observed substantial differences in predictive performance of multivariate models based on the timepoint profiled, with on-treatment samples exhibiting the best performance, paralleling our prior findings in the neoadjuvant anti-HER2 setting (McNamara et al. 2021). Taken together, we demonstrate that features associated with a productive anti-tumor immune response are temporally structured. These findings shed new light on the determinants of immunotherapy response and may inform the design of subsequent trials to better understand the temporal dynamics of response to checkpoint blockade.

SERIAL CIRCULATING TUMOR DNA LANDSCAPE PORTRAYING CLONAL EVOLUTION

Pedram Razavi

Memorial Sloan Kettering Cancer Center, Department of Medical Oncology, U.S.A.

Recent large-scale genomic studies have dramatically advanced our understanding of the genomic alterations present in breast cancer and have shed light on the extensive spatial and temporal clonal heterogeneity of breast cancer. Drug resistance is generally attributed to the evolutionary selection of pre-existing genomic clones, or the acquisition of resistant clones through divergent or convergent evolutionary mechanisms. Underlying tumor evolution also results in polyclonal resistance, a major pitfall in overcoming resistance in advanced disease, highlighting the need for intervention early in the course of disease evolution when clonal diversity is low. Considering the unfeasibility of routine multiregional and serial tumor sampling, tumor sequencing alone cannot capture the full extent of the genomic landscape of the disease and has obvious limitations for longitudinal tumor evolution monitoring. Liquid biopsy approaches, on the other hand, can potentially provide a powerful tool to assess tumor heterogeneity and monitor clonal evolution in real time. In this talk, I will review the current data and some unpublished work from our group aiming to study breast cancer evolution utilizing ctDNA profiling. The ability to accurately monitor disease burden, tumor response, and track its genomic evolution in a metastatic or micrometastatic setting provides a unique opportunity to study early escalation and de-escalation strategies of care based on the lack of ctDNA response among patients who have not yet shown clinical progression. Such adaptive trials may improve outcomes by eradicating resistant clones at their inception or during their early growth and can potentially enhance overall outcomes.

NEOANTIGEN ANALYSIS

Sangwoo Kim

Yonsei Univ. College of Medicine, Korea

NEOANTIGEN-TARGETED VACCINE

Soonmyung Paik

Theragen Bio, Department of Severance Biomedical Science Institute, Korea

Although mutations result in formation of foreign proteins, most of them fail to induce adaptive immune response in patients due to; 1) weak affinity of the mutated peptide to the patient's MHC allotypes, 2) lack of affinity to TCRs, 3) failure to prime nave T cells due to pMHC expression level below priming threshold on the surface of the antigen presenting cells (immunological ignorance), 4) absence of TCR repertoire at the tumor draining lymph node, or 5) immunosuppressive environment at the tumor draining lymphnodes.

In phase 1 clinical trials for neoantigen targeted cancer vaccines, immune response to more than 50% of the targeted neoantigens were de novo suggesting that vaccination can overcome the immunological ignorance. These results suggest that neoantigen targeted vaccines can be used to treat immunologically cold tumors that are not typical targets of the immune checkpoint inhibitors.

To produce a neoepitope targeted personalized cancer vaccine for an individual patient, several steps are required.

1) Genome sequencing of the tumor sample together with normal blood must be conducted to identify all mutations. Since most of the clinical specimens are formalin fixed and paraffin embedded (FFPE) which results in sequencing artifacts. While the clinical sequencing panels can accurately diagnose hotspot mutations, exome or whole genome sequencing needs to be performed to identify neoepitopes that are mostly passenger mutations. Therefore, deep-learning algorithms such as DEEPOMICS FFPE (Heo et al, Scientific Reports 2024) need to be applied to remove the FFPE induced artifacts.

2) Among the list of identified mutations, candidate neoepitopes must be selected based on the patient's HLA allotypes. Due to the large number of mutations and resulting class I epitope candidate peptides with mutations, this process typically involves use of computational prediction algorithms. As a result of the training with a large body of immunopeptidome sequencing data, prediction of the MHC affinity is fairly accurate for major alleles. However, TCRs see the opposite side of the peptides than the side that binds to the MHC protein. Therefore, to accurately predict T cell response to a neoepitope, affinity to not only MHC but TCR must be predicted. Regrettably T cell response or TCR binding data is scanty to develop an accurate TCR binding algorithm. Furthermore, limited naive T cell repertoire of each patient and TCR degeneracy makes it nearly impossible to accurately predict in vivo immunological response. Thus, the current generation of the neoepitope prediction tools have low positive predictive values. A real time screening of all potential neoepitope candidates in vitro using tandem minigenes or barcoded multimers with blood from the patient or HLA matched donor blood can be attempted but those methods are costly and hardly can meet the patient care timeline. To address this challenge, we developed a neoepitope screening method called Double Barcode Neoepitope Scan which does not require synthesis of peptides for screening.

3) In order to break the immunological ignorance, the vaccine must be designed and formulated so that it is delivered to the resident antigen presenting cells of as many secondary lymphoid organs possible (due to non-overlapping TCR repertoire among each secondary lymphoid organs), expressed at a high level, and processed correctly to be presented by both class I and class II MHC pathways. For mRNA vaccines, UTRs and poly A tail needs to be optimized for stable translation of the multivalent polypeptide incorporating 20 to 30 neoepitopes in tandem. Circular RNA platform with better stability is also being actively pursued. Once translated, the polypeptide must be targeted to the MHC pathways to be processed and presented on the surface of the dendritic cells as pMHC complexes. This process is governed by the signal peptide and MHC targeting sequence. Organ targeting is achieved by selecting the right nanoparticle formulation and route of administration. Other vaccine formats are also being tested including autologous dendritic cells loaded with neo epitope peptides or tumor lysates and nanoparticles with peptides to name a few.

4) Vaccine must be produced in a GMP setting. At this point, personal scale manufacturing of mRNA-LNP vaccine is challenging since the production line of CMOs are designed for large scale production.

Despite these challenges, several companies have conducted phase 2 clinical trials in several disease settings with encouraging results. Of particular importance is the trial in pancreatic cancer in a minimal residual disease setting. In a half of the vaccinated patients, immunological response could be demonstrated and was associated with better clinical outcome with no recurrences during the 18 months follow up period.

NEOANTIGEN-TARGETED CELL THERAPY

Hee Jin Lee

ASAN Medical Center, Department of Pathology, Korea

Cancers can be targeted by T cells with specific T cell receptors (TCR) reactive to neoantigens. Neoantigen-targeted cell therapy includes tumor-infiltrating lymphocyte (TIL) and TCR-engineered T cell (TCR-T) therapies.

For neoantigen-reactive TIL therapy, TILs can be separately cultured from different fragments of tumor tissue and then the most neoantigen-reactive culture can be selected for final TIL therapy. In another way, neoantigens can be supplied to the culture media with antigen presenting cells to enrich neoantigen-reactive TILs.

For successful TCR-T therapy, we need to consider several aspects as follows:
Target: public (shared) vs. private neoantigen
Source of TCR: autologous vs. allogeneic, TIL vs. PBMC, CD4+ vs. CD8+
Isolation of neoantigen-reactive T cells: tetramer, CFSE, surface marker, scRNA seq
Constant region (mismatching): human vs. others, modification
Source of T cells for transduction: autologous vs. allogeneic T cells
Transduction method: viral vector vs. non-viral system
How many TCRs to be engineered
Improve T cell function: costimulatory and immune checkpoint molecules, cytokine, chemokine receptor, metabolism, memory phenotype
Combined therapy: lymphodepletion, IL-2, immune checkpoint inhibitor

ANTIBODY-DRUG CONJUGATES: THE EVOLUTION OF DEVELOPMENT AND CURRENT LANDSCAPE IN BREAST CANCER

Kyong Hwa Park

Korea Univ. Anam Hospital, Department of Medical Oncology, Korea

Over the last two decades, antibody-Drug Conjugates (ADCs) made a new breakthrough for both solid cancers and hematologic malignancies in the targeted therapy era. Since the first ADC, gemtuzumab ozogamicin approved in 2000, 14 ADCs have been approved so far and marketed worldwide. With the development and understanding of the 3 major components of the ADC, about 100 ADCs are under clinical development. All of the structural components of ADC (mono-clonal antibody, liker, and payload) are known to affect the antitumor activity, toxicity, and pharmacokinetics. With more expansion of targets and clinical indications, ADC is now considered as new targeted therapeutics and it is expected to replace current standard cytotoxic chemotherapeutics in the future. In the first generation ADCs, including gemtuzumab ozogamicin and inotuzumab ozogamicin, IgG4 isotype of humanized monoclonal antibodies were conjugated to calicheamicin through the acid-labile linkers. The release of payloads was slowly hydrolyzed in the normal pH circulation, resulting in uncontrolled release of payloads and off-target toxicity. The payload, calicheamicin caused antibody aggregation due to hydrophobicity. Moreover, DARs of the first generation ADCs were highly heterogenous due to the stochastic conjugation via the lysine and cysteine residues. The second generation ADCs are represented by brentuximab vedotin and ado-trastuzumab emtansine. These ADCs are based on IgG1 isotype with better bioconjugation with payloads and higher cancer cell targeting. Notably, payloads used in the second generation ADCs, auristatins and mytansinoids, have more effective cytotoxicity and water solubility. Thus, more payloads were conjugated and new linkers with better plasma stability resulted in more stable DARs. With the continuous efforts in optimization of DAR, linkers and payloads were turned out to be key for the success.

In the third generation ADCs era, polatuzumab vedotin, enfortumab vedotin, and fam-trastuzumab deruxtecan represented as fully-humanized antibodies with site-specific conjugation technology. The most important progress with the third generation ADCs is the use of more potent payloads such as PBD, tubulysin, and immunomodulator with novel mechanisms.

In breast cancer, there are 3 approved ADCs and are in clinical use in most of the regions. Since the T-DM1 was the first ADC approved for HER2 type cancer, fam-trastuzumab deruxtecan made a new avenue not only in HER2 type cancers, but in non-HER2 cancers based on the significantly improved clinical outcomes in the pivotal trials. Sacituzumab govitecan is the first approved ADC in advanced triple negative breast cancer. Based on the proven efficacy and safety profile in advanced stage cancers, 2 third generation ADCs are in clinical development both in combination treatment using IOs in both advanced stage and high-risk early cancers.

UNRESOLVED PROBLEM IN REAL-WORLD PRACTICE: TOXICITIES AND MANAGEMENT OF BRAIN METASTASES

Chun-Yu Liu

Taipei Veterans General Hospital, Department of Medical Oncology, Taiwan

Breast cancer is one of the main cause of cerebral and leptomeningeal metastases, the prognosis of which remains poor. Antibody drug conjugates (ADCs) have emerged as promising therapeutic agents in the realm of oncology, offering targeted delivery of potent cytotoxic agents to tumor cells while sparing healthy tissues. Few data are available on the efficacy of third-generation ADCs on brain metastasis (BM) and/or leptomeningeal metastasis (LM) of breast cancer. As the field of ADCs is rapidly evolving, with new constructs entering the late clinical development, in this review we highlight the unresolved problems surrounding the use of ADCs in the context of brain metastases, focusing on the efficacy of approved and novel promising conjugates on patients with BM and LM of breast cancer. We discuss the mechanisms underlying the blood-brain/tumor barrier penetration and the factors influencing the efficacy of ADCs in treating intracranial lesions. Furthermore, we provide insights into ongoing research efforts and potential future directions aimed at optimizing the therapeutic efficacy of ADCs while minimizing the risk of neurotoxicities in patients with brain metastases. By elucidating these challenges and proposing strategies for their management, this review seeks to enhance the clinical understanding and utilization of ADCs in the complex landscape of brain metastases.

FUTURE DIRECTIONS: RESISTANCE MECHANISM OF ADCS AND STRATEGIES TO OVERCOME

Sarat Chandarlapaty

Memorial Sloan Kettering Cancer Center, Department of Human Oncology and Pathogenesis Program, U.S.A.

Antibody Drug Conjugates (ADCs) have transformed clinical breast cancer practice demonstrating efficacy in refractory settings for both metastatic and early-stage disease. Despite the major improvements ADCs have shown over conventional cytotoxic chemotherapy, resistance to therapy has been observed in the advanced setting. As the ADCs are constructed to have a unique mechanism of drug action, the basis for therapy has also proven distinct from other forms of systemic therapy. In this session, we will review several putative mechanisms of resistance that are beginning to be observed and validated in the clinic including alterations in the antibody target, suppression of ADC internalization, and suppression of payload effect. We will further define some potential strategies for overcoming these resistance mechanisms through next generation inhibitors or combinatorial approaches.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

Panel Discussion

"Go Beyond Cure of Breast Cancer"

RESISTANCE MECHANISM OF CDK4/6 INHIBITOR: PRIMARY OR ACQUIRED

Dennis Slamon

Univ. of California, Los Angeles, U.S.A.

WHAT IS THE OPTIMAL TREATMENT STRATEGY AFTER THE FIRST LINE CDK4/6 INHIBITOR?

Yoon-Sim Yap

National Cancer Centre Singapore, Department of Medical Oncology, Singapore

Endocrine therapy (ET) with cyclin-dependent kinase 4/6 inhibitor (CDK4/6i) is currently the standard first-line treatment for most patients with hormone receptor (HR) positive, human epidermal growth factor receptor (HER2) negative advanced breast cancer. However, resistance to ET and CDK4/6i inevitably ensues. The optimal post-progression treatment regimens and their sequencing continue to evolve in the rapidly changing treatment landscape. In this session, we summarize the mechanisms of resistance to ET and CDK4/6i, which can be broadly classified as alterations affecting cell cycle mediators and activation of alternative signaling pathways. Recent clinical trials have been directed at the targets and pathways implicated, including estrogen and androgen receptors, PI3K/AKT/mTOR and MAPK pathways, tyrosine kinase receptors such as FGFR and HER2, homologous recombination repair pathway, other components of the cell cycle and cell death. We describe the findings from these clinical trials using small molecule inhibitors, antibodydrug conjugates and immunotherapy, providing insights into how these novel strategies may circumvent treatment resistance, and discuss how some have not translated into clinical benefit. The challenges posed by tumor heterogeneity, adaptive rewiring of signaling pathways and dose-limiting toxicities underscore the need to elucidate the latest tumor biology in each patient, and develop treatments with improved therapeutic index in the era of precision medicine.

ANTIBODY DRUG CONJUGATE FOR HR+HER2- MBC

In Hae Park

Korea Univ. Guro Hospital, Department of Center for Breat Cancer, Korea

Antibody-drug conjugates (ADCs) are revolutionizing therapeutic approaches for patients with inoperable of metastatic breast cancer. While initially transforming the treatment landscape for HER2 positive breast cancer, they now offer novel prospects in triple negative breast cancer and HR+/HER2-/low breast cancer. In the context of HR+/HER2-/low metastatic breast cancer, patients encountering resistance to combined endocrine therapies with CDK4/6 inhibitors often face limited options beyond chemotherapy upon tumor progression or ineligibility for endocrine therapy. Given the ubiquitous expression of TROP-2 across breast cancer subtypes, the phase 3 TROPiCS-02 study was launched to evaluate the therapeutic efficacy of Sacituzumab govitecan in patients with metastatic HR+/HER2- disease. Similarly, Datopotamab deruxtecan, another TROP2-directed agent, demonstrated promising results for metastatic HR+/HER2- breast cancer in the TROPION-Breast01 trial. Additionally, the DESTINY-Breast02 trial showed encouraging outcomes for HR+/HER2-low metastatic breast cancer using trastuzumab deruxtecan. ADCs are continuously broadening their applications, often in conjunction with immune checkpoint inhibitors or targeted therapies. Undoubtedly, HR+/HER2-/low metastatic breast cancer stands to gain significantly from ADCs, underscoring the necessity for further exploration of optimal treatment sequencing strategies.

NEED TO COMPLETE REMOVAL OF RESIDUAL MICROCALCIFICATIONS? - IN CASE HIGHLY SUGGESTIVE OF CLINICAL PCR IN MRI AND WITH RESIDUAL DIFFUSE MICROCALCIFICATION IN MAMMOGRAM

Tari King

Dana-Farber Brigham Cancer Center, Department of Surgery, U.S.A.

Neoadjuvant chemotherapy (NAC) increases rates of breast conservation (BCT) and decreases the need for axillary lymph node dissection (ALND) in select patients. In patients with hormone receptor negative and HER2 positive breast cancer, improvements in NAC regimens have resulted in increasing rates of pCR, increasing opportunities for BCT yet overall rates of BCT remain low . Barriers to breast conservation after NAC are likely multifactorial and include challenges with both imaging and pathologic evaluation of the extent of disease as well as provider and patient acceptance of this approach. The need for accurate imaging pre and post treatment is paramount in surgical planning. It is well-documented that MRI provides the best assessment of response to NAC, however the performance of MRI does vary by breast cancer subtype with the best correlation seen in hormone receptor negative disease. Malignancies that present with mammographic calcifications (MMG Ca++) also represent a challenge as there is little expectation that MMG Ca++ will "go away", even in the setting of a complete pathologic response (pCR). Therefore the recommendation to remove all original and remaining MMG Ca++ can be a barrier to BCT. The likelihood of having MMG Ca++ also varies by subtype and appears to be more common in HER2+ disease. Although in many cases residual Ca++ do not represent viable disease, in the absence of pathologic confirmation, surgical excision should remain the standard expectation.

INFLAMMATORY BREAST CANCER: ARE WE READY TO DE-ESCALATE LOCAL THERAPY?

Stephanie M. Wong

Jewish General Hospital Segal Cancer Centre, Department of Surgery, Canada

Inflammatory breast cancer (IBC) comprises 2-4% of all breast cancer diagnoses and is a rare, aggressive phenotype of breast cancer that is characterized by tumour emboli present within the dermal lymphatics. For decades, due to high rates of distant metastases and locoregional recurrence, the treatment of IBC has centred on tri-modality therapy with neoadjuvant chemotherapy, modified radical mastectomy (MRM), and post-mastectomy radiation therapy. However, with improvements in pathologic complete response rates to neoadjuvant chemotherapy in IBC, there has been growing interest in de-escalating local therapy with the use of breast conserving surgery or skin-sparing mastectomy rather than MRM, and immediate versus delayed reconstruction following mastectomy. An effort to minimize the morbidity of axillary surgery has also led to several series evaluating the feasibility of sentinel lymph node biopsy over axillary lymph node dissection in clinically node-negative IBC. The current session will review the recent literature on surgical controversies in IBC and evaluate ongoing clinical trials that aim to improve outomes for women with non-metastatic IBC.

YOUNG AGE BREAST CANCER WITH CT1-3NX, LOW GRADE, ER+ TUMOR - UPFRONT SURGERY OR NEOADJUVANT CHEMOTHERAPY?

Hideko Yamauchi

Univ. of Hawai'i Cancer Center, Department of Breast Surgical Oncology, U.S.A.

Young patients diagnosed with early-stage, low-grade, estrogen receptor-positive breast cancer face unique challenges that require a nuanced treatment strategy. These challenges include a typically more aggressive tumor biology and the imperative to balance effective treatment with fertility preservation and long-term quality of life considerations.

This session will review the evolving paradigm that favors neoadjuvant chemotherapy (NAC) over traditional upfront surgery. By offering systemic therapy prior to surgery, NAC aims not only to reduce tumor size to allow for breast-conserving surgery, but also to evaluate tumor response, potentially informing subsequent treatment pathways. In addition, NAC provides the opportunity for sentinel lymph node biopsy after therapy, potentially reducing axillary morbidity even in cases with initial nodal involvement.

Emphasis is placed on the integral role of a multidisciplinary team in the development of a comprehensive treatment plan. This approach utilizes the expertise of surgical and medical oncologists, radiologists, plastic surgeons, genetic counselors, and fertility specialists. Within this framework, we will explore how NAC provides patients with the critical time to consider surgical decisions, genetic testing, and reconstructive options, while also addressing the psychosocial factors and patient preferences that are paramount to the decision-making process.

The goal of this presentation is to provide an insightful synthesis of the existing evidence and the active debates surrounding the most effective treatment strategies. In doing so, we aim to equip attending physicians with the knowledge to enhance personalized care for young patients with low-grade, ER+ breast cancer.

TUMOR AGNOSTIC TRIALS ACROSS SUBTYPES IN METASTATIC BREAST CANCER

Giuseppe Curigliano

European Institute of Oncology and Univ. of Milano, Department of Medical Oncology, Italy

Metastatic breast cancer presents a complex landscape of molecular subtypes, challenging traditional treatment paradigms. Tumor agnostic trials, a hallmark of precision medicine, offer a promising avenue for personalized therapy. This abstract explores the evolving role of tumor agnostic trials in metastatic breast cancer, transcending subtype boundaries to target common genomic alterations. By leveraging biomarker-driven approaches, these trials aim to identify effective treatments irrespective of traditional classification. Key challenges and opportunities in implementing tumor agnostic trials in metastatic breast cancer are discussed, highlighting the potential to revolutionize therapeutic strategies and improve patient outcomes in this heterogeneous disease setting.

BEYOND THE GUIDELINES: CLINICAL INVESTIGATOR PERSPECTIVES ON THE MANAGEMENT OF HER2-LOW BREAST CANCER

Janice Tsang

The Univ. of Hong Kong, Department of Medical Oncology, Hong Kong

With the continuous advancement of breast cancer care and translational research, from the era of personalized medicine to precision medicine, since the identification of the HER2 as the driver mutation breast cancer, the human epidermal growth factor receptor-2 (HER2) gene amplification and subsequent HER2 protein expression has been found in approximately 15-20% invasive breast cancer patients, and this is associated with faster tempo of disease with more aggressive progression and poorer prognosis.

Over the years, HER2 remains a well-recognized prognostic indicator as well as robust therapeutic target, predicting the significant clinical benefit from anti-HER2 therapy for all HER2 positive diseased breast cancer patients. For the past decades, HER2 positive disease is defined as either HER2 immunohistochemical (IHC) staining of 3+ or 2+ with presence of fluorescence in situ hybridization (FISH) positive, and the classification of HER2 positive and HER2 negative disease has been relatively binary. Yet, the recent definition of the apparently new entity of "HER2-low" breast cancer reveals the large proportion of breast cancers which show a low to moderate expression of the HER2 protein by IHC (IHC 1+ or 2+ and FISH negative), but without HER2 gene amplification, has led to increasing attention and interests in potential benefit from anti-HER2 therapy especially with its representation of at least 40-60% of all breast cancer patients, as well as the added value of antibody drug conjugates (ADCs) such as deruxtecan as demonstrated by the positive result of the DESTINY-Breast04 study and beyond.

While we have moved from a single common homogenous disease to a population of rare heterogeneous diseases for breast cancer, from clinical subtypes to intrinsic subtypes, we have now identified the newly explored HER2-low disease. There are indeed challenges and opportunities even for better management for this expanding population of breast cancer: on one hand, there are similar clinicopathological features with HER2-zero rather than HER2 positive disease, there are differential biological features such as some have higher stromal tumour infiltrating lymphocytes (sTILs) associated to more favourable survival with the exploration of increasing the sTILs and activation of the tumour immune microenvironment with novel agents such as the ADCs and immunotherapy as potential future direction, warrant further study in clinical translational research, and facilitating our better understanding of this group of breast cancer patients through unlock the mystery of the biology.

IDENTIFYING BIOLOGICAL ENTITY THAT IS SENSITIVE TO IMMUNE CHECKPOINT INHIBITORS

Hee Kyung Ahn

Gachon Univ. Gil Medical Center, Korea

TREATMENT APPROACH IN SMALL HER2+ OR TNBC: UPFRONT SURGERY VS NEOADJUVANT CHEMOTHERAPY?

Marios Konstantinos Tasoulis

The Royal Marsden NHS Foundation Trust, Department of Surgery, United Kingdom

Neoadjuvant systemic therapy was traditionally used for locally advanced breast cancer. However, advances in our understanding of tumour biology, have led to increasing use of neoadjuvant systemic therapy even in earlier stage disease. This is mainly guided by cancer subtype and especially for HER2 positive and triple negative disease, neoadjuvant systemic therapy is considered standard of care.

However, in the modern era of individualized, multidisciplinary care, there is increasing focus on the optimal management of "small", triple negative or HER2 positive cancers. The debate of whether to manage these cancers with upfront surgery or neoadjuvant chemotherapy is particularly relevant as with the advent of screening programs, breast cancers are diagnosed at an earlier stage.

Both approaches may be associated with several potential benefits. Neoadjuvant chemotherapy may allow access to additional systemic therapy options and may also help us tailor adjuvant treatments with documented benefit in oncological outcomes. Neoadjuvant systemic therapy may also allow de-escalation of surgery in the breast and the axilla which can lead to reduced morbidity. On the other hand, upfront surgery may facilitate tailoring of adjuvant systemic therapy potentially allowing de-escalation of treatment with less or even no cytotoxic therapies, leading to reduced side effects, physical and financial toxicity.

It is therefore important to review the existing literature to help us guide the management of "small" triple negative and HER2 positive breast cancers based on the best available evidence in an effort to optimize oncological outcomes while minimizing the effects of the treatments. To this direction, more research is warranted to advance our understanding of the disease processes and the response to treatment, to allow a patient-centered individualized approach.

SMALL LUMINAL A BREAST CANCER IN POSTMENOPAUSAL WOMEN: SLNB OMISSION VS RT OMISSION?

Tadahiko Shien

Okayama Univ. Hospital, Department of Breast and Endocrine Surgery, Japan

In the treatment of breast cancer, strategies of escalation, in which treatment is added to patients with a worse prognosis, and de-escalation, in which treatment is omitted from patients with a better prognosis, are being promoted. In perioperative treatment, de-escalation of surgery is being considered. De-escalation is particularly desirable for axillary surgery because of its potential to cause post-operative lymphoedema. In the past, axillary lymph node dissection by sentinel lymph node biopsy was omitted, and even in cases where metastases were detected in sentinel nodes, axillary dissection was omitted on the assumption that radiotherapy was performed. The omission of SLNB has been studied in recent years, and the results have been reported. SLNB is performed in patients with cN0; its primary purpose is nodal staging. For the cN0 patients, it is only a confirmatory test and can be omitted. In contrast, if sentinel lymph node metastases are positive, radiotherapy is mandatory instead of omitting axillary dissection. In the ACOSOG Z0011 and SENOMAC trials, 27% and 35% of patients in the axillary dissection arm had non-sentinel lymph node metastases, respectively. The non-inferior prognostic value of axillary lymph node dissection in patients with positive sentinel nodes in these trials suggests that radiation and systemic treatment can minimize the residual prognostic impact of these metastases.

Against this background, SLNB is necessary in cases of pN1 in order to omit axillary dissection and instead use radiotherapy. However, this information may not be necessary in Bp cases where post-operative radiotherapy is planned from the outset.

The SOUND study reported that SLNB can be omitted in patients with cT1 who were accurately judged to be negative for axillary lymph node metastases using preoperative US. The NAUTILUS study and other studies are underway to determine whether SLNB can be omitted in a wider range of eligible cases.

In contrast, postoperative radiation is a treatment to prevent locoregional recurrence.

It is more valuable in high-risk cases. Conversely, it is expected to be omitted in low-risk cases, and several clinical trials have been conducted. In particular, it has been reported that Breast XRT can be safely omitted in elderly patients. According to tumor biology, Breast XRT does not have a significant prognostic effect in ER-positive breast cancer with a low risk of recurrence (Luminal A) or in patients with low RS as a result of Oncotype DX. The IDEA trial reported the possibility of omitting Breast XRT in patients under 60 years of age by combining these factors, which will be proven in the DeBRa trial. On the other hand, The NSABP B-51 trial also reported that Regional Nodal Irradiation could be omitted in cN1 patients with pN0 after preoperative chemotherapy and surgery.

Further categories in which radiation can be omitted will likely continue to be reported in the future.

SLNB and radiation therapy are not opposites, as they have very different objectives. Therefore, they cannot be weighed against each other. However, clinical trials are now showing that there are subjects for whom each can be omitted. By combining these data, it should be possible to identify subjects for whom both can be omitted.

SMALL LUMINAL A BREAST CANCER IN POSTMENOPAUSAL WOMEN: TAILORED APPROACH OF RADIOTHERAPY

Bum-Sup Jang

Seoul National Univ. Hospital, Department of Radiation Oncology, Korea

Accelerated Partial Breast Irradiation (APBI) and Ultrahypofractionation (UFH) are increasingly recognized as viable alternatives to Whole Breast Irradiation (WBI) for the treatment of small luminal A breast cancer in postmenopausal women. These innovative approaches offer a personalized, less invasive treatment option, focusing on the efficacy and quality of life for patients. The presentation explores the transition from traditional RT methods to APBI and UFH, emphasizing the significance of tailored treatment plans that take into account individual patient factors such as tumor characteristics and genomic profiles. It also highlights the evolution of RT guidelines and reviews clinical evidence from major trials like NASBP-B39/RTOG 0413, RAPID, IMPORT LOW, and GEC-ESTRO, which support the comparable oncologic outcomes of APBI to WBI, with the added benefits of reduced toxicity and shorter treatment durations. Furthermore, the adoption of UFH, as evidenced by the FAST-Forward trial, provides an effective, time-efficient treatment alternative with favorable oncological outcomes and a positive toxicity profile. In this session, the economic and practical advantages of these methods will be discussed, aligning with the trends toward more personalized and minimally invasive approaches in the care of small luminal-type breast cancer, thereby enhancing patient well-being and healthcare efficiency.

ADDRESSING SEXUAL HEALTH DISTURBANCE DURING ENDOCRINE THERAPY: UNIQUE CHALLENGES AMONG VARIOUS AGE GROUPS

Tara Sanft

Yale School of Medicine, Department of Medical Oncology, U.S.A.

Treatment of breast cancer for the highest risk premenopausal women involves inducing menopause with ovarian function suppression and aromatase inhibitor therapy. This throws younger women into experiencing side effects that had previously been more common in the older age groups of cancer survivors. These side effects are challenging because they impact every domain of sexual health and they impact adherence to cancer treatment. The four domains of sexual health include low desire, vulvovaginal symptoms, negative body image, and sexual partner relations. This session will review the importance of inquiring about sexual side effects, the accepted interventions for each of the four domains and algorithms to help with decision making.

CURRENT THERAPEUTIC OPTIONS FOR FERTILITY PRESERVATION: CHALLENGES AHEAD

Matteo Lambertini

Univ. of Genova - IRCCS Policlinico San Martino Hospital, Department of Medical Oncology, Italy

Anticancer treatments have significantly contributed to increase cure rates of patients with breast cancer but at the cost of medium- to long-term side effects. Among young women, the possible risk of gonadotoxicity and compromised fertility with the use of anticancer therapies represents a major source of distress. Therefore, oncofertility is a crucial issue for young patients. According to current guidelines, every young woman with newly diagnosed breast cancer should receive a proper oncofertility counselling before starting any systemic anticancer treatment in order to increase her chances of future pregnancies and/or decreasing her risk of developing treatment-induced premature ovarian insufficiency. During this counseling, the risk of gonadotoxicity with the proposed treatment should be discussed together with available option for preserving fertility and/or ovarian function. How to counsel patients who are candidates to receive new targeted therapies (including immunotherapy) represents one of the major challenges to overcome in the coming years.

The presentation will be focused on the current evidence and existing unmet needs in the field of oncofertiliy for young women with breast cancer.

LEVERAGING BONE HEALTH ISSUE IN WOMEN RECEIVING ENDOCRINE THERAPY: PRACTICAL APPLICATIONS AND FUTURE PERSPECTIVES

So-Youn Jung

National Cancer Center, Department of Surgery, Korea

Adjuvant endocrine therapy has been shown to be highly beneficial for both overall and disease-free survival in estrogen-receptor-positive cancer. Estradiol is key in regulating bone health. Bone loss rates increases with age, and estrogen deficiency is the main cause leading to decreased bone mineral density (BMD) and an increased risk of fractures.

In premenopausal women, each available adjuvant endocrine treatment option (tamoxifen vs tamoxifen + OFS vs AI + OFS) increases bone loss. While AI plus OFS results in the greatest decline in bone health, tamoxifen before menopause is associated with a decrease in BMD. The effect of these therapies continues even after treatment discontinuation, leading to an increased proportion of patients with osteopenia and osteoporosis. In postmenopausal women, AIs are associated with greater bone turnover, bone loss, and fracture risk compared with tamoxifen.

Optimal management of bone health in women with endocrine therapy includes a proper assessment the patient's BMD with a dual x-ray absorptiometry scan at baseline and during treatment.

Improving bone health, a calcium-enriched diet, moderate resistance, weight-bearing exercise, and vitamin D uptake could be recommended in women receiving endocrine therapy. Bone-targeted agents (BTAs), such as bisphosphonates and denosumab, have been widely tested and applied to prevent bone loss in clinical practice. These agents inhibit bone resorption through a different mechanism of action.

In breast cancer patients receiving endocrine therapy, proper assessment and management of bone health is a critical component of survivorship care. Both prevention of treatment-induced bone loss and reduction in the risk of recurrence should be considered when counseling patients.

BREAST CONSERVING SURGERY IN BREAST CANCER WITH BRCA1/2 MUTATION CARRIERS

Tristen Park

Yale School of Medicine, Department of Surgery, U.S.A.

Breast conservation therapy (BCT) for early breast cancer has been well established to be equivalent to mastectomy in randomized controlled trials. In contrast, breast conservation for BRCA1/2 gene mutation carriers is still an area of controversy and an area of ongoing investigation. Women carrying a germline variant in BRCA1/2 genes not only have a high risk of breast cancer but are also at increased risk of developing a second primary breast cancer, particularly in the contralateral breast. This has led to a trend of patient undergoing bilateral mastectomies in the setting of a gene mutation with an invasive breast cancer diagnosis. This talk will review the literature to date regarding ipsilateral recurrence free and overall survival in patient who underwent mastectomy vs BCT in the affected breast. We will also touch upon ramifications for contralateral breast cancer occurrence and shared decision making.

IS ALL UNILATERAL BREAST CANCER WITH BRCA1/2 MUTATION CARRIERS RECOMMENDED CONTRALATERAL RISK REDUCING MASTECTOMY?

Isabel T. Rubio

Clinica Universidad de Navarra, Department of Breast Surgical Oncology, Spain

It is well known that the risk of developing a new invasive breast cancer on the contralateral side is substantially increased among BRCA mutation carriers with a prior diagnosis of breast cancer. The cumulative risk of contralateral breast cancer (CBC) is relatively low (around 0.4% per year) among patients with unilateral breast cancer without known germline mutations. In contrast, the cumulative, 10-year risk of CBC is approximately 30% among patients with unilateral breast cancer and a BRCA1 or BRCA2 pathogenic variants (PVs). There are > 2-fold increased risk of CBC and 15-year cumulative incidence of approximately 30% for BRCA1 PV and 25% for BRCA2 PV after an initial breast cancer diagnosis.

When considering CPM in those breast cancer patients carrying a BRCA PV several factors need to be taken into account. Menopausal status at diagnosis influences the risk of CPM. Premenopausal BRCA PV carriers are at a higher risk of CBC compared with postmenopausal carriers, whereas the CBC risk in PV carriers among women over age 65 years appears to be similar to noncarriers.

Regarding estrogen receptor status of the primary tumor, BRCA1 and BRCA2 PV carriers with both ER-positive and ER-negative breast cancer had a significantly increased risk of CBC. Different to those estrogen receptor negative breast cancer patients with PALB2 PV where there is a signifcantly increased risk of CBC, with a 10-year, cumulative incidence similar to that of BRCA1 PV carriers.

The question whether CPM impacts on survival is controversial. Survival for most women with invasive breast cancer is driven by the metastatic risk of the primary tumor. In patients with breast cancer and BRCA PVs, there is not enough evidence on the overall survival advantage resulting from CPM, maybe, because in many cases, contralateral breast cancers are detected early and then likely curable.

Other studies have shown a borderline/clear survival benefit for TNBC patients with PVs undergoing CPM. Even though, it is unlikely that CPM itself improves survival although the majority of studies may not have enough longer follow up to detect a significant survival advantage.

Whether all patients with unilateral breast cancer with BRCA1/2 mutation carriers need a CPM need to be individualized on the basis of estimation of the CBC risk and considering several factors such as age at diagnosis, menopausal status, ER status of the initial breast cancer, systemic treatments and patient preference.

RISK REDUCING MASTECTOMY BEYOND BRCA1/2 MUTATION CARRIERS

Sung-Won Kim

Daerim St. Mary's Hospital, Department of Surgery, Korea

Breast cancer (BC) is the most common cancer among women and continues to be the leading cause of cancer-related deaths globally. Genetic predisposition is one of the major risk factors in BC, accounting for 5%10% of all BCs. Of these, 20%40% of inherited BCs can be attributed to deleterious germline variants in the BC susceptibility genes BRCA1 and BRCA2.

Women who have BRCA germline variants are at an increased risk of developing breast and ovarian cancers. The lifetime cumulative risks of breast and ovary cancer for individuals with pathogenic/likely pathogenic (P/LP) BRCA1/2 variants are known to be approximately 69%-72% and 17%-44%, respectively. Given the elevated lifetime risk, many female BRCA1/2 and other germline pathogenic variant carriers may consider risk-reducing mastectomy (RRM) in order to prevent the development of BC. For P/LP BRCA variant carriers, clinical evidence supporting RRM and risk-reducing salpingo-oophorectomy (RRSO) has been well-documented. Although several analyses of BC risk after bilateral and contralateral prophylactic mastectomy have been reported a reduction of 90% or more with BC, it is not known to provide an overall survival benefit.

As genome-wide genetic testing, based on next-generation sequencing, has increased in clinical settings in recent decades, the proportion of non-BRCA BC susceptibility genes has also risen. Major clinical guidelines describe BC susceptibility genes, including TP53, PTEN, PALB2, CDH1, STK11, CHEK2, ATM, BARD1, RAD51C, RAD51D, and others, in addition to BRCA1/2. Among non-BRCA genes, TP53, PTEN, PALB2, CDH1, and STK11 are considered high- or moderate-penetrance genes, carrying a lifetime cumulative BC risk of approximately 30%-60% or higher. In particular, the cancer risk was highest after the age 20 for female P/LP TP53 variant carriers, mainly attributed to BC. The cumulative cancer incidence related to Li-Fraumeni syndrome reached nearly 100% by age 70 years for both sexes. Therefore, major clinical guidelines recommend RRM to minimize exposure to therapeutic radiation for P/LP TP53 variant carriers.

For BC risk reduction, primary goals are prevention and early detection of cancer development. To this end, four strategies have been implemented: healthy life style, surveillance, chemoprevention, and risk-reducing surgery (RRS). However, clinical data on the risk of BC, including contralateral BC, and related cancers for non-BRCA genes are insufficient and limited. Therefore, considering RRM for P/LP non-BRCA variant carriers requires personalized risk assessment and should not rely solely on genetic variants. Other competing risks are type of pathogenic variants of in cancer predisposition genes, strong family history of breast and other cancer, prior chest irradiation, patient's age, mammographic density, chemoprevention therapy, or RRSO. To prioritize and improve risk stratification among P/LP non-BRCA carriers, it is considered to implement risk-assessment tools that integrate family history, genetic and genomic information, as well as treatment and prognosis of the initial BC. However, several tools have limited clinical value due to only moderate discrimination or the potential

biased results. After evaluating personalized risk, carriers of P/LP variants in non-BRCA genes who choose not to undergo RRM may require alternative tailored surveillance strategies.

Recently, ASCO-SSO provides clinical practice guidelines to broaden the criteria for germline testing in patients with BC. This expansion aims to identify an additional 30% of carriers of P/LP variants in nine BC predisposition genes (ATM, BRCA1, BRCA2, CDH1, CHEK2, NF1, PALB2, PTEN, and TP53) who previously did not meet the NCCN testing criteria based on family history. As the criteria of genetic testing expand, more individuals may become eligible for RRM, which has the potential to lower the risk of BC.

Options for risk reduction should be discussed in a shared decision-making environment. The decision to undergo RRM is intensely personal and influenced by factors such as perceived BC risk, anxiety about screening and diagnostic procedures, and anticipated outcomes like physical, emotional, cosmetic, and financial aspects. Comprehensive counseling should include discussion of extent of cancer risk reduction, risks associated with surgeries, breast reconstruction, and management of menopausal symptoms in aspects of multidisciplinary consultations. Addressing the psychosocial and quality-of-life aspects is also important when considering these RRS procedures.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

Education Session

"Go Beyond Cure of Breast Cancer"

SYNERGY FROM SURGICAL VIEWPOINT: A HOLISTIC IMAGING INTERPRETATION WITH INTRAOPERATIVE EXPERIENCE

Joon Jeong

Gangnam Severance Hospital, Department of Surgery, Korea

During the process of determining the surgical approach for breast cancer, surgeons rely on radiologic studies to discern between total mastectomy and breast-conserving surgery. Recently, with the increasing proportion of nipple-sparing mastectomy technique that preserve the nipple-areolar complex (NAC) and skin in total mastectomy, the importance of accurately assessing tumor involvement of the NAC or skin through radiologic studies have been further emphasized in the clinical field. Typically, surgeons utilize breast magnetic resonance imaging (MRI) to ascertain the precise tumor extent. However, when non-mass enhancement (NME) accompanies the tumor on breast MRI, delineating the tumor's extent becomes notably challenging. NME, defined as areas of abnormal enhancement without space occupation effect, blurs the distinction between benign and malignant findings. Consequently, many surgeons have traditionally performed surgery to remove all NME. Nevertheless, there's been a lack of investigation into the correlation between the pathologic tumor extent and NME detected on breast MRI.

We undertook a prospective study to explore the correlation between NME extension to the subareolar region on breast MRI and pathologic nipple involvement. When examining nipple involvement in the surgical specimens of patients who underwent breast surgery including nipple resection, those with confirmed nipple extension in the surgical specimen were found to have accompanying nipple extension of NME on MRI. Conversely, in patients where nipple extension of NME was not present on MRI, pathologic nipple involvement was rare. Following this study, we conducted a retrospective analysis to investigate whether the sacrifice of the nipple is inevitable even in cases where the nipple extension of NME observed on preoperative MRI resolves after neoadjuvant chemotherapy. Our finding revealed that among patients with nipple extension of NME on initial MRI, but whose nipple extension of NME disappeared after neoadjuvant chemotherapy, cases of pathologic nipple involvement were rare. In this presentation, we intend to present the results of our previous studies and elucidate the significance of accurate imaging studies in guiding surgeon's decision-making.

SYNERGY FROM ONCOLOGICAL VIEWPOINT: EXPLORING CURRENT TRENDS AND PRINCIPLES OF CHEMOTHERAPY

Jae-Joon Kim

Pusan National Univ. Yangsan Hospital, Department of Medical Oncology, Korea

Breast cancer remains a significant challenge in the field of radiology, demanding nuanced approaches to diagnosis, staging, and treatment assessment. Neoadjuvant chemotherapy has emerged as a pivotal component in the multimodal management of breast cancer, presenting unique opportunities and challenges for radiologists. This lecture aims to provide a comprehensive overview of neoadjuvant chemotherapy in breast cancer, focusing on its radiological implications, imaging modalities, and clinical significance.

Neoadjuvant chemotherapy in breast cancer treatment has expanded significantly, driven by its potential to downstage tumors, improve surgical outcomes, and tailor subsequent therapies based on treatment response. Radiologists play a crucial role in the evaluation of treatment response through various imaging modalities, including mammography, ultrasound, and magnetic resonance imaging.

Recently, the effectiveness of neoadjuvant chemotherapy in breast cancer has been improved through various drugs. In patients with HER2-positive breast cancer, HER2-targeted therapies, such as trastuzumab and pertuzumab, has significantly improved outcomes, underscoring the importance of tailored treatment approaches. Several studies, including the NOAH trial and TRYPHENA trial, have demonstrated the effectiveness of HER2-targeted therapy in patients with HER2-positive breast cancer. In patients with triple-negative breast cancer, the KEYNOTE-522 study showed that neoadjuvant chemotherapy combined with pembrolizumab improved clinical outcomes.

Despite its numerous advantages, neoadjuvant chemotherapy poses several challenges, including the risk of disease progression during treatment, development of drug resistance, and adverse effects associated with chemotherapy agents. Strategies to mitigate these challenges, such as optimal patient selection, multidisciplinary collaboration, and close monitoring of treatment response would be important.

In conclusion, neoadjuvant chemotherapy represents a cornerstone in the management of breast cancer. By understanding the radiological implications, imaging modalities, and clinical significance of neoadjuvant chemotherapy, radiologists can enhance their role in the multidisciplinary management of breast cancer and improve patient outcomes.

CONTEMPORARY IMAGING INSIGHTS AND INTERPRETATION CONSIDERATIONS FOR PATIENTS UNDERGOING NEOADJUVANT SYSTEMIC THERAPY

Kazunori Kubota

Dokkyo Medical Univ. Saitama Medical Center, Department of Radiology, Japan

Neoadjuvant Systemic Therapy (NST), also known as Preoperative Systemic Therapy (PST), is a cornerstone in the management of breast cancer. This approach, not confined to being merely adjuvant, plays a pivotal role in treatment strategies by potentially reducing the need for extensive surgery through tumor shrinkage. Moreover, NST facilitates the evaluation of the tumor's response to the treatment, which is crucial for predicting the patient's prognosis. The diagnostic imaging of NST before, during, and after treatment holds significant importance in tailoring patient-specific treatment plans and determining the surgical approach.

Prior to the commencement of NST, a baseline study is imperative for establishing the extent of the disease. Recent guidelines from the National Comprehensive Cancer Network (NCCN) recommend considering systemic evaluation through chest and abdominal CT scans or FDG-PET/CT to gauge the disease spread accurately.

During NST, monitoring the tumor's response to therapy is critical. Early detection of disease progression is essential for possibly altering the treatment approach, often leaning towards surgical intervention. While MRI offers an objective measure of response, ultrasound (US) allows for simpler and more accessible observations. Although early predictions of treatment response via PET/CT or MRI are reported, their accuracy and ease of interpretation at this stage remain a challenge.

The preoperative diagnostic imaging following NST is vital in deciding the extent of surgery required. A systematic review of the Japanese Breast Cancer Guidelines revealed that the sensitivity and specificity for predicting pathological complete response (pCR) with MRI post-NST range between 45%-98% and 23%-100%, respectively. The diagnostic performance varies by cancer subtype, with higher sensitivity reported for HER2-positive and triple-negative breast cancer (TNBC) subtypes, which are more prone to achieving pCR. This variation underscores the importance of evaluating MRI findings in the context of cancer subtypes. Luminal types, for instance, may not be as visibly distinguishable even when present, whereas TNBC and HER2-positive cancers often exhibit a pCR upon disappearance on imaging.

This presetation aims to underscore the crucial role of diagnostic imaging in the NST framework for breast cancer treatment. By highlighting the need for baseline assessment, ongoing monitoring during therapy, and preoperative evaluation, it emphasizes the dynamic nature of treatment planning and the necessity for tailored surgical interventions based on individual tumor responses and subtypes. Further research and development in imaging techniques and their interpretation could enhance the precision and effectiveness of breast cancer treatment strategies, ultimately improving patient outcomes.

LIQUID BIOPSIES GUIDED TREATMENT IN ER+HER2- BREAST CANCER

Jisun Kim

ASAN Medical Center, Department of Surgery, Korea

Liquid biopsy enables to dissect heterogeneity of tumors which can profoundly affect response to specific therapy. Most metastatic breast cancer patients have undergone several lines of treatment, and under those selective pressure, metastatic tumors tend to acquire mutations leading to acquisition of new subclones. While one-time tissue analyses may not sufficiently display the dynamics of the subclones, noninvasive liquid biopsy enables tracking and monitoring the process of clonal evolution while treatment from real time analyses. This talk will mainly focus on circulating tumor DNA analyses, it's updated results on how ctDNA may be offered in real-clinical practice especially for HRpos HER2neg BC patients.

CtDNA may support in guiding selecting drug for treatment and monitoring it's response. PI3K inhibitor has been shown to be effective in PIK3CA mutated tumors. Tumors with PIK3CA mutation found in either tumor and/or plasma are candidates for PI3K inhibitor (eg. Alpelisib) by applying PCR based method- or sequencing. PCR based method analyzes specific 10-20 known hotspot mutations and sequencing method analyzes the whole exonic region of the gene. Currently, PCR based method has been approved for both using both tumor and plasma, while sequencing method is limited to tumor tissue. Elimination of PIK3CA mutation in plasma DNA shortly after treatment is suggested to be prognostic and predictive of treatment response. ESR1 mutation is a known cause of endocrine resistance and arise during long term estrogen deprivation especially after aromatase inhibitor treatment while not found in most primary tumors (< 2-3%). Recent phase lll trial analyzed the oral SERD in metastatic HR positive HER2 negative patients with previous 1-2 lines of endocrine therapy. Progression free survival was prolonged for overall population and patients with ESR1 mutations (47.8% of overall population) displayed most benefit and lead to update in 2023 guideline for using Elacestant for ESR1 mutated breast cancer patients. ESR1 mutation was analyzed in plasma DNA by using Guardant360 CDx. Another recent phase lll trial randomizing patients to switch to fulvestrant + CDK4/6i from aromatase inhibitor + CDK4/6i at time of plasma ESR1 mutation positive or stay on AI + CDK4/6i, reported longer progression survival for early switch to fulvestrant. As most primary tumors do not exhibit ESR1 mutation, ctDNA is the preferred method for detecting ESR1 mutation. AKT inhibitor (eg.Capivasertib) has recently been approved for patients with PI3K/AKT/PTEN pathway alteration including PTEN loss, AKT activating mutation and the renown PI3KCA mutations. These multiple mutations can be detected by using high-depth NGS panel that are effective for detecting copy number alterations.

For early HRpos HER2neg breast cancer patients, liquid biopsy offers prognostication and detection of recurrence. It is known, in various solid tumors, that MRD, minimal residual disease after standard therapy reflects worse prognosis. Also, data suggest that ctDNA positivity antedates clinical relapse with spectrum of lead-time depending on BC subtypes. Several RCTs are ongoing on rather early intervention (eg. adding

CDK4/6inhibitor) according to ctDNA positivity during surveillance will lead to better outcomes. A retrospective analyses have shown benefit of extended endocrine therapy for ctDNA positive BC patients after completing 5yr endocrine therapy.

Circulating tumor DNA indeed is an exciting area for research, and has great potential in bringing benefit for BC patients in various areas. Growing number of extensive studies are under way to support evidences.

While liquid biopsy technology holds promise for both advanced and early breast cancers for its ability to potentially identify patients and guide decisions, it is crucial to select appropriate method for each clinical setting and purposes. With limited number of studies investigating the relevant correlation/comparison between each methods and pipelines, clinicians should bear in mind to deeply understand each methodology selected for each clinical trials before bringing them into real patients.

MULTIGENE ASSAYS BASED DECISION FOR EXTENDED ENDOCRINE THERAPY

Masakazu Toi

Tokyo Metropolitan Cancer and Infectious Disease Center Komagome Hospital, Department of Surgery, Japan

The molecular hallmarks and molecular dynamics of late recurrence in estrogen receptor (ER)-positive and HER2-negative early breast cancer are gradually becoming more apparent. Detailed analyses are currently being conducted from the perspectives of tumour genomic abnormalities, immune responses, and stromal reactions. Additionally, an analysis of the predictive performance of some genomic assays for late recurrence and its relationship to the benefits of long-term extended endocrine therapy has been reported. It is a big decision for patients to receive extended long-term endocrine treatment because ten years of endocrine therapy brings various toxicities. It is well known that the anatomical stage, consisting of tumour size and nodal status, can predict long-term prognosis for up to 20 or 25 years. Combining genomic biomarkers with these conventional variables is a topic of discussion in current clinical practice.

BIOMARKERS FOR NEOADJUVANT ENDOCRINE THERAPY

Hyun Jo Youn

Jeonbuk National Univ. Hospital, Department of Surgery, Korea

Endocrine therapy (ET) is the standard of care for hormone receptor (HR)-positive early-stage breast cancer in the adjuvant setting. For patients with locally advanced HR-positive breast cancer, neoadjuvant endocrine therapy (NET) facilitates downstaging of the tumor and increased rates of breast conserving surgery. However, NET remains under-utilized, and there are very limited clinical guidelines governing which therapeutic agent to use, or the optimal duration of treatment. Also, as in the adjuvant setting, the response to neoadjuvant HT can vary across patient subgroups.

Since the 2000s, NET now plays a central role as a research tool for predictive endocrine sensitivity biomarkers and targeted therapies. The COVID-19 pandemic led to increases in NET use, exhibiting the safety and efficacy of this strategy for downstaging. A "window of opportunity" trials (WOTs) has raised significant interest in recent years as a means of assessing the patient's sensitivity to short-term NET, which provides important prognostic information, and helps in decision making regarding treatment options in a time-efficient and cost-efficient manner. The results from WOTs are still premature and require a further search for reliable biomarkers.

Estrogen receptor is the most intensively-studied and well-established biomarker for selection of ET. Currently, a number of other biomarkers including conventional immunohistochemical markers (Ki67, Preoperative endocrine prognostic index) and molecular markers such as genetic markers (ESR1, PIK3CA) and multigene assays (Oncotype DX, EndoPredict) have been investigated.

To realize the goal of personalized medicine, we are in urgent need to explore reliable biomarkers to accurately predict the clinical response and long-term outcomes associated with NET. Validation of these biomarkers as reliable surrogate endpoints can also lead to a revolution in the clinical trial designs, and potentially avoid the need for repeated tissue biopsies in the surveillance of disease response. Further validation and guidelines for biomarker use will be instrumental in helping standardize the use of NET.

TECHNOLOGY OF GENOMIC PROFILING IN BREAST CANCER: HOW TO INTERPRET GENOMIC TESTING

In Hye Song

ASAN Medical Center, Department of Pathology, Korea

The genome is the entire set of DNA instructions within a cell. The human genome comprises 3 billion nucleotide base pairs and 20,000~25,000 genes. Advances in molecular technology has led to the widespread adoption of next generation sequencing (NGS) in the field of diagnostic pathology. NGS allows for the comprehensive analysis of either the entire genome or a large number (> 100) of genes in a single experiment. In recent days, targeted NGS tests for solid cancers typically cover 300 to 500 genes, whereas classical Sanger sequencing can analyze only one exon in a single experiment.

The NGS workflow consists of the following steps: 1) nucleic acid extraction, 2) library preparation and target enrichment, 3) generation of sequence reads, 4) alignment of reads to the reference genome, 5) variant calling, 6) annotation of detected variants, and 7) clinical interpretation. These processes culminate in the production of NGS reports. The elements of NGS reports include patient information, experimental and analytical methods, detected genetic alterations, tiers for significance, and interpretative comments. Some panels also provide information on tumor mutational burden or loss of heterozygosity status. It is important for clinicians to understand these steps and reporting elements. Additionally, communication among clinicians, radiologists, pathologists, and bioinformaticians can be facilitated through molecular tumor boards, sometimes offering unexpected yet crucial insights.

This lecture aims to provide fundamental knowledge about cancer NGS, featuring the presentation of several intriguing breast cancer cases.

TUMOR VS CFDNA ANALYSIS IN BREAST CANCER

Pedram Razavi

Memorial Sloan Kettering Cancer Center, Department of Medical Oncology, U.S.A.

The landscape of actionable alterations has changed dramatically in the past five years, with more than two-thirds of metastatic ER+ breast cancers harboring at least one actionable alteration, leading to biomarker-driven therapeutics. Advances in sequencing technology have made it feasible to detect tumor-derived somatic alterations in the ctDNA of plasma samples on a large scale. The ability to detect and enumerate ctDNA offers a wide array of practical clinical applications, including tumor genomic profiling, monitoring disease burden and heterogeneity, discovering novel mechanisms of therapy resistance, and detecting minimal residual and micrometastatic disease. In this talk, I will review the utility of ctDNA in routine clinical practice and discuss the strengths and limitations of this approach compared to tumor tissue sequencing for the de novo detection of tumor-derived mutations, inference of tumor mutational burden, microsatellite instability and mutational signatures, and monitoring disease burden and response to therapy.

ACTIONABLE MUTATIONS IN BREAST CANCER: MOLECULAR INSIGHTS AND THERAPEUTIC APPROACHES

Min Hwan Kim

Yonsei Univ. College of Medicine, Department of Medical Oncology, Korea

The therapeutic targeting of oncogenic mutations commonly found in breast cancers, such as PIK3CA, ESR1, BRCA1/2, ERBB2, AKT, and PTEN, has been challenging for a long time. However, recent landmark studies established genotype-driven targeted therapy in advanced breast cancer patients no doubt. In this educational session lecture, we will review the current status of molecularly targeted therapies for actionable mutations in breast cancers and future perspectives in this fields.

1. Mutational landscape of breast cancers

The TCGA breast cancer paper published in 2012 demonstrated that breast cancer tumors have actionable driver mutations, and the mutation prevalence was different according to the breast cancer subtypes. Unfortunately, the proportion of druggable mutations was not high in breast cancer in general, in contrast to NSCLC or melanoma that has lots of mutations in tyrosine kinase. Therefore, more sophisticated and context-dependent analysis is neccessary for therapeutic targeting of breast cancers. The whole genome sequencing analysis of breast cancer tumors revealed unique characteristics of breast cancers, including APOBEC nucleotide substitution signatures, rearrangements, and HRD, that differentiates breast cancers from other tumors. Large-scale genomic analysis studies have reported that about ~60% of all breast cancer patients have OncoKB level < 3 actionable mutations.

2. PIK3CA mutation and other mutations in PI3K-AKT pathways

The most common oncogenic mutation in breast cancer tumors is PIK3CA activating mutation, which can be found in 30-40% of luminal breast cancer and in ~10% of other types. The landmark SOLAR-1 and Capitello-291 trial showed that Alpelisib and Capivasertib in combination with endocrine therapy significantly improves PFS in HR+HER2- breast cancer patients that harbor PIK3CA mutation and PIK3CA/AKT/PTEN pathway mutation, respectively. The more agents, including inavolisib and gedatolisib, are coming into this field. PIK3CA mutation test is now increasingly performed to direct therapy strategies in HR+HER2- breast cancer patients. Efforts for therapeutic targeting of PIK3CA mutations in HER2-positive or TNBC subtypes is also underway.

3. ESR1 mutation

ESR1 mutation is almost exclusively found in tumor tissues after endocrine therapy exposure. ESR1 mutations are commonly found in ligand binding domain (LBD) of ER-alpha protein that enables constitutively active ER signaling in the absence of estrogen. The ESR1 mutations can be interpreted in two ways: 1) resistance to estrogen deprivation agents (AI), and 2) Dependence on ER signaling that can be targeted by direct ER degraders (SERD). A series of oral SERD trials are now ongoing in various therapeutic context in HR+HER2-

breast cancers, and elacestrant is already now recommended as TOC in 2nd line treatment of ESR1-mutant advanced breast cancers. A set of trials are also now testing early detection of ESR1 mutation by serial ctDNA testing and therapeutic intervention by switching AI to SERDs.

4. BRCA1/2 and other HRR gene mutations

50% of TNBC patients are thought to have HRD and a significant number of HR+HER2 negative breast cancers also have HRD. PARP inhibitors showed clinically significant PFS improvement in OlympiaD and EMBRACA trial; however, the overall survival improvement was lacking. TBCRC048 trial showed that olaparib treatment is also effective in somatic BRCA1/2 mutations and PALB2 mutations, reinforcing that tumor tissue NGS test is therapeutically relevant.

5. ERBB2 mutation

The incidence of ERBB2 mutation is low (2~3%) compared to amplification, showing enrichment in ILC compared to IDC. Pan-HER2 inhibitors now showing activity against ERBB2 mutant breast cancers. Neratinib plus fulvestrant treatment is now recommended based on phase II MutHER study.

6. Gene fusions

Oncogenic gene rearrangement is rare in breast cancer patients, but can be important target for targeted therapy. Although NTRK fusions are rarely found in breast cancer overall, >90% of secretory breast cancer harbor this targetable fusion. NTRK inhibitors showed robust activity against NTRK fusions and now approved across tumor types. RET fusion is also rare oncogenic fusion and reported to be found in ~1% of breast cancer patients.

7. Oncogene amplification

Frequent gene amplifications are important hallmark of breast cancer; however, therapeutic targeting has been challenging beside ERBB2 (HER2). Common gene amplification includes ERBB2, FGFR1, MYC, CCND1, CCNE, and PIK3CA, and a recent paper indicated that they can be generated by mechanism so called "translocation-bridge amplification". Their clinical implications are now being studied.

8. Genetic alterations as biomarker

TP53 mutation is known as poor prognostic marker in luminal breast cancer. RB1 loss and BRCA1/2 mutations are associated with poor response to CDK4/6 inhibitors. Post-hoc analysis of DAISY trial reported that SLX4 mutation would cause resistance to T-DXd, and TACSTD2 (TROP2)/TOP1 mutation were also identified in sacituzumab govitecan resistant tumors.

RT OMISSION IN LOW-RISK ELDERLY PATIENTS

Timothy Whelan

McMaster Univ., Department of Radiation Oncology, Canada

Radiotherapy Omission in Low-Risk Patients with Breast Cancer

This presentation will review the original trials of omission of radiotherapy following breast conserving surgery in low-risk women based on clinicopathological factors alone (e.g. age, tumor size, grade). It will also report on recently published trials such as LUMINA and IDEA where molecular biomarkers (e.g. intrinsic subtype or Oncotype DX recurrence score) were combined with clinicopathological factors to identify low-risk patients treated with breast conserving surgery and endocrine therapy without radiotherapy. Finally, it will review new trials of omission of radiotherapy in HER2 positive disease or after the pathologic complete response following neoadjuvant chemotherapy.

RNI ISSUES IN YPN0

Jeanny Kwon

Chungnam National Univ. College of Medicine, Department of Radiation Oncology, Korea

The role of postoperative radiation therapy in breast cancer management is well established, primarily based on evidence from studies conducted in the primary surgery setting. However, with the increasing use of neoadjuvant chemotherapy (NAC) due to its benefits, the optimal radiation therapy strategies in this context remain less defined. Factors such as tumor subtype, nodal burden, and response to neoadjuvant therapy may play crucial roles in determining the optimal radiation approach. Among these factors, the response to neoadjuvant therapy is increasingly recognized as a significant predictor of oncologic outcomes. With advancements in chemotherapy leading to a gradual increase in pathologic complete response (pCR) rates, questions have arisen regarding whether RNI should be administered in cases where pCR is achieved in the axillary lymph nodes, or which subgroup may derive additional benefit from RNI. Landmark trials addressing these questions are currently underway, and in this session, we aim to review the existing evidence from studies conducted in the neoadjuvant chemotherapy setting to provide insights into this topic.

TUMOR BED BOOST - WHEN AND HOW

Isabelle Kindts

AZ Groeninge, Department of Radiation Oncology, Belgium

Breast-conserving therapy, involving breast-conserving surgery followed by whole-breast irradiation and optionally a boost to the tumour bed, is the preferred therapeutic option for women with primary non-metastasised breast cancer.

A boost to the tumour bed means that an extra dose of radiation is applied that covers the initial tumour site. The rationale for a boost of radiotherapy to the tumour bed is that (i) local recurrence occurs mostly at the site of the primary tumour because remaining microscopic tumour cells are most likely situated there; and (ii) radiation can eliminate these causative microscopic tumour cells. The boost continues to be used in women at high risk of local recurrence, but is less widely accepted for women at lower risk. Reasons for questioning the boost are twofold. Firstly, the boost brings higher treatment costs. Secondly, the potential adverse events are not negligible.

In this session, we firstly aim to discuss the indications for the boost to the tumour bed. Secondly, if the indication is set, we will discuss the modalities.

ANTIBODY DRUG CONJUGATES

Janice Tsang

The Univ. of Hong Kong, Department of Medical Oncology, Hong Kong

There has been dramatic improvement in the drug development for better efficacy for treatment of breast cancer. While traditional chemotherapeutic agents are limited with their relatively narrow therapeutic window with much toxicities, the advent of antibody drug conjugates (ADCs) has brought new hope to both oncologists and cancer patients, shedding new light on better treatment and clinical outcome for breast cancer patients.

ADCs are a group of drugs, composing of an antibody and a toxic payload covalently coupled by a chemical linker, and through recognizing and binding to receptors that are over-expressed on the cancer tissues, they deliver the payload directly to the cancer cells, thus minimizing potential harmful effects to the healthy non-cancer cells, limiting the toxicities exposure of the normal tissues and the patient. Actually, the concept of ADCs with chemical linkers could be dated back to the 1960s when scientists tried to test the ADCs concept in animal models with the first clinical trials based on mouse antibodies began in the 1980s. Yet the development of ADCs has been complex, especially that for an effective ADC is extra demanding, with each individual component of any ADC being optimized, be it the target, the antibody, the linker, the conjugation chemistry as well as the cytotoxic payload. As at today, there are about 12 FDA-approved ADCs covering at least 16 indications including various clinical subtypes of breast cancer, including the clinical application of trastuzumab emtansine (TDM-1), deruxtecan (TdxD) in HER2 positive advanced breast cancer, the added value of TdxD on HER2-low advanced breast cancer, sacitizumab govitecan in metastatic triple negative and hormone positive HER2 negative breast cancer etc.

Due to their relative complex biology and development, ADCs are associated with relevant toxicities which are characteristic of each specific compound and these include haematological toxicities, elevated transaminases, gastrointestinal upset, pneumonitis and some other rarer toxicities which the treatment physicians need to be mindful with better patient and carer education at the time of commencement of the treatment. Thus, management of the toxicities of these novel agents need to be part of the important focus of clinical practice, and better patient education and empowerment needs to be reinforced as we anticipate the further emerging list of ADCs will further substantially change the treatment landscape of breast cancer in the days to come.

TARGETED THERAPEUTICS IN HORMONE POSITIVE BREAST CANCERS

Yoon-Sim Yap

National Cancer Centre Singapore, Department of Medical Oncology, Singapore

Several new drugs have been approved over the past 5 years for breast cancer in both the early and advanced settings. Although certain drugs such as CDK inhibitors may be well tolerated with mainly asymptomatic neutropenia, there may be other adverse effects such as transaminitis, pneumonitis, thromboembolic events and prolonged QT prolongation. Inhibition of PI3K-AKT-mTOR pathway may be complicated by toxicities such as hyperglycaemia and rash, among others. The differential toxicity profiles of everolimus, alpelisib and capivasertib will be discussed. The most common toxicities associated with PARP inhibitors are haematologic, but may also lead to more serious complications such as myelodysplasia and leukaemia. We will discuss the frequency, workup and management of the various adverse effects. Education of both healthcare professionals and patients is important to maximise the benefit risk ratio of these new agents.

IMMUNOTHERAPIES: SHORT AND LONG TERM

Kyoung Eun Lee

Ewha Womans Univ. Mokdong Hospital, Department of Medical Oncology, Korea

In recent years, various immune check point inhibitors (ICIs) have been used as standard treatments for various cancer types, including breast cancer. In particular, ICIs that target and inhibit programmed cell death-1 (PD-1) and programmed cell death ligand-1(PD-L1), have shown promising results in the treatment of patients with early/metastatic triple negative breast cancer(TNBC), which has been associated with poor prognostic outcomes.

And we are experiencing that they show toxicity profiles that is quite different from the cytotoxic agents used in the past decades. These are called immune-related adverse events(irAEs) and include relatively non-serious cases to fatal cases. These toxicities require highly specific management, including guidance from multidisciplinary specialists. Therefore, Understanding the mechanisms of these side effects and how they can be separated from the anti-tumor effects of ICIs, as well as identifying biomarkers that predict the development of immune-related toxicities has become important.

In this topic, Results from prospective clinical trials in the adjuvant and palliative setting of breast cancer will be mentioned on known irAEs and representative side effects and some guidelines for managing such side effects will be mentioned along with clinical cases in daily practice. Additionally, the biomarkers for irAEs and re-challenge issues in clinical practice will be addressed.

Ultimately, high suspicion, early detection and early treatment are important, so it is also necessary to be aware of such information and monitor patients well when carrying out daily treatment.

OBESITY, BREAST CANCER, AND THE POTENTIAL MEDIATING EFFECT OF ESTROGEN

Jennifer Ligibel

Dana-Farber Cancer Institute, Department of Medical Oncology, U.S.A.

Obesity and related factors are strongly associated with the risk of developing and dying from breast cancer. Observational evidence links obesity to an increased risk of developing more than a dozen malignancies, including post-menopausal breast cancer. Preliminary evidence from bariatric surgery cohorts suggests that weight loss achieved through surgical means is associated with a 50% reduction in subsequent breast cancer risk. A growing body of literature also links obesity to prognosis in many common cancers, especially breast cancer. More than 100 studies have demonstrated that women with obesity at the time of breast cancer diagnosis are at increased risk of cancer recurrence and mortality compared to leaner women. Emerging evidence suggests that the relationship between obesity and breast cancer risk and outcomes may vary by a patient's menopausal status and by the hormone receptor status of the tumor, highlighting the potential mediating effect of estrogen and other sex steroids on the relationship between obesity and breast cancer. In this talk, we will review the data suggesting a differential effect of obesity on breast cancer risk in younger and older women and discuss findings from weight loss studies suggesting that weight loss in across the lifespan may impact hormone receptor positive tumors in older women and hormone receptor negative tumors in younger women. We will also discuss the relationship between obesity and physical activity and outcomes in women with advanced breast cancer. Finally, we will discuss efforts to study the effect of intentional weight loss on breast cancer outcomes.

EFFECT OF ADJUVANT TREATMENT ON OBESITY, SARCOPENIA IN BREAST CANCER PATIENTS

Young-Jin Suh

The Catholic Univ. of Korea, St. Vincent's Hospital, Department of Surgery, Korea

The evaluation of body weight and breast cancer recurrence has been predominantly based on risk associated with excess body weight rather than on the risk associated with weight loss. Weight gain is more common in younger women and women receiving adjuvant therapy. Some found age differences related to weight changes during adjuvant chemotherapy, where women over 50 years old were more likely to lose weight during adjuvant chemotherapy, whereas women under 30 years old gained weight. In one study, Asian women had the lowest risk of weight gain post breast cancer diagnosis

Sarcopenia, a loss of muscle mass or strength, can naturally occur with aging and is further exacerbated in older adults with cancer. The prevalence of sarcopenia is between 12 to 57% in older cancer patients. Cancer treatments such as surgery, chemotherapy, and radiation may further contribute to muscle loss. Sarcopenia is as common and important a risk factor as obesity for cancer outcomes, including survival, chemotherapy toxicity and surgical outcomes. In a recent meta-analysis, sarcopenia was found to be a risk factor for mortality among early-stage female breast cancer patients. However, the other examined sarcopenia in women with early-stage breast cancer and found it to be associated with improved outcomes. Sarcopenia is underrecognized in nonmetastatic breast cancer and occurs in over one-third of newly diagnosed patients. The majority of studies to date have focused on weight gain after a breast cancer diagnosis and its implications on health in survivors. Fewer studies have examined weight loss and its related characteristics.

Sarcopenia is not a condition restricted to patients with later-stage disease but rather is highly prevalent among patients with nonmetastatic disease across all levels of BMI. Additionally, information on muscle quantity and adiposity from clinically acquired CT scans provide significant prognostic information that outperforms BMI. Measures of both sarcopenia and adiposity from clinically acquired CT scans in nonmetastatic patients provide significant prognostic information that outperform BMI and will help to guide interventions to optimize survival outcomes. In the era of precision medicine, the direct measurement of muscle and adiposity will help to guide treatment plans and interventions to optimize survival outcomes. Weight changes are common among breast cancer patients. Both muscle and adiposity represent modifiable risk factors in patients with breast cancer. In addition to weight loss, some say to consider interventions to improve muscle mass, such as resistance training or protein supplementation.

Major recent advances on how chronic renal disease and inflammation affect cellular signaling include the identification of the myostatin (MSTN)/activin system, and its related transcriptional program that promotes protein degradation. There are reports on the expanding role of MSTN activation in promoting muscle atrophy and the recent clinical studies that investigated the efficacy of MSTN/activin pathway antagonism in sarcopenic

patients. Using baseline CT scan imaging and readily available software, skeletal muscle mass assessments could be incorporated into the clinical setting, and we hypothesize that they could prevent severe adverse, dose-limiting events. Estrogen deprivation with aromatase inhibitors (AIs) is a reference therapeutic approach for post-menopausal women with breast cancer either in adjuvant or metastatic setting. In postmenopausal women, aromatase inhibition causes depletion of estrogen levels. Hormonal derangements induced by hormonal therapies cause bone metabolism alterations in women with breast cancer, resulting in bone fragility and increased risk of fractures.

THE ROLE OF OBESITY AND SARCOPENIA IN ANTI-CANCER IMMUNOTHERAPY

Yen-Shen Lu

National Taiwan Univ. Hospital, Department of Medical Oncology, Taiwan

Body composition refers to the proportional distribution of different body mass contents amongst various compartments including adipose tissue and lean body mass. The most clinically distinct body phenotypes are obesity and sarcopenia. Obesity plays a significant role in tumorigenesis. In addition to its role in cancer development, obesity has now emerged as a prognostic factor that may predict cancer mortality. The other clinically distinct phenotype of body composition is sarcopenia which is defined by severe reduction of lean body mass and wasting of skeletal muscle. Sarcopenia has been identified as an independent prognostic factor for mortality in some cancer types. In addition, a distinct overlap syndrome of increased adipose tissue (obesity) and loss of lean body mass (sarcopenia) has been recognized as an important factor contributing to worse prognosis in some cancers. Given the established link between different body composition and outcomes in cancer that was outlined by prior research, it was plausible for researchers to analyze whether different body phenotypes could be a predictive factor for response and outcomes with novel therapies. In this talk, the available evidence of a biological crosstalk between different body composition phenotypes and tumor microenvironment in cancer will be discussed. the available studies conducted to analyze the implications of body composition phenotypes on survival outcomes in patients with different cancer types who were treated with ICI will be reviewed, and also provide our recommendations on the conceptual utility of incorporating body composition calculations into prospective trials. In general, the study of body composition as a prognostic marker in NSCLC patients treated with novel immune a is an area of compelling interest. Future studies should focus on incorporating subgroup analysis in large prospective trials to better analyze this association.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

IERBS 2024 Symposium

"Go Beyond Cure of Breast Cancer"

PATIENTS SELECTION OF ROBOTIC AND ENDOSCOPIC NSM FOR BEGINNERS

Sae Byul Lee

Univ. of Ulsan College of Medicine, Division of Breast Surgery, Korea

As early detection of breast cancer increases, the proportion of patients undergoing breast-conserving surgery (BCS) is increasing. However, 30% of breast cancer patients still undergo mastectomy. The number of patients undergoing mastectomy and reconstruction is increasing. Nipple spring mastectomy (NSM) and reconstruction are gradually increasing because they can maintain the shape of the breast and there is no difference in prognosis from conventional mastectomy. However, NSM is a relatively difficult surgical method compared to mastectomy or BCS. First, NSM has a large surgical field. And the flap should not be incised too thinly to prevent skin necrosis. Conversely, if the thickness of the flap is too thick, there is a risk of local recurrence, so it is important to peel the flap with an appropriate thickness. In order to secure a sufficient surgical field and operate the surgical instruments smoothly, the skin incision must be lengthened, which not only reduces the cosmetic satisfaction but also leads to skin necrosis due to poor blood supply to the flap. To solve this problem, robotic and endoscopic nipple sparing mastectomy were introduced to improve oncological safety and cosmetic satisfaction.

Robot-assisted surgery can use multi-joint endoscopes and instruments, enabling precise surgery using small incisions. Robotic surgery is widely used to perform colorectal surgery, prostatectomy, hysterectomy, cystectomy, and gastric surgery, and it was first reported in 2017 for breast surgery. Several recent research articles show that robotic and endoscopic nipple sparing mastectomy has similar safety profile when compared to conventional NSM, and equivalent results have been reported for oncological outcomes.

Breast surgery has witnessed remarkable advancements with the introduction of robotic and endoscopic techniques for NSM. As beginners explore these innovative approaches, patient selection becomes a pivotal aspect in ensuring favorable outcomes. This presentation aims to delineate the criteria guiding the selection of patients suitable for robotic and endoscopic NSM, shedding light on the nuanced considerations essential for surgeons venturing into these procedures.

By addressing patient selection considerations for beginners in the realm of robotic and endoscopic NSM, this presentation seeks to contribute to the ongoing discourse on advancing breast surgical techniques.

ONGOING STUDIES OF MINIMALLY INVASIVE MASTECTOMIES - CRITICAL APPRAISAL AND PERSPECTIVES FROM A MIS BREAST SURGEON

Chi Wei Mok

Changi General Hospital, Singhealth Duke-NUS Breast Centre, Department of Surgery, Singapore

In this talk, Asst Prof Mok will share on all ongoing studies of robotic and endoscopic nipple sparing mastectomies from an interesting perspective of a practicing minimally invasive breast surgeon with equal expertise in both endoscopic and robotic breast surgery. He will be sharing on all aspects that current studies looked at including landmark trials setting the pace for surgeons in this field. This lecture promises to be an engaging one with thought provoking reflections.

CURRENT APPLICATION OF ROBOTIC AND ENDOSCOPIC NSM FOR HIGH RISK OF BREAST CANCER PATIENTS

Deborah Farr

UT Southwestern Harold C. Simmons Cancer Center, Department of Surgery, U.S.A.

Importance: Robotic assisted nipple sparing mastectomies (rNSM) with multiport robots, including the Da Vinci Xi multiplatform, have been described since 2015, however significant hurdles to multi-port robotic surgery exist in limited viewing fields like breast surgery.

Objective: To demonstrate that the Single-Port da Vinci SP (Intuitive Surgical), which was designed for small cavity surgery was feasible in patients undergoing rNSM.

Design: As part of an IRB approved study STU2022-0091, 72 nipple sparing mastectomies (SPrNSM) with pre-pectoral tissue expander reconstruction were completed.

Setting: Large University Hospital

Participants: Women who met surgical criteria for nipple sparing mastectomies per standard of care.

Intervention: Surgery using a Single-Port robot and the surgical technique of the authors.

Main Outcomes and Measures: Age, indication, body mass index, breast size, operative time, conversion to open surgery, systemic complications, postoperative skin necrosis, and reported skin and nipple sensation.

Results: 72 single port robotic nipple sparing mastectomies were completed over 4 years. Sixteen patients had high risk genetic mutations such as BRCA1/2, ATM or CHEK2 and an additional 5 women had a great than 20% lifetime calculated risk. Eighteen women had benign pathology, six women had DCIS and thirteen women had invasive breast cancer. The breast size ranged from A-D cup with median B, with BMI 19.7-29.1 (median 23.2). The total duration of the procedure from incision to skin closure for both sides ranged from 134 minutes to 361 minutes (median 247). The median robotic time for a unilateral SPrNSM was 48 mins. No cases were converted to open and no immediate or oncologic complications such as positive margins or recurrence were seen. Complications were consisted of NAC ischemia requiring resection in one patients' bilateral breasts and a hematoma requiring evacuation in another patients unilateral breast. In the first 10 patients prior to routine sensation testing, 65% (n = 20) had measurable NAC sensation at a range from 4-36 months post-index resection. In the following 52 resected breasts, 28 (73%) retained nipple sensation following the index operation.

Conclusion and Relevance: SPrNSM with immediate reconstruction with pre-pectoral tissue expanders followed by implant or autologous reconstruction is feasible and can be performed safely by an experienced breast surgeon with limited previous robotic training. Further studies confirming the preliminary data demonstrating improved NAC and skin sensation following SPrNSM are warranted.

IMPLICATION OF DRY AND CADAVERIC SKILL LABS FOR ROBOTIC AND ENDOSCOPIC NSM

Jeffrey Johnson

Mayo Clinic, Department of Surgery, U.S.A.

The development, application, and dissemination of novel surgical techniques requires a parallel system of novel training. Robotic NSM, especially using the single port system, involves application of a novel technology to an established surgery. While traditional open and robotic procedures are broadly similar, training for the novel technique requires familiarity with the robotic platform as well as understanding the similarities and contrasts with the open technique. For experienced surgeons comfortable with the NSM procedure, this may involve a steep learning curve in robotic surgery. For younger trainees, this may involve training in both NSM as well as robotic surgery. As with any novel technique, this presents significant challenges.

Increasingly, surgical training has shifted to an emphasis on simulation. This allows for repetition, reproducibility, and flexibility in training while minimizing the risk to patients. A number of studies have demonstrated the utility of surgical simulation in helping prepare surgeons, although data is lacking in robotic NSM given the novelty of the procedure. In addition, varying local laws and customs and different degrees of penetration of robotic technology have created a staggered introduction of the robotic technique at different sites around the world.

The tools for simulation training are limited but increasing. Current tools for simulation training include virtual training, dry lab, and cadaveric labs. The first are aimed at familiarizing physicians with the robotic platform while the latter adds in the element of procedure-specific training. The balance of training is not standardized beyond what is required on some clinical trials, and the ideal training program has not been identified.

Experience has demonstrated the value of simulation training for NSM. For surgeons familiar with multiport robotic surgery, virtual and supervised dry lab training aid in the transition to the single port platform. Cadaveric labs and direct observation of experienced robotic surgeons help surgeons learn steps of the operation and map robotic experience to their open experience. However, cadaveric labs remain limited, particularly with differences in tissue quality and energy use. Furthermore, cadaveric labs are unable at this time to prepare surgeons to assess and improve important clinical outcomes such as ischemia, thermal injury, and hematoma.

To develop a successful robotic NSM program, it will be essential to develop standardized training and assessments. This should include surgeons as well as other OR staff including bedside assistants, technicians, nurses, and the anesthesia team. Tools exist for assessing acquisition of technical skills but these will need to be validated against clinical outcomes for this procedure. It will be essential for robotic sites to cooperate and share experience with training as well as clinical outcomes.

ROBOTIC AND ENDOSCOPIC NSM IN LARGE & PTOTIC PATIENTS

Wen-Ling Kuo

Chang Gung Memorial Hospital, Department of Surgery, Taiwan

Robotic mastectomy (RM) is a newly developed minimally incision breast surgery aimed for total or nipple-sparing mastectomy for therapeutic purpose in breast cancer or prophylactic purpose in high-risk pathogenic germline variant carriers. Although the safety and complication rates are known to be comparable for RM and conventional mastectomy (CM), the quality of RM still relies on the experience and technical maturation of breast surgeons. Large or protic breast is one the patient factors that lead to more technical challenges in performing RM. In East Asia, women have smaller and less ptotic breasts compared with Western women, and RM is practiced more often and much readily accepted in this region. Starting RM practice with smaller and non-ptotic breast is a much safer and easier way to gain success. Whether large or ptotic breast is a ceiling to RM is not known. From our experience of 159 RMs, our breast specimen size ranged between 73 to 835gm, with a median weight of 308gm, among which 45 (28.3%) cases had specimen size larger than 400gm. The robotic console time was significantly ($p = 0.046$) longer for breasts larger than 400gm (74.5min, range 38-294) than less than 400gm (67min, range 35-170). Total surgical time which is also contributed by reconstruction time and also longer with larger breasts. On the other hand, ptotic breast (grade 1-3) (75min, range 38-294) also leads to significantly longer ($p = 0.024$) console time than non-ptotic breasts (66min, range 35-140). The comparison of complication rates is to be reported in the conference. In our Asian experience, we seldom encounter large and ptotic breasts, which is much more common in Western countries, from this yet limited data, we suggest that more patience and careful practice is required if RM is to be performed in women with large or ptotic breasts, which is not necessarily the ceiling or contraindication.

MANAGING POSTOP-COMPLICATIONS OF ROBOTIC AND ENDOSCOPIC NSM COMPARED TO OPEN NSM

Eisuke Fukuma

Kameda Medical Center, Japan

PROS

Antonio Toesca[1], Caterina Marchio[1], Vanesa Gregorc[1], Guglielmo Gazzetta[1], Eleonora Meduri[1], Stefano Chaifouroosh Mamagany[1], Luca Resca[1], Seung Ah Lee[1], Rossi Elisabetta Maria Cristina[2], Felice Borghi[1], Corrado Lauro[1], Giada Pozzi[1]

[1]Candiolo Cancer Institute, Department of Surgery, Italy, [2]European Institute of Oncology, Department of Surgery, Italy

Breast cancer stands as the most prevalent form of cancer globally, witnessing significant advancements in early detection, systemic therapies, and surgical methodologies.

Although robotic nipple-sparing mastectomy has undergone trials, the rates of complications, surgical outcomes, and oncological efficacy of this technique is going to be confirmed on larger scale evidence.

To delve into this matter, a thorough examination of existing literature is carried out in this presentation. Studies investigating complications and procedural factors comparing robotic nipple-sparing mastectomy to traditional approaches is reviewed. Randomized controlloed trials and meta-analysis are presentended. The primary study endpoints focused on complications (such as ClavienDindo grade III complications, skin or nipple necrosis, seroma, hematoma, infection, implant loss, and wound dehiscence) and oncological outcomes (including recurrence, verall survivals and long term management). Secondary endpoints encompassed procedural factors, hospital stay duration, cost-effectiveness and learning curve.

Focus on Quality of Life is also evaluated and presented as main point of this advanced procedure surgery.

In conclusion, robotic breast surgery shows promise, particularly in its potential to revolutionize breast surgery practices and rigorous comprehensive evaluation of its oncological safety remains imperative as the field continues to evolve.

CONS

Andrea Barrio

Memorial Sloan Kettering Cancer Center, Department of Surgery, U.S.A.

While randomized trials have demonstrated equivalence between breast conservation and mastectomy, mastectomy for the treatment of breast cancer is still indicated for many women due to multicentricity, genetic predisposition, or breast cancer recurrence among other reasons. Over time, there has been a shift from radical mastectomy to conventional total mastectomy, and subsequently to skin sparing mastectomy with the understanding that local recurrence risk is determined more by tumor biology than surgical technique.

More recently, total skin preservation with nipple sparing mastectomy has emerged as a surgical option for women with early-stage breast cancer, for the theoretical purpose of improving aesthetics and overall long-term quality of life. While nipple sparing mastectomy (NSM) is an acceptable surgical option for women undergoing prophylactic mastectomy for genetic predisposition and for those with early-stage cancer where the probability of occult nipple involvement is low, there remains a wide variability in patient selection across institutions for this procedure, with many offering NSM to higher risk patients with more advanced disease. In addition, NSM remains a technically challenging procedure with ongoing concerns that the adequacy of the mastectomy is inferior to a standard approach.

Robotic NSM has emerged as a novel method for total breast removal through a small incision, allowing for potentially better visualization and improved ergonomics for the surgeon. While we can agree that robotic NSM is feasible in small breasted women with low complication rates, prospective data on oncologic safety are limited. In this debate, we will discuss the ongoing concerns regarding the oncologic safety of robotic NSM, the technical challenges and learning curve of the procedure, and the cost associated with this procedure which may offset any potential "benefit." As a result of the lack of long-term oncologic data from randomized trials, robot-assisted NSM does not currently have a role outside of clinical trials.

ROBOT ASSISTED BREAST RECONSTRUCTION: WHICH OPTIONS CAN WE HAVE?

Hyun Ho Han

ASAN Medical Center, Department of Plastic Surgery, Korea

Robot-assisted mastectomy is gradually expanding its scope. The situation is expanding further as evidence on oncologic safety and patient reported outcomes continues to emerge. Of course, robots can be used in breast reconstruction.

Robotic reconstruction can be broadly divided into breast pocket, flap elevation, and micro anastomosis.

Breast pocket work includes pocket repair, flap suture for the inset and ADM fixation. DIEP flap can be harvested using DaVinci robot while minimizing the fascia incision. Micro-anastomosis can be also possible using robot.

I will introduce each of them in this lecture.

IMMEDIATE BREAST RECONSTRUCTION FOLLOWED BY ROBOT-ASSISTED NIPPLE-SPARING MASTECTOMY

Dong-Won Lee

Yonsei Univ., Department of Plastic Surgery, Korea

Surgical robotics are rapidly advancing across various surgical fields. Among the many types of surgical robots developed so far, the most widely used is the da Vinci robot (Intuitive Surgical, USA), which applies a form of minimally invasive surgery that advances laparoscopy. It utilizes robotic arms capable of delicate and wide-ranging movements, along with a camera that offers three-dimensional, magnified views. The capabilities of the da Vinci robot minimize tissue damage, thereby reducing the likelihood of complications such as bleeding and infection, and can lead to improved surgical outcomes through reduced postoperative pain and hospital stay.

Recently, the da Vinci robot has also been applied to breast cancer surgery and breast reconstruction. The first reported case of robotic mastectomy was performed by Toesca in 2015, and since then, several cases of robotic mastectomy have been reported. Although robotic breast cancer surgery has not yet become mainstream, the spread of robotic technology is very rapid in South Korea, and numerous studies are being conducted to prove the efficacy and safety of robotic surgery in breast cancer. Adequate consideration is needed on how to perform reconstruction in the new context of robotic mastectomy. Robotic mastectomy involves short incisions located outside the breast, making breast reconstruction more challenging. However, reconstruction with implants, wrapped in acellular dermal matrix and inserted through the incision, is possible without necessarily using a robot. Autologous tissue reconstruction is also feasible, requiring selection of the thoracodorsal vessels as recipient vessels. Care must be taken to avoid damaging the connected vessels during the insertion of the flap through the incision after microvascular anastomosis.

Regarding breast reconstruction, Selber reported cases of breast reconstruction using latissimus dorsi (LD) flap elevation with the aid of robots in 2012. Since then, there have been reports of robotic-assisted cases for elevating deep inferior epigastric artery perforator (DIEP) flaps as well. LD flap with robotic assistance can reduce scarring at the donor site, and DIEP flap surgery offers the benefits of reduced post-operative pain and donor site morbidity. Following robotic mastectomy, plastic surgeons can also perform flap elevation surgeries using robots for reconstruction.

AUTOLOGOUS BREAST RECONSTRUCTION - JAPANESE TREND AND OUR STRATEGY

Hiroki Mori[1], Noriko Uemura[1], Goshi Oda[2], Toshiyuki Ishiba[2]

[1]*Tokyo Medical and Dental Univ., Department of Plastic and Reconstructive Surgery, Japan,*
[2]*Tokyo Medical and Dental Univ., Department of Breast Surgery, Japan*

In Japan, there are close to 100,000 new breast cancer patients per year in recent years. Breast reconstruction, which plays a role in the treatment of the disease, was officially covered by insurance in 2006 for autologous flap; from 2014, breast implant has also been covered by insurance, and from 2020, reconstruction with risk reduction will also be covered by insurance. However, in 2021, the breast reconstruction rate is 7% of breast cancer surgeries and 13% of total mastectomies, which remains low compared to the United States and South Korea. The reasons for this may include lack of patient awareness, regional disparities, lack of cooperation with breast surgeons, and differences in the enthusiasm of plastic surgeons. Regarding surgical procedures, all autologous tissues are covered by insurance, and there is little delay in global trends. Fat grafting is currently not covered by insurance, but if it becomes covered by insurance, it will be a viable option for touch-up purposes and for smaller breasts. Robotic surgery is expected to be covered by insurance for nipple-sparing mastectomy soon, but not yet for the deep inferior epigastric artery perforator (DIEP) flap.

We have been performed breast reconstruction since the 1990s with a good relationship with breast surgeons, and currently autologous tissue reconstruction is mainly performed with DIEP flap. In this presentation, we will discuss preoperative and intraoperative simulation, our strategy for one-or two-stage reconstruction, postoperative results, and evaluation of the rectus abdominis muscle at the donor site.

INTRODUCTION CONSENSUS MEETING OF IERBS & SUMMARY OF PREVIOUS CONSENSUS MEETING OF IERBS

Hung-Wen Lai

Changhua Christian Hospital, Department of Surgery, Taiwan

Objectives: To achieve a consensus statement on robotic mastectomy.

Background: Robotic-assisted surgery has gained much attention especially the results of few case series reporting on the technical feasibility, safety and early oncologic outcomes of robotic-assisted mastectomy in a few centers worldwide. The aim of this consensus statement was to develop and provide standardized guidelines on robotic mastectomy based on consensus statement by a panel of experts from indications to outcome measures and indicators, thereby providing a valuable guide for breast surgeons worldwide.

Methodology: An internationally representative expert panel of 10 surgeons was invited to participate in the generation of a consensus statement. 52 statements were created in 6 domains: indications, contraindications, technical considerations, patient counseling, outcome measures and indicators, training and learning curve assessment. Experts were asked to vote if they agree, disagree or of the opinion that the statement should be rephrased. Two electronic rounds via online survey of iterative rating and feedback were anonymously completed, followed by a final round of in-person meeting during the inaugural International Endoscopic and Robotic Breast Surgery Symposium 2019 from May 24 to 25, 2019. Consensus was reached when there was at least 80% agreement on each statement.

Results: A total of 53 statements with at least 80% agreement were generated after 3 rounds of voting; 21 statements from first round of voting, 20 statements from second round of voting and 12 statements from the final round of in-person meeting. All experts agreed that the consensus statement served as expert recommendations but not mandatory for a successful and safe practice of robotic mastectomy.

Conclusion: Robotic mastectomy is a promising technique and could well be the future of minimally invasive breast surgery whereas proving to be safe and feasible. The first consensus statement on robotic mastectomy from an international panel of experts serves as an extremely important milestone and provides recommendations for breast surgeons keen to embark on this technique.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

Breast Imaging Session

"Go Beyond Cure of Breast Cancer"

NEW BI-RADS: RECENT UPDATES AND IMPLICATIONS

Wendy Demartini

Stanford Univ., Department of Radiology, U.S.A.

The American College of Radiology Breast Imaging Reporting and Data System (BI-RADS) provides a structured system that is used around the world for reporting breast imaging findings. Currently, the BI-RADS Atlas 5th Edition is in use, but planning is in-progress for updated content for a new BI-RADS 6th Atlas Edition. This lecture will describe the intended changes to the upcoming 6th Edition, with an emphasis on planned updates for the mammography, ultrasound and breast MRI lexicons.

NON-MASS LESIONS IN ULTRASOUND: VARIOUS VOICES FROM KOREA AND JAPAN

Ei Ueno

Tsukuba International Breast Clinic, Department of Senology, Japan

Due to the difficulty in depicting breast cancer indicative of bloody nipple discharge with a mechanical ultrasound scanner, an expanded duct was plotted on a graph to identify the responsible lesion. Subsequently, with the development of a mechanical sector scanner, it became possible to depict ducts in real-time, while, on the other hand, ductal carcinoma in situ (DCIS) showing microcalcifications on mammography started to be detected. Ueno, while referencing mammography, discovered specific lesions during ultrasound examinations that did not exhibit mass images, and proposed these lesions as "Non-mass image forming type" in 1986. In the 1990s, mammography screening was introduced in all Japan, leading to the detection of numerous such lesions, which gained widespread recognition. Later, in 2011, Dr. Moon from Korea suggested that the term "Non-mass image forming type" was too long. Consequently, in Japan, the term was revised to "Non-mass abnormalities," and the diagnostic criteria were established by the Japan Society of Ultrasonics in Medicine in 2023. On this occasion, we introduce the content of this and research on Non-mass lesions in Korea. The Japan Society of Ultrasound in Medicine (JSUM) Terminology / Diagnostic Criteria Commitee has classified non-mass abnormalities into five subtypes: hypoechoic area in the mammary gland, abnormalities of the ducts, architectural distortion, multiple small cysts, and echogenic foci without a hypoechoic area. We herein define the findings for each of these subtypes and present a summary of the JSUM guidelines on non-mass abnormalities of the breast generated based on those findings.

Classification of non-mass abnormalities

Hypoechoic area in the mammary gland
(1) Patchy or mottled hypoechoic area (2) Geographic hypoechoic area
(3) Indistinct or ill-defined hypoechoic area

Abnormalities of the ducts
(1) Duct dilatation (2) Ducts with internal echoes (3) Irregularity of ductal caliber

Architectural distortion

Multiple small cysts

Echogenic foci without a hypoechoic area

IMAGING BIOMARKERS IN BREAST IMAGING: BREAST DENSITY, GLANDULAR TISSUE COMPONENT, AND BACKGROUND PARENCHYMAL ENHANCEMENT

Su Min Ha

Seoul National Univ. Hospital, Department of Breast Radiology, Korea

Biomarker is a defined characteristic that is measured as an indicator or normal biological processes, pathologic processes, or responses to an exposure or intervention. Molecular, histologic, radiographic, or physiologic characteristic are types of biomarkers. There is growing movement toward tailoring breast cancer screening to individual woman's future cancer risk. There are multiple risk assessment tools to estimate woman's future risk of breast cancer, including the Tyrer-Cuzick, Gail and Breast Cancer Surveillance Consortium risk models. However, these clinical risk assessment tools have been shown to have variable predictive accuracy. Recently, mammography images using deep learning artificial intelligence (AI) algorithms have been developed to predict future breast cancer risk. AI algorithms using mammography images alone perform on par with or better than traditional tools. Thus, use of image-based AI risk models may result in more accurate, personalized screening. In addition to mammography, breast ultrasound can distinguish glandular and fibrous tissue in mammographically dense areas based on their echogenicity. The sonographic glandular tissue component (GTC) reflects the degree of lobular involution and is an independent predictor of the risk of future breast cancer in women with dense breast. Sonographic GTC information could identify the subset of women with dense breasts who are likely to benefit from supplemental screening. Lastly, background parenchymal enhancement (BPE) from contrast enhanced breast MRI has emerged as novel imaging-derived biomarker in the diagnosis and treatment monitoring of breast cancer and growing evidence supports the role of breast parenchyma vascularity and metabolic activity as probable risk factor for breast cancer development and recurrence in patients with personal history of breast cancer. Improved breast cancer risk assessment models are needed for personalized screening strategies that achieve better harm to benefit ratio. Mammography, breast ultrasound and MRI can be used for risk assessment in addition to breast cancer detection. Longitudinal risk assessment may enable better risk assessment. Further researches on multimodality risk assessment combining mammography, ultrasound and MRI to predict breast cancer risk may enable better risk assessment. In this talk, we will discuss about the image-derived biomarkers using density on mammography, GTC on breast ultrasound and BPE on contrast enhanced breast MRI.

CONTRAST-ENHANCED MAMMOGRAPHY: FROM EXAMINATION TECHNIQUES TO FUTURE PROSPECTS

Janice Sung

Memorial Sloan Kettering Cancer Center, Department of Radiology, U.S.A.

Although mammography is the only imaging modality shown to reduce breast cancer mortality, screening mammography has several limitations, especially limited sensitivity in women with mammographically dense breasts. Contrast enhanced mammography (CEM) is a vascular based imaging technique where iodinated contrast is given to visualize neovascularity associated with breast cancers, similar to breast MRI. With CEM, a dual energy mammogram is performed approximately 2 minutes after intravenous injection of iodinated contrast. For a screening CEM, two images are obtained almost simultaneously for each CC and MLO view. One is the low- energy image which visually appears essentially identical to a 2D full field digital mammogram. The second is a high energy image obtained above the k-edge of iodine. These two images are used to create a recombined image that highlight areas of contrast uptake. By having both images, the radiologist has the anatomic information typically seen with mammography in combination with information on perfusion that is typically seen with breast MRI. Advantages of CEM include potential wider availability and increased access, lower cost, and faster interpretation time compared to breast MRI.

Indications for CEM include further evaluation of abnormalities detected on screening mammography, extent of disease evaluation in women newly diagnosed with breast cancer, evaluating response to neoadjuvant therapy, and breast cancer screening. In these settings, CEM has been found to be more sensitive than full field digital mammography. Compared to breast MRI, CEM appears to have comparable sensitivity and higher specificity.

Limitation of CEM include false positives, false negatives, and risk of contrast reaction and other contrast related complications. Common causes of benign focal enhancement include fibroadenomas, papillomas, and PASH. Some cancers do not enhance, most commonly malignant calcifications and architectural distortion due to an underlying malignancy. Background parenchymal enhancement may also limit detection of breast cancer. Most contrast reactions are mild, such as hives, but more severe contrast reactions may occur. Contrast induced nephropathy is also a possibility. Women need to be screened for a history of iodinated contrast allergy and renal disease prior to initiating the CEM.

Interest in CEM in both the diagnostic and screening settings continues to increase, and CEM has emerged as a modality with much potential due to its combination of morphologic and perfusion information at one setting.

AUTOMATED BREAST ULTRASOUND: FROM EXAMINATION TECHNIQUES TO PEARLS FROM EXPERIENCES

Sun Mi Kim

Seoul National Univ. Bundang Hospital, Department of Radiology, Korea

Automated Breast Ultrasound (ABUS) is increasingly utilized alongside conventional handheld ultrasound (HHUS) as a supplementary screening test for breast cancer, in conjunction with mammography. Both modalities are particularly effective in detecting invasive breast cancers that may be missed by mammography, especially in denser breast tissue. However, HHUS presents several limitations, including operator dependence, a small field-of-view, lack of reproducibility and standardization, as well as demanding considerable time from the radiologist for scanning oversight.

ABUS addresses these limitations by automating and standardizing the breast scanning process, utilizing a larger field of view transducer compared to HHUS. Consequently, ABUS offers advantages such as reduced operator dependency during image acquisition, enhanced reproducibility, superior coronal imaging capabilities not available with HHUS, and a broader field-of-view.

Despite these advantages, the implementation of ABUS encounters some hurdles due to differences in examination techniques and interpretation compared to HHUS. During image acquisition, radiologic technologists must acquaint themselves with the unique display mode, imaging features, patient positioning, and artifacts associated with ABUS to ensure high-quality images. Likewise, radiologists should be familiar with wide coronal, axial, and sagittal ABUS images, artifacts, and discrepancies compared to HHUS.

This presentation will review examination techniques and provide useful tips for utilizing ABUS across various cases according to indications, aiming to enhance its efficacy in breast cancer screening and diagnosis.

ABBREVIATED BREAST MRI: UNVEILING RECENT RESEARCH INSIGHTS AND REAL-WORLD CLINICAL PERFORMANCE

Llewellyn Sim

Singapore General Hospital, Department of Radiology, Singapore

Breast MRI is known as the most sensitive imaging modality for the detection of breast cancer but its use in screening asymptomatic women has been limited to those with high familial risk. The reasons for this include its high costs, poor accessibility, relative unavailability, use of intravenous gadolinium, lack of radiological expertise, relatively lower specificity and long scan duration with poor patient tolerability.

The advent of abbreviated Breast MRI with similar diagnostic accuracy as a full diagnostic breast MRI protocol but with the advantage of reduced examination time and costs, offers potential to be the next generation screening test for breast cancer.

Various imaging protocols for abbreviated breast MRI have been investigated with a common basic protocol comprising pre-contrast and post-contrast T1-weighted sequences, subtraction and MIP images as well as a T2-weighted sequence.

Limitations of abbreviated breast MRI, particularly the lack of delayed scans for kinetic analysis, have led to the exploration of additional ultrafast and multi-parametric imaging to achieve better sensitivity and specificity. Ultrafast MRI aims to capture very early post-contrast kinetic information at high temporal resolution to avoid background parenchymal enhancement as well as to provide new kinetic parameters to distinguish between benign and malignant lesions.

Current data shows abbreviated breast MRI is feasible for screening women with high (> 20%) and intermediate (> 15%) lifetime risk of breast cancer and is more cost-effective for the former category. There is potential to extend abbreviated breast MRI screening to average-risk women with dense breasts but this has yet to be proven to be cost-effective.

Further studies are needed to standardize the abbreviated breast MRI protocol, to select the target screening population most likely to benefit from abbreviated MRI, to evaluate outcomes in patients with cancers detected from abbreviated MRI screening and to assess its cost-effectiveness.

The use of abbreviated breast MRI for non-screening indications (eg. assessing the extent of disease, staging, post-neoadjuvant chemotherapy evaluation and diagnostic work-up) remains under investigation and is not clinically established.

Special Session

"Go Beyond Cure of Breast Cancer"

ASIA IN BREAST STUDY GROUP (BIG)

David Cameron

The Univ. of Edinburgh, Department of Medical Oncology, United Kingdom

25 years ago, Professors Martine Piccart and Aron Goldhirsch founded the Breast International Group: a not-for-profit organisation that was intended to facilitate co-operation and common clinical trials between academic breast cancer study groups across the world. They were concerned that attempts to answer important clinical questions were being fragmented into many small trials rather than larger studies, and that control of these questions that matter to patients was often in the hand of commercial organisations.

I will summarise many of the important achievements and relationships built over the past 25 years, with academic groups across the world and with pharma companies. I will look at the involvement of Asian groups in the BIG network to paint a picture of where we are now.

But as an organisation that is now more mature, aged 25, and in a world recovering from a pandemic, the issues that stimulated the creation of BIG have not gone away-indeed there is evidence that control of phase III, practice changing, clinical trials, often lies well away from the patients for whom these questions are important, if not life-saving.

I will therefore describe how BIG is increasingly working with and involving patients in our trials, and how we can increasingly work globally to address questions that matter to patients with breast cancer.

Funding-BIG is a not-for-profit organisation which receives grant funding from the EU, many charities including BCRF, our own fundraising arm “BIG against Breast Cancer”, and funding for specific clinical trials from a number of Pharma companies.

COLLABORATION EXPERIENCE WITH BIG

Sung-Bae Kim

ASAN Medical Center, Department of Oncology, Korea

The Breast International Group (BIG) is a pivotal non-profit organization focused on breast cancer research on a global scale. Established in 1999 with headquarters in Brussels, Belgium, BIG promotes international collaboration in breast cancer research, uniting academic research groups worldwide to enhance the efficiency and effectiveness of research efforts. The organization facilitates large-scale cooperation to expedite significant advances in breast cancer research, aiming to reduce duplication of effort and resources, quickly enroll patients in studies, share data and knowledge, and answer critical scientific questions. BIG-Asia, as part of BIG's global outreach, highlights the organization's commitment to addressing the unique challenges and needs in breast cancer research across Asian populations. With breast cancer affecting a significant number of women in Asia, including a notable percentage of premenopausal women, there is an urgent call for more trials focused on this demographic.

East Asian groups actively contribute to patient recruitment in global trials. BIG-Asia Collaboration was initiated to develop Asian-led trials to be run under the BIG umbrella and engage young investigators in the mission of BIG.

The official BIG-East Asian group was launched in San Santonio, in 2017 with goals 1) to develop clinical trial ideas and involve early-career investigators from the BIG East Asian groups 2) to develop clinical trial ideas and involve early-career investigators from the BIG East Asian groups. We also discussed the funding & driving force to support the BIG-EAST Asian Groups' collaboration

Researchers across Asia, from seven countries (China, Hong Kong, Japan, the Republic of Korea, Singapore, Taiwan, and Thailand), emphasize the importance of international support for investigator-led trials, adapting advances in breast cancer research to local clinical practices, and addressing specific regional challenges. The need for cost-effectiveness research for approved drugs is also highlighted, to guide the use of limited resources more effectively

The BIG-ASIA early career investigators' workshop was held in Singapore, on 22-23 Nov 2018. Three proposals were selected and two abstracts were presented at the BIG Scientific Meeting in 2019.

BIG-Asia will continue to evolve and mentor its young investigators. We hope to develop clinical trials that will respond to the specific needs and challenges of the region.

BIG PATIENT PARTNERSHIP INITIATIVE: DEVELOPING CLINICAL TRIALS THROUGH PATIENT PARTNERSHIP

Carmela Caballero

Breast International Group, Department of Research & Development, Belgium

Early on, BIG started working with Europa Donna, the European Breast Cancer Coalition to involve patient advocates in the development of BIG trials. Over the years, Europa Donna representatives have provided input to BIG's leadership and researchers during BIG's regular Scientific Meetings, served on steering committees a number of BIG's clinical trials, and contributed to study-related communications.

In 2021, BIG established the BIG Patient Partnership Initiative (BIG-PPI), a group of about 15 patient advocate advisors from around the world (including the President of Europa Donna), to work even more closely with BIG. Members of the BIG-PPI are people who have experienced being or caring for a patient with breast cancer, and who wish to contribute to BIG's mission on a volunteer basis. BIG aims to involve members of the BIG-PPI systematically as early as possible during the process of a trial design to discuss study concepts and goals, clinical protocols, and related informed consent forms.

So far, the following activities have been conducted within the BIG-PPI:

1. Facilitating improved communication between the PPI members, with the BIG Headquarters, and with BIG Executive Board through in-person & virtual meetings and a dedicated web-based portal
2. Guiding and informing the clinical research that BIG leads and conducts through patient-focused research interests survey, attendance to the BIG Scientific Meetings, and Input Meetings for early trial concepts.
3. Providing specific training for BIG-PPI members regarding the biology and treatment of breast cancer, as well as the conduct of clinical research and drug development. This was done in collaboration with representatives of the BIG Network and the patient partners themselves.

In the future, BIG plans to deepen the involvement of the BIG-PPI not only in individual trials, but also in guiding BIG's overall scientific strategy. This will ensure that its clinical trials and research programmes are always closely aligned with patients' needs. To achieve this, we will seek to better understand breast cancer research priorities from the patient perspective through surveys and workshops. In addition, we will increase BIG-PPI's involvement via face-to-face meetings of various kinds, including retreats with the BIG Executive Board.

As BIG moves forward beyond its 25 years, our mission is to continue delivering breast cancer trials that truly respond to patient needs. The vision of BIG-PPI is to develop these trials not just for patients but with patients.

WOMEN FOR ONCOLOGY THROUGH BIG-ASIA

Janice Tsang

The Univ. of Hong Kong, Department of Medical Oncology, Hong Kong

Over the past decades, there has been increasing number of female medical students joining the medical professional training leading to emerging numbers of female medical graduates across the continents. Similar pattern is observed in the medical manpower landscape in Asia.

The same pattern is observed in the field of oncology, be it medical oncology, clinical oncology, radiation oncology or surgical oncology. Despite the increase in number of women in medicine especially with women for oncology (W4O), there is always an apparent glass ceiling for leadership position in the field of medicine as well as the service of oncology. While women for oncology are seen to be dedicated in providing added value in the holist care of cancer patients and their families, there are ongoing challenges for women for oncology striving to aim for leadership positions during their careers as well as their better contribution to the society through their gifts and talents in education, research, and clinical services, and as a carer for their own family and beyond. These include but not limited to historical, cultural, political, socio-economical and the conscious and unconscious bias in the traditional Asian culture.

Since the advent of the Breast International Group (BIG) – Asia (BIG-Asia) Initiatives, one of the objectives includes raising the awareness to promote gender balance in the oncology career development to promote gender equity in the field of oncology, enhancing a family friendly environment and advocating equal access to mentorship and career development for women for oncology, as well as providing supportive network and platform to groom more women for oncology in Asia through the BIG-ASIA network. This presentation will give an overview of how the BIG-Asia helps to facilitate women for oncology in Asia and the way forward.

OVERVIEW ON THE TREATMENT DIVERSITY FOR BREAST CANCER WORLDWIDE (WHO)

Benjamin Anderson

Univ. of Washington, Department of Surgery, U.S.A.

Background and Context: The 40% reduction in breast cancer mortality in high income countries has yet to be mirrored in low- and middle-income countries. In 2023, the World Health Organization (WHO) launched the Global Breast Cancer Initiative (GBCI) Framework to provide guidance for policy makers and the medical community in resource-constrained settings on how best to adapt existing healthcare resources to optimize patient outcomes. Following a universal patient management pathway, the 3 GBCI pillars (early detection, prompt diagnosis, treatment to completion) and their corresponding key performance indicators (KPIs) define opportunities for systematic improvement in breast care delivery in specific care delivery settings. When implemented with appropriate quality controls, targeted interventions can improve breast cancer outcomes culminating in reduced breast cancer mortality.

Aim: Using the GBCI Framework as a scaffold for program development, this project creates a general approach whereby context-specific assessments can be applied to design customized Breast Cancer Action Plans (BCAPs) that when implemented will predicably improve breast cancer outcomes in varied real-world settings.

Strategy: The Geneva-based NGO City Cancer Challenge (C/Can) has partnered with WHO to support the implementation of the GBCI Framework in C/CAN cities. This partnership has received catalytic funding to develop and execute multiple projects to define strategic approaches for applying the GBCI Framework in real-world settings adapting to existing resource limitations and health system constraints. Projects generated through this collaboration will be piloted at the level of cities where C/Can has established a presence. Initial results and lessons learned will be used to identify barriers and facilitators for the implementation of the GBCI Framework that will inform WHO (at all three levels), Ministries of Health, development agencies and other key stakeholders. These novel approaches can then be adapted and scaled up at the national level based on proven successes in target cities as an evidence-based, phased implementation strategy.

Anticipated Outcomes: By integrating best practices and evidence-based guidelines adapting the GBCI Framework to the local context, this project should enhance the quality and effectiveness of breast cancer care services. The cumulative impact will be better overall cancer outcomes, including higher survival rates, improved quality of life for patients, and reduced mortality rates related to breast cancer through models that can be used in other countries around the world.

ASIAN DATA ON THE TREATMENT DIVERSITY

Takashi Ishikawa

Tokyo Medical Univ., Department of Surgery, Japan

We sometimes need to be cautious to extrapolate evidences from western countries to our local practice in Asia. I want to show our clinical study on postmastectomy radiotherapy (PMRT) as one of those examples.

PMRT is the standard treatment for locally advanced breast cancer including pT1-2 and N1 tumors. Our study aimed to determine the prognostic impact of PMRT in patients with breast cancer.

Methods: Using data from the Japanese National Clinical Database from 2004 to 2012, we evaluated the association of PMRT with locoregional recurrence (LRR), any recurrence, and mortality. We enrolled patients who had undergone mastectomy and axillary node dissection and were diagnosed with pT1-2 and 1-3 lymph node metastases. We compared clinicopathological factors and prognosis between patients who received (PMRT group) and those who did not receive (No-PMRT group) PMRT.

Results: Among 8914 patients enrolled, 492 patients belonged to the PMRT group and 8422 to the No-PMRT group. The median observation time was 6.3 years. There was no significant difference in the cumulative incidences of LRR (4.0% versus 5.0%, $P = 0.61$), recurrence (13.8% versus 11.8%, $P = 0.23$) and breast cancer death (6.0% versus 4.3%, $P = 0.08$) at 5 years between the groups. Multivariable analysis revealed that LRR was significantly associated with tumor size, number of node metastases and triple-negative subtype but not with PMRT.

Conclusions: The LRR rate in the No-PMRT group was 5.0% at 5 years among patients with T1-2 and N1. PMRT did not significantly influence LRR in patients with T1-2 and N1. However, PMRT administration should be tailored considering the individual risks of tumor size, 3 node metastases and triple-negative subtype.

The 5-year LRR incidence in the No-PMRT group was much lower in this study than 16.5% in the EBCTCG meta-analysis and no benefit PMRT was observed in this patient population. I will discuss several reasons that caused these differences and extend to my proposal of fact-finding cohort studies of breast cancer focusing on differences between East and Asia from clinical and basic points of view.

CLOSING THE GAP IN RADIOTHERAPY ACCESS IN ASIA

Mei Ling Yap[1,2,3], Dania Abu Awwad[4], Jesmin Shafiq[1], Geoffrey Delaney[1], Yavuz Anacak[5], Freddie Bray[6], Jerickson Flore[7], Minjmaa Minjgee[8], Soehartati Gondhowiardjo[9,10], Tiara Bunga Mayang Permata[9,10], Jaffar Pineda[11], Suhana Yusak[12], Eduardo Zubizarreta[13]

[1]Collaboration for Cancer Outcomes, Research and Evaluation, Liverpool Hospital, UNSW, Department of Ccore, Australia, [2]The George Institute for Global Health, UNSW Sydney, Department of The Cancer Program, Australia, [3]Macarthur Cancer Therapy Centre, Western Sydney Univ., Campbelltown, Department of Radiation Oncology, Australia, [4]Univ. of Sydney, Department of Faculty of Medicine and Health, Australia, [5]Ege Univ., Izmir, Department of Radiation Oncology, Republic of Turkiye, [6]International Agency for Research on Cancer, Department of Cancer Surveillance Branch, France, [7]Jose R Reyes Memorial Medical Center, Department of Radiation Oncology, Philippines, [8]Universitas Indonesia, Jakarta, Department of Faculty of Medicine, Indonesia, [9]Cipto Mangunkusumo General Hospital, Department of Radiation Oncology, Indonesia, [10]National Cancer Center, Department of Radiation Oncology, Mongolia, [11]AC Sacred Heart Medical Centre, Pampanga, Department of Radiation Oncology, Philippines, [12]National Cancer Institute, Putrajaya, Department of Radiation Oncology, Malaysia, [1]3: International Atomic Energy Agency, Department of Vienna International Centre, Austria

Introduction: The Asia-Pacific is the region with the highest incidence of cancer and large resource gaps in cancer care resources have previously been reported. Radiation therapy is a fundamental component of comprehensive cancer care, with both curative and palliative indications. To date, evidence-based modelling of radiation therapy demand in this region has been based on high-income country (HIC) data and have not accounted for the more advanced stage at presentation seen in many low-income and middle-income countries (LMICs). We aimed to estimate the current and future gap in radiation therapy megavoltage machines in the Asia-Pacific region, using modelling adjusted for country income level.

Methodology: Cancer incidence data was sourced from Globocan, IARC. Radiation therapy demand and outcome models adapted for LMICs were created by adjusting models previously developed by the Collaboration for Cancer Outcomes, Research and Evaluation (CCORE)1,2 which used HIC epidemiological data. We adjusted these models to account for the incidence of 33 cancer sub-sites from each individual LMIC in the Asia-Pacific region to estimate the current and projected optimal radiation therapy utilisation rate and the megavoltage machine needs in each country. Data on the number of megavoltage machines available in each country was accessed from the Directory of Radiotherapy Centres, held by the International Atomic Energy Agency. The gap in radiation therapy supply for each country was determined by comparing the projected number of megavoltage machines needed with the number of machines available. We also estimated the local control, and overall survival population benefits that each country would gain, if radiation therapy were available optimally. These findings, as well as gaps in radiotherapy megavoltage machine supply, were compared with previous data findings from 2012 and projected data for 2040, to understand what changes have occurred over the last decade, and what the resource needs will be in future.

Results: There were 57 Asia-Pacific countries included in the analysis, with a combined incidence of 9·5 million new cases of cancer in 2020; an increase of 2·7 million from 2012. The potential local control benefit and overall

survival benefit which the cancer population from the Asia-Pacific region could gain, if radiation therapy were available optimally, was 7·42% and 3·05% respectively. Across the Asia-Pacific overall, the current optimal radiotherapy utilisation rate is 49·10%, which means that an estimated 4·66 million people will need radiotherapy in 2020, an increase from previous work which estimated 1·38 million people needing radiotherapy in 2012. The number of available megavoltage machines increased by 1261 (31%) between 2012 and 2020, but the demand for these machines increased by 3584 (42%); thereby widening the resource gap. The Asia-Pacific region only has 43·9% of the megavoltage machines required to meet demand, with the supply in some LMIC countries meeting <10% of their demand. To meet the projected demand by 2040, 12 000 additional megavoltage machines will be required.

Conclusion: The gap in megavoltage machine availability has widened in LMICs over the past decade and is projected to widen further by 2040. The results from this study can be used to provide evidence for the need to incorporate radiation therapy in national cancer control planning and to encourage governments and policy makers within the Asia-Pacific region to prioritise investment in radiation therapy.

Funding: The Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology for Asia and the Pacific (RCA) Regional Office (RCARP03).

For the full article, see: Awaad D, Shafiq J, Delaney G et al. Current and projected gaps in the availability of radiotherapy in the Asia-Pacific region: a country income-group analysis. Lancet Oncology 25 (2), 225-234 DOI:https://doi.org/10.1016/S1470-2045(23)00619-8

References

1. Barton MB, Jacob S, Shafiq J, Wong K, Thompson SR, Hanna TP, et al. Estimating the demand for radiotherapy from the evidence: a review of changes from 2003 to 2012. Radiother Oncol. 2014;112(1):140-4.

2. Hanna TP, Shafiq J, Delaney GP, Vinod SK, Thompson SR, Barton MB. The population benefit of evidence-based radiotherapy: 5-Year local control and overall survival benefits. Radiother Oncol 2018; 126: 191197. https://doi.org/10.1016/j.radonc.2017.11.004

AGE AND NATIONAL DISPARITIES IN THE DECISION-MAKING PROCESS OF BREAST CANCER PATIENTS

Hee Jeong Kim

ASAN Medical Center, Department of Surgery, Korea

Breast cancer treatment poses unique challenges influenced by demographic and cultural factors worldwide. This study explores disparities in post-mastectomy implant-based reconstruction (PMIBR) rates, revealing higher prevalence among young individuals and variations between ethnic groups, notably with higher rates observed among whites compared to Asians. Cultural influences, rather than ethnicity alone, play a pivotal role in reconstruction rates, as evidenced by cultural adaptation influencing surgical decision-making, particularly among immigrant Asians exhibiting more conservative tendencies.

Clinical and demographic variations among age groups impact treatment approaches, with differences observed in surgical practices across countries. The United States trends towards mastectomy and reconstruction, contrasting with rising rates of breast-conserving surgery (BCS) in Asia. Surgical decision-making hinges on age, cultural factors, surgeon recommendations, and patient involvement.

Addressing breast cancer treatment disparities necessitates tailored approaches reflecting cultural and demographic nuances. Developing medical policies and decision-making processes that foster patient involvement and rational decision-making is imperative. Efforts should focus on enhancing communication strategies to ensure all patients receive personalized, high-quality care, irrespective of geographical or age-related differences.

Furthermore, fertility-pregnancy counseling is essential for young breast cancer patients, encompassing discussions on oncofertility and considerations for BRCA carriers. Overcoming barriers to fertility preservation demands improvements in medical policies and communication strategies to enhance support and informed decision-making.

In conclusion, effective strategies to address global breast cancer treatment disparities require alignment with respective national health policies and targeted interventions addressing age-specific challenges. Tailoring efforts to improve access to fertility-pregnancy counseling and mitigate barriers to informed decision-making across all age groups is paramount. By enhancing medical policies and communication strategies, personalized and high-quality care can be universally provided.

PERI-OPERATIVE INTERVENTION IN EARLY BREAST CANCER

Rajendra Badwe

Tata Memorial Centre, Department of Surgery, India

Background: Fisher had demonstrated in mouse experiment that removal of the primary tumour bestowed growth potential on the secondary. We showed a similar detrimental effect on distant progression in women presenting with M1 breast cancer. The biological underpinning of these clinical findings were unfolded by showing that surgical resection of tumour deregulated hallmarks of cancer bestowing metastatic potential on the primary tumour. We ran two randomised trials in women with early breast cancer (N = 1000 & 1600) using pre-operative progesterone &peri-tumoral local anaesthetic injection.

Findings: In the first study using pre-operative progesterone showed RR 13% reduction in recurrence & death and in node positive patients for DFS 65.3% v 54.7%; hazard ratio, 0.72; $P = .02$ and OS 75.7% v 66.8%; hazard ratio, 0.70; $P = .04$. In the second study infiltrating peri-tumoural local anesthetic, 1583 of 1600 randomized patients were included in the analysis (LA 796, No-LA 804). In LA and No-LA arms 5-year DFS were 86.6% and 82.6% (HR 0.74, 95% CI 0.58-0.95, $p = 0.017$) and 5-year OS were 90.1% and 86.4%, respectively (HR 0.71, 95% CI 0.53-0.94, $p = 0.019$). The impact of LA was similar in subgroups defined by menopausal status, tumor size, nodal metastases, hormone receptor and HER2neu status. In the same cohort it was possible to study effectiveness of pre-operative progesterone as 5 out of 11 centres had adopted pre-operative progesterone as a routine policy and 6 centres did not. There was a significant reduction in DFS and OS in women who received progesterone as seen on Cox proportional hazard model.

Conclusion: Peri-tumoral injection of lidocaine and injecting hydroxyl-progesterone before breast cancer surgery significantly increased disease-free and overall survival. Altering events at the time of surgery can prevent metastases in early breast cancer

HEALTH-RELATED QUALITY OF LIFE (HRQOL) IN THE EVER-132-002 STUDY OF SACITUZUMAB GOVITECAN (SG) VS TREATMENT OF PHYSICIAN'S CHOICE (TPC) IN ASIAN PATIENTS WITH HR+/HER2- MBC

Ming-Shen Dai[1], Binghe Xu[2], Fei Ma[2], Shusen Wang[3], Min Yan[4], Wei Li[5], Jinhai Tang[6], Xiaojia Wang[7], Ying Wang[8], Seock-Ah Im[9], Kimberly M. Komatsubara[10], Ankita Kaushik[11], Anandaroop Dasgupta[11], Jessie Zhu[12], Wei-Pang Chung[13], Joohyuk Sohn[14]

[1]Tri-Service General Hospital, Department of Medical Oncology, Taiwan, [2]Cancer Hospital, Chinese Academy of Medical Sciences, Department of Medical Oncology, Beijing, China, [3]Sun Yat-sen Univ. Cancer Center, Department of Medical Oncology, Guangzhou, China, [4]Henan Cancer Hospital/Affiliated Cancer Hospital of Zhengzhou Univ., Department of Breast Cancer Center, Zhengzhou, China, [5]The First Hospital of Jilin Univ., Department of Cancer Center, Changchun, China, [6]The First Affiliated Hospital of Nanjing Medical Univ., Department of Medical Oncology, Nanjing, China, [7]Zhejiang Cancer Hospital, Department of Breast Medical Oncology, Hangzhou, China, [8]Sun Yat-sen Memorial Hospital, Sun Yat-Sen Univ., Department of Breast Tumor Center, Guangzhou, China, [9]Seoul National Univ. Hospital, Seoul National Univ. College of Medicine, Seoul National Univ., Department of Cancer Research Institute, Seoul, Korea, [10]Gilead Sciences, Inc., Department of Clinical Development Oncology, Foster City, Ca, U.S.A., [11]Gilead Sciences, Inc., Department of Global Value and Access Health Economics Outcomes Research Oncology, Foster City, Ca, U.S.A., [12]Gilead Sciences, Inc., Department of Biostatistics, Shanghai, China, [13]National Cheng Kung Univ. Hospital, Department of Oncology, Taiwan, [14]Yonsei Cancer Center, Department of Internal Medicine, Seoul, Korea

Background: SG is approved in the US and Europe for patients with pretreated HR+/HER2- mBC based on results from the global phase 3 TROPiCS-02 study, which enrolled predominantly non-Asian patients. The phase 3 EVER-132-002 study, a pivotal study that assessed SG in Asian patients, confirmed clinical benefit of SG in this population. Here we compare the impact of SG vs TPC on HRQoL domains in EVER-132-002.

Methods: Asian adults with 2-4 prior lines of chemotherapy were randomized 1:1 to SG or TPC. HRQoL was assessed using EORTC QLQ-C30 v 3.0. Change in physical and role functioning was compared between SG and TPC. Time to deterioration (TTD) for global health status/QoL, pain, and fatigue domains was defined as the time from randomization to first date patient reached ≥ 10-point deterioration from baseline or death.

Result: The ITT population included 331 patients (166 SG; 165 TPC); the HRQoL-evaluable population included 318 (96%) patients (161 [97%] SG; 157 [95%] TPC); TTD for global health status/QoL and for pain/fatigue domains included approximately 95% of the ITT population. HRQoL scores favored SG over TPC, however, no significant differences were observed in TTD (median time in months [95% CI]; hazard ratio [95% CI]; log-rank *P* value) of global health status/QoL scale (SG, 3.9 [3.0-5.5] vs TPC, 3.3 [2.2-4.2]; .899 [0.692-1.167]; .4218), pain scale (SG, 5.3 [3.3-7.0] vs TPC, 3.2 [2.7-4.8]; .813 [0.626-1.057]; .1201), and fatigue scale (SG, 2.1 [1.5-3.2] vs TPC, 1.8 [1.5-2.7]; .914 [0.712-1.173]; .4674) between the groups. There were no significant differences in least squares means change from baseline between SG vs TPC in physical functioning (2.6 [95% CI, -0.38 to 5.51; *P* = .088]) and role functioning (3.5 [95% CI, -0.58 to 7.49; *P* = .093]) scales of EORTC QLQ-C30.

Conclusions: The EVER-132-002 trial demonstrated HRQoL scores favoring SG over TPC, consistent with the global TROPiCS-02 study.

STEREOTACTIC PARTIAL BREAST IRRADIATION FOR EARLY STAGE BREAST CANCER IN KOREA: AN UPDATED PERSPECTIVE WITH 1009 PATIENTS

Yong Bae Kim, Sangjoon Park, Jeesuk Chang, Seo Hee Choi, Ikjae Lee

Yonsei Cancer Center, Department of Radiation Oncology, Korea

Background: This study updates our initial findings on stereotactic partial breast irradiation (S-PBI) for early breast cancers in Korean women, focusing on a larger patient cohort and extended follow-

Methods: We retrospectively reviewed 1009 early breast cancer patients treated with S-PBI at our institution from November 2015 to June 2023. Patients underwent 30 Gy radiation in 5 fractions using Cyberknife or Volumetric Modulated Arc Therapy (VMAT), incorporating gold fiducials for tracking in Cyberknife-based S-PBI. We assessed ipsilateral breast tumor recurrence (IBTR), regional recurrence (RR), distant metastasis (DM) rates, survival outcomes, and toxicity. The IBTR, RR, DM rates were estimated with a competing risk model, and survival outcomes with the Kaplan-Meier method.

Result: The median follow-up period was 25.1 months (IQR, 11.6-42.6). According to American Society for Radiation Oncology and American Brachytherapy Society guidelines, 771 patients (76.4%) were suitable, 229 (22.7%) cautionary, and 9 (0.9%) unsuitable, mainly due to age. Of the patients, 839 (83.2%) received Cyberknife-based S-PBI, and 170 (16.8%) underwent VMAT-based S-PBI. The 5-year IBTR rate was 1.3% (95% CI: 0.4%-3.1%), the 5-year RR rate was 0.1% (95% CI: 0.0%-0.7%), and the 5-year DM rate was 0.5% (95% CI, 0.1%-1.4%). The 5-year overall survival (OS) rate was 98.9% (95% CI: 97.7%-100.0%), and the disease-specific survival (DSS) rate was 99.2% (95% CI: 98.0%-100.0%). Acute toxicity was reported in 219 patients (21.7%), predominantly grade 1, while late toxicity was observed in 38 patients (3.8%), with a median follow-up of 13.5 months (IQR, 10.8-25.6). Cyberknife showed better PTV dose homogeneity and contralateral breast and lung doses, while VMAT was superior for ipsilateral lung dose. No significant differences in heart and LAD doses between the two methods.

Conclusions: Our data suggests that S-PBI is effective and safe for early breast cancer, with low recurrence rates and minimal acute and late toxicities.

MACHINE LEARNING-BASED RISK PREDICTION MODEL FOR LATE DISTANT RECURRENCE AND DECISION OF ENDOCRINE THERAPY EXTENSION IN YOUNG WOMEN WITH ER-POSITIVE/HER2-NEGATIVE BREAST CANCER

Dong Seung Shin[1], Janghee Lee[2,3], Jong-Ho Cheun[4], Jun-Hee Lee[5], Eunhye Kang[6,7], Dasom Noh[8], Yeongyeong Son[8], Soong June Bae[9], Sunyoung Kwon[8,10,11], Han-Byoel Lee[6,7,12], Jai Min Ryu[1], Sung Gwe Ahn[9]

[1]Samsung Medical Center, Department of Surgery, Korea, [2]Dongtan Sacred Heart Hospital, Department of Surgery, Korea, [3]Yonsei Univ. Graduate School, Seoul, Department of Medicine, Korea, [4]SMG-SNU Boramae Medical Center, Department of Surgery, Korea, [5]Soonchunhyang Univ. Hospital Seoul, Department of Surgery, Korea, [6]Seoul National Univ. College of Medicine, Department of Surgery, Korea, [7]Seoul National Univ., Department of Cancer Research Institute, Korea, [8]College of Information and Biomedical Engineering, Pusan National Univ., Busan, Department of Information Convergence Engineering, Korea, [9]Gangnam Severance Hospital, Department of Surgery, Korea, [10]College of Information and Biomedical Engineering, Pusan National Univ., Yangsan, Department of School Of Biomedical Convergence Engineering, Korea, [11]Pusan National Univ., Busan, Department of Center For Artificial Intelligence Research, Korea, [12]Seoul National Univ. Hospital, Department of Biomedical Research Institute, Korea

Background: Late distant recurrence (DR) after breast cancer (BC) surgery, particularly in hormone receptor (HR)-positive/HER2(-) subtype, presents a significant challenge. Our study focused on developing a prognostic model for late DR risk in young premenopausal women using machine learning with a multicenter cohort. We also evaluated whether this model could be useful to assess the benefit of endocrine therapy (ET) extension to suppress the late DR.

Methods: We conducted a retrospective study on premenopausal women (age ≤ 45 years) underwent BC surgery between 2000 and 2011 at three institutions in Korea. We excluded the patients who had distant metastasis within 60 months, bilateral BC, or neoadjuvant chemotherapy. Performing repeated 5-fold cross-validation for training, we used logistic regression (LOG), balanced random forest (BRF), random forest (RF), and support vector machine (SVM) algorithms. Patients were categorized into DR high-risk and low-risk groups with or without ET extension.

Result: A total of 1,701 patients were included in this study. The median age of the cohort was 41 years old (range, 21-45) and the median follow-up period was 143.7 months (range, 60.0-257.6). The BRF algorithm with 9 features, including age, tumor size, lymph nodes, nuclear and histologic grade, progesterone receptor status, chemotherapy, ET extension, and ovarian function suppression, achieved the highest AUC with 0.7770. In low-risk patients (n = 1,089), there was no significant difference in distant metastasis free survival (DMFS) between the groups with or without ET extension (Log-rank *P*-value = 0.74), while high-risk patients (n = 612) showed a significant difference (Log-rank *P*-value = 0.01) in DMFS.

Conclusions: In conclusion, we developed a 10-year DR prediction model for young ER(+)/HER2(-) BC patients. This model offers prognostic information for late DR and helps in making decisions for ET extension in each patient. Ongoing validation study of this model with large cohort will further establish its clinical significance.

IS CLINICAL TREATMENT SCORE POST 5-YEARS (CTS5) A PROGNOSTIC FACTOR IN PREMENOPAUSAL BREAST CANCER PATIENTS IN ASTRRA TRIAL?

Yireh Han[1], Soo Yeon Baek[2,9], Sei-Hyun Ahn[4], Jai Min Ryu[5], Seung Il Kim[6], Eun-Gyeong Lee[7], Seock-Ah Im[8], Yongsik Jung[9], Min Ho Park[10], Kyong Hwa Park[11], Su Hwan Kang[12], Joon Jeong[13], Eunhwa Park[14], Sung Yong Kim[15], Min Hyuk Lee[16], Lee Su Kim[17], Woosung Lim[4], Woo Chul Noh[3], Hee Jeong Kim[2], Hyun-Ah Kim[1]

[1]Korea Cancer Center Hospital, Department of Surgery, Korea, [2]ASAN Medical Center, Department of Surgery, Korea, [3]Konkuk Univ. Medical Center, Department of Surgery, Korea, [4]Ewha Womans Univ. School of Medicine, Department of Surgery, Korea, [5]Samsung Medical Center, Department of Surgery, Korea, [6]Yonsei Univ. College of Medicine, Department of Surgery, Korea, [7]National Cancer Center, Department of Surgery, Korea, [8]Seoul National Univ. College of Medicine, Department of Medical Oncology, Korea, [9]Ajou Univ. School of Medicine, Department of Surgery, Korea, [10]Chonnam National Univ. Medical School, Department of Surgery, Korea, [11]Korea Univ. College of Medicine, Department of Medical Oncology, Korea, [12]Yeungnam Univ. College of Medicine, Department of Surgery, Korea, [13]Gangnam Severance Hospital, Department of Surgery, Korea, [14]Dong-A Univ. College of Medicine, Department of Surgery, Korea, [15]Soonchunhyang Univ. Hospital Cheonan, Department of Surgery, Korea, [16]Soonchunhyang Univ. College of Medicine, Department of Surgery, Korea, [17]Chung-Ang Univ. College of Medicine, Department of Surgery, Korea

Background: The CTS5 model is widely recognized for predicting late recurrence in postmenopausal breast cancer patients. However, its use as a prognostic factor in premenopausal women remains unproven and requires validation. Therefore, we examined late distant metastasis-free survival (DMFS) using 8-year follow up data of the ASTRRA trial.

Methods: After excluding breast cancer patients with recurrence within 5 years, CTS5 score was calculated for each patient and individuals were categorized into low, intermediate and high-risk groups. Analyses were conducted for late DMFS and overall survival. In subgroup analysis, we compared the outcomes between tamoxifen (TMX) with ovarian function suppression (OFS) group and TMX-only group.

Result: High risk premenopausal women had a 9.6% late distant metastasis rate after 5 years, while low-risk group showed 3.43% and intermediate-risk group had 2.56% ($p < 0.001$). In subgroup analysis, the late DMFS curve exhibited comparable pattern in TMX + OFS group and TMX-only group. However, TMX + OFS group experienced fewer late distant metastatic events (low & intermediate risk: 7 patients, high risk: 11 patients, $p = 0.004$) than TMX-only group. (low & intermediate risk: 17 patients, high risk: 15 patients, $p = 0.027$) However, no significant difference was observed between low and intermediate risk women in all analysis. (low risk: 5 patients, intermediate risk: 2 patients in TMX+OFS group, low risk: 11, intermediate risk: 6 patients in TMX-only group)

Conclusions: High risk CTS5 group demonstrated a higher late distant recurrence in ASTRRA trial. Our study suggests considering the CTS5 score for premenopausal women, broadening its applicability. Additionally, TMX + OFS group exhibited reduced late distant metastatic events compared to TMX-only group, highlighting the effectiveness of this therapeutic strategy.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

Session on OPBS

"Go Beyond Cure of Breast Cancer"

THE FUTURE OF ONCOPLASTIC SURGERY: INNOVATIONS AND CHALLENGES IN THE AGE OF PERSONALIZED BREAST CANCER SURGERY

Mee Hoong See

Universiti Malaya, Department of Surgery, Malaysia

The future of oncoplastic surgery presents a dynamic landscape characterized by both innovation and challenges in the realm of personalized breast cancer treatment. This presentation explores the evolution of oncoplastic techniques, including advancements in 3D imaging, refined flap procedures, and targeted therapies, all aimed at achieving optimal oncological outcomes and aesthetic results. However, significant obstacles such as multidisciplinary collaboration barriers, training requirements, and disparities in access persist. Looking forward, the integration of minimally invasive techniques, immunotherapy, and patient-centered care models holds promise for further enhancing surgical precision, treatment efficacy, and patient satisfaction. Addressing these challenges necessitates collaborative efforts to bridge gaps in training, promote equitable access to care, and embrace emerging technologies. By doing so, the future of oncoplastic surgery can offer improved outcomes and quality of life for breast cancer patients worldwide.

ONCOPLASTIC SURGERY IN THE MODERN ERA: BALANCING SURGICAL OUTCOMES WITH PATIENT SATISFACTION

Jeeyeon Lee

School of medicine, Kyungpook National Univ., Kyungpook National Univ. Chilgok Hospita, Daegu, Korea, Department of Surgery, Korea

The evolution of oncoplastic surgery (OPS) has transformed the landscape of cancer treatment, merging the meticulous removal of tumors with the art of reconstructive surgery to optimize both oncological and aesthetic outcomes. This lecture delves into the innovative techniques and multidisciplinary approaches that characterize modern OPS, aiming to strike a delicate balance between achieving clear oncological margins and fulfilling aesthetic expectations in patients with breast cancer.

Key of this lecture is the exploration of patient-centered care in OPS. We will examine how surgeons can engage in meaningful conversations with patients about their expectations, fears, and the realistic outcomes of surgery. This includes addressing the psychological impact of cancer diagnosis and treatment, and how OPS can contribute to a confidence and self-esteem post-operatively.

The presentation will feature case studies to illustrate the decision-making process involved in OPS, including considerations for tumor location, size, and the anatomical features. These cases will underscore the importance of a tailored approach that respects both oncological safety and cosmetic results.

In addressing challenges and controversies in OPS, the lecture will encourage an open dialogue on the ethical considerations of aesthetic outcomes in cancer treatment, the criteria for patient selection, and the need for standardized training and accreditation in oncoplastic techniques.

This lecture will provide a forward-looking perspective on the future of OPS, including emerging research areas, potential technological innovations, and the evolving patient expectations that will continue to shape this field.

CONSIDERATIONS FOR IMMEDIATE BREAST RECONSTRUCTION IN PATIENTS AT HIGH RISK OF RADIATION THERAPY

Tomoyuki Yano

Cancer Institute Hospital, Department of Plastic Surgery, Japan

Currently, there are two main methods of breast reconstruction: reconstruction using breast silicone implants and autologous tissue transfer. There are also two timings for breast reconstruction: primary reconstruction, which is done simultaneously with mastectomy, and secondary reconstruction, which is done after series of breast cancer treatment such as chemotherapy and radiation therapy. Generally, radiation therapy adversely affects both methods and timings of breast reconstruction, such as increasing the complication rate and decrease quality of breast reconstruction. Therefore, for patients who are likely to undergo radiation therapy, it is necessary to carefully consider the reconstruction plan and explain the pros and cons of each reconstruction procedure and timing to the patient.

As a principle of our reconstruction strategy for patients who are highly likely to undergo radiation therapy, we usually recommend secondary reconstruction after completing additional breast cancer treatments, including radiation therapy. Especially since radiation therapy will damage blood circulation of the breast skin envelope, and cause scarring and fibrosis of the skin envelope. These adverse effect reduce the quality and softness of the skin envelope and lead to increased complication rates with implant reconstruction. Due to scarring and hardening of the skin, it may not be possible to insert implants of the same size as the contralateral side, resulting in the risk of asymmetry of breast shape. Thus, we recommend autologous tissue reconstruction, which allows for replacing the low quality skin envelopw with softer, texture-similar abdominal skin, achieving sufficient volume, softness, and symmetry in breast shape.

However, some patients strongly desire primary reconstruction. Conventionally, there have been two options. One is primary reconstruction using autologous tissue, which allows for completing both mastectomy and breast reconstruction at the same single surgery. However, if radiation therapy is applied to the reconstructed breast with flaps, the soft breast obtained from autologous tissue may harden due to the radiation, decreasing the quality of the reconstructed breast. This method may be chosen for patients who have been fully informed of disadvantage of this series of procedures and consented. Another option involves placing a tissue expander at the time of mastectomy, and if post-operative radiation therapy is anticipated, quickly expanding the expander and urgently replacing it with an implant before radiation therapy. This method has been explained to patients as carrying risks of severe contracture, post-operative infection, and implant exposure due to skin thinning after surgery. The situation has slightly changed since last year. Until year of 2022, in Japan, only Allergan tissue expanders got approval from the Ministry of Health, so they were used in all cases. However, due to the metallic components in Allergan expander interfering with radiation planning, our hospital used to perform an urgent implant exchange before radiation therapy. Since 2023, Motiva Flora expanders from Establishment Labs, which have fewer metallic components, have become covered by national insurance, allowing radiation therapy with

the expander in place due to reduced interference. Going forward, it seems we will be able to perform radiation therapy without having to urgently switch to an implant. However, the potential for increased complication rates and decreased reconstruction quality remains, so patients must be fully informed of these disadvantages before applying this series of procedures. To overcome these disadvantages, hybrid reconstruction combining implants with the LD flaps is also available for some patients.

Finally, there is the scenario that is placing a tissue expander followed by implant reconstruction as a secondary reconstruction. This method is clearly disadvantageous and is not recommended, but some patients strongly desire it due to the burden and fear of autologous tissue transfer. In facilities lacking the technical expertise for autologous tissue reconstruction, this method may be the only option. Placing an expander under the breast skin envelope after radiation therapy increases the risk of post-operative infections and significantly deteriorates skin quality due to hardening and reduced blood flow, requiring spaced intervals for saline injections and extending the expansion period. Hardening and thinning of the skin may prevent achieving the same volume as the contralateral breast, especially for medium to large-sized breast, leading to obvious asymmetry, as well as risks of cranial deviation and contracture, making it clear this method has numerous disadvantages.

Given the clear advantages and disadvantages of each reconstruction method for patients likely to undergo radiation therapy, it is necessary to thoroughly explain these factors before surgery. For patients who may undergo radiation therapy, since autologous tissue reconstruction becomes key, it may be necessary to refer patients to facilities capable of autologous tissue reconstruction to ensure the quality of breast reconstruction.

SURGICAL DIFFICULTY OF NIPPLE-SPARING MASTECTOMY AND RECONSTRUCTION BASED ON MASTECTOMY INCISION LOCATION

Hyun Ho Han

ASAN Medical Center, Department of Plastic Surgery, Korea

Mastectomy incision is used in various ways depending on the surgeon's preference. Classic radial, lateral, IMF, periareolar, etc. are used, and they are also used as hybrids. Depending on each incision, the strategy can be different when performing breast reconstruction surgery, and the pros and cons of each may vary.

Mastectomy flap compromise rate, recipient selection for flap reconstruction, etc. can be different defferent

I will introduce each of them in this lecture.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

Session on HBOC

"Go Beyond Cure of Breast Cancer"

LONG-TERM OUTCOME OF BRCA1/2 MUTATION WITH BREAST CANCER IN ASIA

Ava Kwong

The Univ. of Hong Kong, Department of Surgery, Hong Kong

It has been over 20 years since the first hypothesis and discoveries of the BRCA genes in hereditary breast cancer. These discoveries have led to remarkable advancements in our global understanding of oncogenesis and have had significant implications in genetic testing, individualized treatment approaches, targeted therapies, risk-based cancer prevention strategies, and family counseling for healthy relatives. A These advancements are now integral parts of routine breast and ovarian cancer care, providing a whole new context for treating breast cancer patients and their family members. Over the years, it has been expected that BRCA carriers would experience improved survival outcomes due to preventive measures and early cancer detection. In particular, the development of Poly (ADP-ribose) polymerase (PARP1) inhibitors for treating BRCA1/2-deficient cancers was anticipated to yield substantial gains in progression-free survival and overall survival for patients.

We studied one of the largest Asian local cohort of 444 BRCA1 and BRCA2 germline mutation carriers. Real-world survival outcomes data was assessed based on the risk of developing new contralateral breast cancer, disease-free survival, and overall survival. Among this cohort, 209 (47.1%) carried a BRCA1 mutation, and 235 (52.9%) carried a BRCA2 Pathogenic /Likely-Pathogenic mutation. The median follow-up for all patients was 64 months. We then conducted a meta-analysis on these survival outcomes in Asian populations.

Using a multivariable Cox proportional hazards model, considering survival outcomes for the overall cohort, patients with specific demographic characteristics, and the impact of treatment options on survival showed an estimated 5-year risk of developing contralateral breast cancer was to be 86.1% for BRCA1 carriers, 90.4% for BRCA2 carriers, and 96.9% for non-carriers ($p < 0.001$ and $p = 0.001$). However, no significant differences between disease-free survival and overall survival were observed when comparing BRCA carriers with non-carriers. BRCA1 mutation carriers showed slightly poorer overall survival compared to BRCA2 carriers.

The demographic characteristics also revealed that only patients with stage 0-II disease exhibited a higher risk of contralateral breast cancer among BRCA1 carriers (Hazard ratio [HR], 2.50; 95% CI, 1.81-3.45; $p < 0.001$) and BRCA2 carriers (HR, 2.10; 95% CI, 1.46-3.02; $p < 0.001$) compared to non-carriers. Hormonal-positive BRCA1 mutation carriers showed a significant worsening in disease-free survival compared to non-carriers (HR, 2.08; 95% CI, 1.22-3.56; $p = 0.007$). However, this disease-free survival decline was insignificant for hormonal-positive BRCA2 carriers. In terms of overall survival, significantly worsened OS was observed, particularly in early-stage cancer patients who were BRCA1 or BRCA2 mutation carriers (BRCA1: HR, 1.990; 95% CI, 1.162-3.410; $p = 0.012$; BRCA2: HR, 1.820; 95% CI, 1.023-3.240; $p = 0.042$). Moreover, among patients with hormonal-positive breast cancer, only BRCA1 mutation carriers exhibited a significant decline in OS compared to non-carriers (BRCA1: HR, 2.896; 95% CI, 1.439-5.830; $p = 0.003$; BRCA2: HR, 1.166; 95% CI, 0.681-1.997; $p = 0.575$).

We conducted a univariate/multivariate meta-analysis on the Asian population. BRCA mutation carriers showed a significantly higher risk of having contralateral breast cancer compared to the control group in univariate analysis (HR, 4.52; 95% CI, 1.5912.89; $p = 0.0047$). BRCA mutation carriers were also found to have poorer disease-free survival than the control group in univariate analysis (HR, 1.43; 95% CI, 1.081.91; $p = 0.0133$), but the association was not significant in multivariate analysis (HR, 1.25; 95% CI, 0.84-1.84; $p = 0.2709$). No significant impact was observed on overall survival in BRCA on multivariate analysis.

Only BRCA2 mutation carriers showed a significant poorer disease-free survival compared to the control group (BRCA1: HR, 1.52; 95% CI, 0.94-2.46; $p = 0.091$; BRCA2: HR, 1.41, 95% CI, 1.111.79; $p = 0.0055$). Limited studies are currently available in Asia to compare other specific associations between either BRCA1 or BRCA2 and non-carriers.

Our registry of hereditary breast cancer allows us to study in details the genetic and genomic implications in breast cancer. This resource is invaluable for us to monitor our clinical practice and to provide further insight into designing better care for our patients.

IS IT TIME BRCA1/2 GENETIC TEST AS A COMPANION DIAGNOSIS OF BREAST CANCER?

Seigo Nakamura

Showa Univ. School of Medicine, Department of Beast Surgical Oncology, Japan

Genetic counselling, risk-reducing surgeries and various kinds of surveillance for HBOC have been covered under national health insurance since Apr.2000 in Japan.

BRCA testing for HBOC has been approved at the same time. In the testing criteria, under 45 is the upper limit of age.

However, whether under 50 by NCCN guideline or under 65 by ASCO recommendation is a big issue for revision of HBOC guideline in Japan.

Consideration of cost-effectiveness is important to determine the testing criteria.

Especially, it is very important from the stand point of the usage of limited national health budget.

Individually, the value of BRCA testing is different and genetic counseling to explain its merit and demerit including cost is significant.

Originally, Japanese health insurance system has equally covered everybody in principle, however, certain amount of health care cost is forced to pay by themselves because of its rapid escalation.

Therefore, cost-effectiveness analysis is important to consider BRCA testing criteria.

GASTRIC CANCER RISK AND MANAGEMENT IN BRCA1/2 MUTATION

Yoon Young Choi

Soonchunhyang Univ. Hospital Bucheon, Department of Surgery, Korea

The association between germline mutations in the BRCA1/2 genes and the development of breast and ovarian cancer is well-documented, with extensive research validating this link. Recent advancements in sequencing technology have facilitated large-scale germline evaluations, leading to reports on the relationship between BRCA1/2 carriers and a broader spectrum of cancers beyond breast and ovarian malignancies. Gastric cancer, while less common in the West where genomic studies are more prevalent, has historically been understudied in the context of hereditary syndromes, with exceptions primarily limited to CDH1 mutations. However, recent updates have highlighted findings regarding BRCA1/2 in gastric cancer, especially from regions in Asia where the disease is more prevalent. Notably, a significant study from Japan has revealed a higher incidence of BRCA1/2 mutations in gastric cancer than previously recognized. Although research within Korea remains scarce, these developments suggest an impending need for increased examination and testing of cancer-predisposing genetic mutations, including BRCA1/2, to better understand their impact and potential in Korean populations.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

Session on Survivorship

"Go Beyond Cure of Breast Cancer"

INTERVENTION FOR COGNITIVE DYSFUNCTION AND FATIGUE MANAGEMENT IN WOMEN WITH BREAST CANCER

Tara Sanft

Yale School of Medicine, Department of Medical Oncology, U.S.A.

This session will cover the problems of cognitive dysfunction and fatigue associated with breast cancer treatment. These two side effects have commonalities in terms of prevalence, contributing factors and interventions that may improve their impact. Interventions including addressing reversible causes, treatment co-morbidities, pharmacologic and behavioral interventions will be reviewed.

INTEGRATIVE ONCOLOGY IN BREAST CANCER PATIENTS

Etienne Brain

Institut Curie, France

INCORPORATING COMPREHENSIVE AND INTEGRATIVE MEDICINE

Young Ju Jeong

Daegu Catholic Univ. School of Medicine, Department of Surgery, Korea

Comprehensive and integrative medicine (CIM) is a medical service that provides holistic treatment through the convergence of western medicine, traditional medicine, regenerative medicine, and complementary and alternative medicine (CAM).

In recent years, as interest in CIM has increased among cancer patients and their families as an adjunct to conventional therapy, more medical clinics and cancer centers are trying to address public interest and demand by providing CIM services (1). In 2003, the International Society of Integrative Oncology (SIO) was founded through a joint effort of the Dana-Farber Cancer Institute (DFCI), the Memorial Sloan Kettering Cancer Center and the American Cancer Society (ASCO). In addition, European university hospitals such as the United Kingdom, France, and Germany have similar centers and educational institutions earlier than the United States (2). In Korea, the Comprehensive & Integrative Medicine Institute (CIMI) was established in 2009 to provide integrated medical care. The CIMI is a non-profit foundation established by Daegu Metropolitan City, Daegu Catholic University Medical Center (DCUMC), and Daegu Haany University Medical Center under the sponsorship of the Ministry of Health and Welfare of Korea. Since 2009, faculties of DCUMC and Daegu Haany University Medical Center have conducted national R&D project through a cooperative system. In particular, over the past 15 years, we conducted CIM studies on breast cancer patients suffering from various cancer-related symptoms such as hot flashes, chemotherapy-induced peripheral neuropathy, fatigue, endometrial symptom and lymphedema.

Recently, parallel randomized trials were developed as a collaboration between the Leonard P. Zakim Center for Integrative Therapies and Healthy Living at the DFCI and the CIMI. From 2018 to 2021, a coordinated multinational study to evaluate the impact of acupuncture on hot flashes and related symptoms in hormone receptor-positive breast cancer patients undergoing adjuvant endocrine therapy was conducted at three sites: DFCI, Boston, MA, US; DCUMC, Daegu, Republic of Korea; and Jiangsu Province Hospital of Traditional Chinese Medicine, Nanjing, China (3). The results of a pooled analysis of individual patient data from this trial were presented at the 2022 ASCO Annual Meeting, which showed that acupuncture led to statistically and clinically meaningful improvements in hot flashes, endocrine symptoms, and breast cancer-specific quality of life in women undergoing adjuvant hormonal therapy for breast cancer in the USA, South Korea and China (4). Currently, the same three-country collaborative research team has completed another randomized CIM study design for breast cancer patients and is conducting clinical trials (Clinical Trial Registry Numbers: NCT05528263, KCT0008470 and ChiCTR2200066714, respectively). Research results are expected in 2025, and we hope that these CIM studies can help reduce cancer-related symptoms and improve quality of life in breast cancer survivors.

Despite efforts to incorporate CIM into the current health care system, there is still limited research on it, and researchers are exploring the potential benefits of CIM and the best method to integrate CIM into conventional cancer care (1,5). There are multiple barriers affecting the use of CIM in cancer patients including patients' perspectives and personal circumstances such as current health status, physical mobility, access to transport, available social support, the intensity of cancer treatment. Also, cultural barriers, lack of reliable information and scientific evidence, and cost can be barriers. Many cancer survivors are using CAM to help ease their cancer-related symptoms and reduce the side effects of cancer treatment. Although CAM is not a replacement for cancer treatment and no complementary health treatment has been proven to cure cancer, CAM have shown benefits to patients and are used to complement the main cancer treatment (5). As CIM is evolving, it should be emphasized that CIM is a patient-centered, evidence-informed field of comprehensive cancer care (6). The foundation of the SIO and the release of clinical practice guidelines of integrative therapies by SIO demonstrate the importance of rigorous scientific research and evidence-informed practice in cancer care (6,7). Recently, ASCO endorsed SIO clinical practice guidelines on the evidence-based use of integrative therapies for women with breast cancer (6,8). Health providers who treat breast cancer patients need to understand that CIM can help breast cancer survivors, and to recognize what types of CIM can be beneficial and safe for patients.

References

1. Frenkel M, Cohen L. Hematol Oncol Clin N Am 2008;22:727-736.
2. Lee SJ. Hanyang Med Rev 2010;30(2):75-83.
3. Lu W, et al. Contemp Clin Trials 2022;121:106885.
4. Lu W, et al. J Clin Oncol 2022;40:16_suppl, 12124-12124.
5. https://www.lls.org/treatment/integrative-medicine-and-complementary-therapies.
6. Latte-Naor S, Mao JJ. J Oncol Pract 2019;15(1):7-14.
7. Lyman GH, et al. J Oncol Pract 2018;14(8):495-499.
8. Greenlee H, et al. CA Cancer J Clin 2017;67(3):194-232.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

Session on Digital Health

"Go Beyond Cure of Breast Cancer"

TECH & PATIENT-CENTRIC CANCER CARE

Eunsu Park

Lunit Care, Korea

HRS: STANDARD-BASED MULTI-INSTITUTIONAL RESEARCH PLATFORM

Soo-Yong Shin

Kakao Healthcare, Department of Technological Lab, Korea

In recent times, the rapid advancement of AI technology has led to the proposal of Medical Foundation Models and the active development of Artificial Intelligence-enabled Medical Devices (AIMD) or Machine Learning-enabled Medical Devices (MLMD), which are gradually being applied in clinical settings. When developing AIMDs/MLMDs, it is crucial to minimize data bias by training with data from multiple institutions and validating with data from other institutions that were not used in training. Especially lately, without such multi-institutional training/validation, it has become nearly impossible to get published in top-tier journals or to obtain certification/approval for medical devices.

However, utilizing multi-institutional data requires navigating through the administrative processes of individual hospitals\\\\\\\\\\\\\\\' Institutional Review Boards (IRB) and Data Review Boards (DRB), which can be significantly time-consuming. Moreover, as medical institutions become more stringent in their review processes in terms of patient information protection and asset management, the inconvenience for researchers has been increasing.

In the aspect of technology, since the early 2000s, with the emergence of internet portal companies, various issues related to personal information protection have been highlighted, leading to active research in Privacy-Preserving Data Mining (PPDM). Google\'s proposal of Federated Learning (FL) technique, aimed at utilizing the computing resources of individual smart devices to save the company\'s computing resources, has emerged as a prominent technology in PPDM due to its characteristic of not exporting data externally, and its utility has been proven in various fields. Particularly in the medical field, it has started to be preferred as a cutting-edge technique for data analysis while protecting patient information, applied to images, genomics, and EMR data, among others.

This presentation will introduce the Healthcare Research Suite (HRS) that is currently under development by KakaoHealthcare in collaboration with thirteen Research-Alliance (R-A) hospitals. We will particularly highlight its Federated Learning module, developed in partnership with Google Cloud. The focus will be on three key areas: 1) the efforts made to standardize each hospital\'s data according to the Universal Data Model (UDM) by KakaoHealthcare; 2) how the Federated Learning was implemented in collaboration with Google Cloud; and 3) the validation of this technology through its application to real patient data obtained from the R-A hospitals.

DIGITAL HEALTHCARE 2024: AGE OF GENERATIVE AI

Koon-Ho Rha

Naver Healthcare, Department of Oncology and Hemato-Oncology, Korea

With the emergence of Open AI's ChatGPT in 2022 and Google's Bard in 2023, interest in digital healthcare is increasing not only in various fields of society but also in the medical field. The past of digital healthcare begins with the Electronic Health Record (EHR) of the 1980s. It was adopted in storage and prescription and developed until the early 2000s with the digitization of patient records. In the early 2000s, the Internet began to exchange health information online, and with the spread of smartphones and mobile devices that began in the late 2000s, mobile health care (mHealth) began to provide a different aspect of health care. The application enables individuals to monitor their health conditions using mobile apps and wearable devices, and manage chronic diseases as well as exercise.

Current digital healthcare has the following representative aspects.

1. Remote Patient Monitoring: Using wearable devices, sensors, etc., RPM has the potential to collect patient health data through real-time monitoring and enable more efficient and personalized care in medical personnel and medical institutions.

2. Digital Therapy: Software-based digital therapy is a new category that can prevent or manage diseases by identifying health conditions, mainly in the field of mental health and in the management of chronic diseases.

3. Health Information Exchange (HIE) and Interoperability: In Korea, efforts are being made to promote interoperability and health information exchange (HIE) between different medical systems for smooth sharing of medical information led by the Ministry of Health and Welfare and the Health and Medical Information Service. As a representative example, standards such as Fast Healthcare Interoperability Resources (FHIR) were considered to enable interoperability between different EHR systems, health platforms, and other digital solutions. Interoperability and HIE will help reduce duplicate tests and improve patient outcomes in the long run.

4. Digital Health Startup: Many startups are emerging in various fields such as digital therapy, remote patient monitoring, and artificial intelligence solutions. In particular, as investments such as venture capital are intertwined, the activation of medical entrepreneurship by providing funds constitutes a large framework for innovation in healthcare.

In the future, especially in the era of the introduction of innovative technologies such as Generative Artificial Intelligence and Large Language Model (LLM), the following potential impacts are expected.

1. Improving the efficiency of providing medical services: Artificial intelligence-based medical technology can streamline medical processes such as simple repeated questionnaires and patient education in a way that minimizes intervention of medical personnel. For example, it can improve the overall productivity of the labor-intensive medical system, such as efficient use of waiting times and reducing repetitive tasks of medical personnel.

2. Strengthen Medical Decision Support: Artificial intelligence technology can provide medical personnel with a Clinical Decision Support System, making evidence-based treatment and treatment options more efficient. In particular, it is expected that medical personnel's expertise can be enhanced and outcomes can be improved in an environment where time constraints such as the latest knowledge and treatment environment are inevitable.

3. Improving access to healthcare: Digital healthcare technology can improve access to healthcare services in real-time, spatio-temporal, and especially temporal. For example, AI will be able to respond to questions before and after treatment in the form of Frequently Asked Questions (FAQ), and filter out more emergencies to reduce the burden on healthcare institutions and improve patient access in three dimensions.

4. Providing Human-Centered Services: Artificial intelligence-based solutions will be used to provide human-centered design and user experiences in the future. Naver's CareCall, developed in 2021, is capable of voice-based basic welfare services as well as emotional care for the elderly living alone based on the Hyperclova engine, which is a self-generated artificial intelligence. As of May 2023, it is possible to provide services to 15,000 senior citizens in 53 local governments in Korea. This is a human-centered technology that helps to efficiently use human resources such as living welfare centers and health centers that provide welfare/medical services as well as the satisfaction of the elderly.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

GBCC-TBCS Joint Session

"Go Beyond Cure of Breast Cancer"

EPIDEMIOLOGY AND CHARACTERISTICS OF YOUNG PATIENTS WITH BREAST CANCER IN ASIAN COUNTRIES

Ching-Hung Lin

National Taiwan Univ. Hospital, Department of Medical Oncology, Taiwan

The incidence of breast cancer in Asia is typically lower than that in Western countries. However, the breast cancer registry statistics indicated that this incidence has rapidly increased over past 3 decades in East Asian countries such as Singapore, Korea, Japan, China, and Taiwan. Previous studies have reported a much stronger birth cohort effect on the incidence of breast cancer in East Asian countries compared with Western countries, and this effect is directly correlated with a rapid surge of young female breast cancer (YFBC) in East Asia.

The "Westernized" lifestyle is intuitively considered the major cause of the rapid increase of YFBC in Asia. Therefore, emerging YFBC in East Asia considered to be a mirror image of its Western counterpart. However, our recent studies have revealed major discrepancies in clinicopathological features, molecular subtypes, and prognosis between Taiwanese and Caucasian YFBCs. Specifically, Taiwanese YFBCs are characterized by a high prevalence of low histological grade and luminal subtype, defined as ER and/or PR positive and HER2 negative, and favorable prognosis. Consistent findings were found in Japan and Asian Americans. These highly suggest that the emerging YFBCs in East Asia belong to a new disease entity. In this presentation, I will review the clinicopathological and genetic differences in breast cancer between East and West, and illustrate the racial differences in treatment perspectives.

SURGICAL MANAGEMENT OF BREAST CANCER IN YOUNG ASIAN PATIENTS AND PERSPECTIVES IN CLINICAL RESEARCH

Jai Min Ryu

Samsung Medical Center, Department of Surgery, Korea

It's notable that there is indeed a higher proportion of young breast cancer patients in Asian countries compared to Western countries. This demographic difference often leads to variations in the approach to surgical management and clinical research focus. In Korea specifically, several study groups are dedicated to advancing the understanding and treatment of breast cancer, particularly in young patients.

Korean Breast Cancer Study Group (KBCSG): This group focuses on various aspects of breast cancer research, including epidemiology, pathology, treatment strategies, and outcomes assessment. It plays a crucial role in conducting multicenter studies and clinical trials to improve the management of breast cancer in Korean patients.

KOrea Robot Endoscopic minimal access Breast cancer Study Group (KoREa-BSG): This specialized group likely concentrates on the development and utilization of minimally invasive and robotic surgical techniques for breast cancer treatment. These approaches aim to minimize scarring, reduce recovery time, and improve cosmetic outcomes for patients undergoing breast cancer surgery.

Korea Oncoplastic Breast Surgery Study Group (KOPBS): Oncoplastic surgery combines oncologic principles with plastic surgery techniques to achieve better cosmetic outcomes while ensuring complete tumor removal. This group is likely dedicated to advancing oncoplastic breast surgery techniques and conducting research to evaluate their effectiveness and long-term outcomes in Korean patients.

Each of these study groups likely contributes significantly to the body of knowledge surrounding breast cancer management in Korea, with a particular focus on addressing the unique needs and characteristics of young Asian patients. Their collaborative efforts in clinical research can lead to advancements in surgical techniques, treatment protocols, and ultimately, better outcomes for breast cancer patients in Korea and potentially beyond.

MEDICAL MANAGEMENT OF BREAST CANCER IN YOUNG ASIAN PATIENTS AND PERSPECTIVES IN CLINICAL RESEARCH

Chi-Cheng Huang

Taipei Veterans General Hospital, Department of Surgery, Taiwan

Young female breast cancers may exhibit certain characteristics that distinguish it from older patients. They may display more aggressive nature, advanced stage in diagnosis, high grade tumor, less likely to express hormone receptors, and more likely to have genetic alterations. Consequently, young patients represent a special subset of Asian breast cancer cohort with unmet clinical needs especially in fertility concerns and psychosocial impact.

In this presentation we will use the Taiwan Cancer Registry (TCR), to evaluate the clinical characteristics, treatment patterns and prognostic factors from real-world data. Early detection and advances in novel therapeutics have improved outcomes for breast cancers of all ages. Regular breast awareness, clinical breast exams, and mammography screening are essential of early detection, and these public health issues should be promptly discussed with healthcare providers, clinicians, and young female population collectively.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

GBCC-SSO Joint Session

"Go Beyond Cure of Breast Cancer"

SENTINEL LYMPH NODE BIOPSY IN UPFRONT SURGERY

Tari King

Dana-Farber Brigham Cancer Center, Department of Surgery, U.S.A.

SLN biopsy is standard practice for staging the axilla in node negative patients undergoing upfront surgery. This was clearly established in NSABP B32 which confirmed that SLN alone was equivalent to SN+AND in node negative pts with no difference in OS, DFS or local-regional failure between the two groups and true axillary failure rates of < 1% despite the fact that the FNR was 9.8% . For patients presenting with cT1-2N0 breast cancer who are found to have 1-2+ SLN we now have a large body of RCT data demonstrating no difference in DFS, OS or axillary recurrence rates between ALND and observation (Z0011, IBCSG and AATRM) or ALND and AxRT (AMAROS and OTOASOR). Additional positive nodes in the ALND arms were reported in 27-38% pts in the trials of macromets and 13% of patients in the trials of micromets and while axillary recurrence rates in the ALND arms ranged from 0.2-2% they were not different from axillary recurrence rates in the investigational arms. Demonstrating that with basic eligibility criteria one can select a population of patients with limited nodal involvement where SLNB is sufficient for axillary staging yet further axillary surgery is not required for local control. These data have now been expanded to include patients with larger tumors (cT1-3) and to include more patients treated with mastectomy owing to the recent publications of the SENOMIC and SENOMAC trials. It is clear that for patients undergoing mastectomy, who are found to have positive SLNs, PMRT + AxRT provides durable local regional control with less morbidity than ALND and omission of intraoperative nodal evaluation affords the opportunity for multi-disciplinary treatment planning and decreases potential overtreatment with ALND + PMRT+ AxRT.

Given advances in systemic therapy we have also now witnessed a shift in the importance of identifying even limited nodal disease preoperatively in pts with triple negative or HER2+ breast cancer. As such our practice now includes routine axillary US for patients with cT1c HER2+ and triple negative breast cancer to identify patients that may benefit from a neoadjuvant chemotherapy approach. For patients with hormone receptor (HR) positive HER2 negative breast cancer the questions are becoming more nuanced and given the results of RxPONDER which demonstrated no chemotherapy benefit for post-menopausal pts with 1-3 positive nodes and RS < 26, it is increasingly clear that biology and not nodal disease should be the driving factor for systemic therapy decisions. The low rates of high axillary disease burden (pN2 disease) in this cohort argues against ALND for routine decision making and also supports careful implementation of the SOUND clinical trial data in practice. Among premenopausal patients with node positive HR+HER2- disease, decision making may be more nuanced however it should remain the rare patient where complete ALND is required for systemic therapy decisions.

SENTINEL LYMPH NODE BIOPSY AFTER NEOADJUVANT CHEMOTHERAPY

Jeong Eon Lee

Samsung Medical Center, Department of Surgery, Korea

Recently, neoadjuvant chemotherapy has been increasingly employed in breast cancer treatment, especially in triple negative breast cancer and Her-2 positive breast cancer with or without a combination of Immune checkpoint inhibitors or targeted agents. The expectation of pCR is getting high.

Sentinel lymph node biopsy (SLNB) is a simple procedure commonly used in the management of breast cancer. It was initially introduced from the methods of lymph node detection in melanoma patients, and widely spread in three decades saving lots of women from the risk of lymphedema without any additional benefit from the axillary lymph node dissection. Although the risk of arm discomfort is relatively low in SLNB compared to axillary lymph node dissection, there is indeed a certain number of complications after SLNB. Because of this reason, even the omission of doing SLNB has been tried, and we are just starting to see the results.

Then, what about doing the SLNB after neoadjuvant chemotherapy? Despite the lack of any firm evidence from randomized prospective studies, there must be little argument for doing SLNB in initially cN0 patients with around or less than a 10% false negative rate. There has been no clue for the reason why '10%' has become a psychologic limit of mental comfort for breast cancer surgeons, it has been known that the real isolated axillary lymph node recurrence rate is shallow as 1% to 2% with no difference in terms of disease-free survival or overall survival. With this observation, a few observational studies which skip any axillary lymph node procedure, such as ASLAN, ASICS, and EUBREAST-01, are now undergoing in cases of the exceptional responders of neoadjuvant chemotherapy in triple negative breast cancer and Her-2 positive breast cancer.

Is it possible to do the SLNB in initial cN1/2 patients? With the examination of three or more sentinel lymph nodes, it has been known that we may decrease the false negative rate around or below 10%. In cases of marking or clipping before the suspicious node(s) disappear and successful removal, it is known that we may decrease the false negative rate as low as 2%. Considering the coupling rate of pCR in the breast and axilla is above 85% even in patients with initial cN1/2, we may try SLNB in good responders with a chance of pCR in the axilla. What can be the next story then? Can we skip the SLNB in excellent responders in triple negative breast cancer and Her-2 positive breast cancer? I hope we can get some clues in a few years. However, the goal should be the proper optimization rather than a blind unconditional pursuit of decrease.

SENTINEL LYMPH NODE BIOPSY IN IPSILATERAL BREAST TUMOR RECURRENCE

Ko Un Clara Park

Dana-Farber Brigham Cancer Center, Department of Surgery, U.S.A.

Despite advancements in breast cancer treatment, questions persist regarding the necessity and efficacy of repeat sentinel lymph node biopsy (SLNB) for breast cancer recurrence. This talk will discuss the role of repeat SLNB in the management of breast cancer recurrence. Specifically, the discussion will stem on the definition of recurrence varying from true recurrence versus new primary. There are prognostic factors associated with nodal involvement in recurrence which will be discussed. The feasibility of repeat SLNB depends on various factors, including initial treatment modality and previous axillary surgery. Technical considerations of repeat SLNB will be discussed. Further research is warranted to elucidate the role of surgical axillary staging in recurrence, optimize techniques for repeat SLNB, and address unresolved questions regarding lymphatic drainage patterns and injection techniques.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

GBCC-CACA Joint Session

"Go Beyond Cure of Breast Cancer"

ADVANCEMENTS IN TARGETED THERAPIES: MANAGING HER2+ METASTATIC BREAST CANCER IN CHINESE PATIENTS

Pengfei Qiu

Shandong Cancer Hospital and Institute, China

EXPLORING EMERGING STRATEGIES: ADDRESSING TRIPLE-NEGATIVE METASTATIC BREAST CANCER IN KOREAN PATIENTS

Koung Jin Suh

Seoul National Univ. Bundang Hospital, Department of Medical Oncology, Korea

Triple-negative breast cancer (TNBC) represents a diverse subtype of breast cancer characterized by its aggressive nature and poor prognosis. Despite cytotoxic chemotherapy being the primary treatment for most patients with metastatic TNBC (mTNBC), response durations are typically brief, with a median overall survival of only 12 to 18 months. Thus, it's imperative to explore innovative therapeutic approaches to enhance outcomes in this population. This presentation will delve into recent advancements in mTNBC management, including the adoption of immune checkpoint inhibitors, targeted therapies, and antibody-drug conjugates. Additionally, it will offer insights into recent clinical trials conducted in Korea, ongoing research initiatives, regulatory approvals, and domestic guidelines, providing a comprehensive overview of the Korean landscape in TNBC management.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

GBCC-JBCS Joint Session

"Go Beyond Cure of Breast Cancer"

DE-ESCALATION THERAPY FOR LOW-RISK HER2-POSITIVE EARLY-STAGE BREAST CANCER

Kazuki Nozawa

Aichi Cancer Center Hospital, Department of Breast Oncology, Japan

Developments in both escalation and de-escalation therapies have been recognized in the treatment of HER2-positive early breast cancer. Particularly in the context of de-escalation treatment, the APT trial, which reported on the effectiveness of a regimen combining Trastuzumab and Paclitaxel, has established a standard treatment despite being a single-group study. This approach is representative of de-escalation treatment strategies. Now, it is proposed that de-escalation treatment be personalized further through the use of multi-gene assays.

PROGNOSTIC IMPACT OF ADJUVANT ENDOCRINE THERAPY BY AGE FOR PATIENTS WITH T1A/BN0M0 ER-POSITIVE AND HER2-NEGATIVE BREAST CANCER

Yuko Takahashi[1], Shinsuke Sasada[2], Kaori Terata[3], Kumiko Kida[4], Yasuaki Sagara[5], Takayuki Ueno[6], Keisei Anan[7], Akihiko Suto[8], Chizuko Kanbayashi[9], Mina Takahashi[10], Rikiya Nakamura[11], Toshiyuki Ishiba[12], Michiko Tsuneizumi[13], Seiichiro Nishimura[14], Yukinori Ozaki[6], Akihiko Shimomura[15], Takehiko Sakai[6], Yoichi Naito[16], Hideo Shigematsu[2], Hiroya Hashimoto[17], Tomomi Fujisawa[18], Takashi Hojo[19], Fumikara Hara[6], Hiroji Iwata[20], Tadahiko Shien[1]

[1]Okayama Univ. Hospital, Department of Surgery, Japan, [2]Hiroshima Univ., Department of Surgical Oncology, Japan, [3]Akita Univ. Hospital, Department of Breast and Endocrine Surgery, Japan, [4]St. Luke's International Hospital, Department of Breast Surgical Oncology, Japan, [5]Social medical corporation Hakuaikai Sagara Hospital, Department of Surgery, Japan, [6]The Cancer Institute Hospital of Japanese Foundation for Cancer Research, Department of Breast Oncology Center, Japan, [7]Kitakyushu Municipal Medical Center, Department of Surgery, Japan, [8]National Cancer Center Hospital, Department of Breast Surgery, Japan, [9]Niigata Cancer Center Hospital, Department of Breast Oncology, Japan, [10]National Shikoku Cancer Center Hospital, Department of Breast Oncology, Japan, [11]Chiba Cancer Center, Department of Breast Surgery, Japan, [12]Tokyo Medical and Dental Univ., Department of Surgery, Japan, [13]Shizuoka General Hospital,, Department of Breast Surgery, Japan, [14]Shizuoka Cancer Center Hospital, Department of Breast Surgery, Japan, [15]National Center for Global Health and Medicine, Department of Breast and Medical Oncology, Japan, [16]National Cancer Center Hospital East, Department of Medical Oncology, Japan, [17]Nagoya Medical Center, Department of Clinical Research Division, Japan, [18]Gunma Prefectural Cancer Center, Department of Breast Oncology, Japan, [19]Saitama Medical Univ., Department of Breast Oncology, Japan, [20]Nagoya City Univ. Graduate School of Medical Sciences, Department of Breast and Endocrine Surgery, Japan

Backgrounds: We previously reported an analysis of the impact of adjuvant endocrine therapy (ET) for patients with ER+ and HER2- T1a/bN0M0 breast cancer (BC) (Breast Cancer Res Treat, 202, 473483, 2023). For the whole cohort, adjuvant ET significantly reduced distant metastases (DM), but the absolute overall survival (OS) difference was small. The presence of medical comorbidities related to treatment toxicity and the estimated life-expectancy differ based on age, affecting the clinical impact of ET. There may be settings where co-morbidities result in a sufficiently short, expected OS such that the benefit of ET will not outweigh risk.In multivariate analysis, age (55 vs > 55) was not an independent risk factor for DM.Here we evaluate the impact of adjuvant ET for ER+/HER2- T1a/bN0M0 breast cancer by age-specific subgroups, focusing on younger (< 41) and older (> 64) population.

Methods: This is a multicenter retrospective cohort study that evaluated the impact of adjuvant ET for patents with ER+/HER2- T1a/bN0M0 BC who underwent primary breast cancer surgery between 2008 and 2012 in 47 institutes of the Japan Clinical Oncology Group (JCOG). We analyzed the cumulative incidence of DM with Gray's-test and distant metastasis-free survival (DMFS) and OS using Kaplan-Meier estimates with log-rank test in patients treated with and without ET in each of three age-specific subgroups (< 41, 41-64, and 64 > years of age).

Results: Median follow-up was 9.2 years; the median age was 55. Of 4756 eligible patients, 417 patients were

< age 41 (331 and 86 with and without ET, respectively), and similarly, 3087 patients were aged 41-64 (2633 and 454) and 1252 patients were > age 64 (1025 and 227). In the < 41 subgroup, 9-year cumulative incidence of DM was 1.7% with ET and 9.1% without ET ($p = 0.04$), 9-year DMFS was 97.2% vs 91.0% ($p = 0.023$), and similarly, 9-year OS was 97.8% vs. 97.0% ($p = 0.954$). In the > 64 subgroups, 9-year cumulative incidence of DM was 1.2% with ET and 1.9% without ET ($p = 0.449$), though, 9-year DMFS was 92.6% vs. 84.0% ($p < 0.01$), and 9-year OS was 93.8% vs. 84.9% ($p < 0.01$). In those aged 41-64, no significant difference was observed in the cumulative incidence of DM, DMFS and OS between patients with and without ET.

Conclusions: For the incidence of distant metastasis, adjuvant endocrine therapy was associated in the only younger (40), that was not associated in older (41 - 65, and 65) population, though improved DMFS in the younger (< 40) and older (>65) population and was associated with improved OS in those >65. These findings support shared decision making regarding the indication of adjuvant ET is crucial, especially in patients for with low risk of distant metastasis, considering the age of patients.

COHORT STUDY OF ASIAN BREAST CANCER PATIENTS WITH BRCA 1/2 MUTATION (KOREA-BSG 06)

Chihwan Cha

Hanyang Univ. College of Medicine, Department of Surgery, Korea

Among the numerous risk factors for breast cancer, BRCA 1/2 mutations have gained significant attention due to their genetic predisposition and potential impacts on treatment decisions including prophylactic surgery and target agents such as PARP inhibitor. In South Korea, various clinical studies have been conducted since 2007 through the nationwide multicenter 'Korean Hereditary Breast Cancer (KOHBRA) study', including the prevalence of BRCA mutations in familial/non-familial breast cancer patients and the development of a risk calculation model to predict the possibility of BRCA mutation (KOHCal). However, unfortunately, the long-term follow-up data on the survival and recurrence outcome of patients registered in the 'KOHBRA study' could not be collected and lost to follow-up. Taking this into account, we collected retrospective multicenter data including long-term survival outcomes among breast cancer patients who underwent BRCA genetic testing followed by curative surgery.

The ON-BRCAII is a large-scale cohort study being conducted by the Korea Robot-Endoscopy Minimal Access Breast Surgery Study Group (KoREa-BSG). More than 4,000 patients with primary breast cancer who underwent BCS or mastectomy (including prophylactic surgery) and received BRCA1/2 mutation tests between January 2008 and December 2015 were retrospectively reviewed from 14 institutions in South Korea. The primary endpoint was to assess the oncologic safety of breast conservation in patients carrying BRCA1/2 mutations by comparing long-term survival outcomes (about 9 years) with mastectomy. Secondary endpoint was to investigate the prognostic implications of BRCA mutations among patients with curative surgery. Our previous analysis will be presented in ASCO annual meeting & GBCC 2024. As an expanded research topic using ON-BRCAII cohort data, we would like to propose following joint research with JBCS; 1) exploration of clinical prognostic factors for "high-risk group" who can be a candidate for treatment escalation, 2) translational research using tissue samples (such as tumor blocks) for molecular profiling to identify risk stratification factors, and 3) investigation of racial differences among BRCA carrier between Asian and Caucasian patients through international collaborations.

PROSPECTIVE SINGLE-ARM STUDY OF ENDOCRINE THERAPIES WITH OVARIAN FUNCTION SUPPRESSION IN PREMENOPAUSAL NODE-POSITIVE EARLY BREAST CANCER PATIENTS WITH LOW GENOMIC RISK (INTERSTELLAR TRIAL, KBCSG-25)

Sung Gwe Ahn

Gangnam Severance Hospital, Department of Surgery, Korea

Background: It is unclear whether the clinical benefit of cytotoxic adjuvant chemotherapy (CT) could be replaced by ovarian-function suppression (OFS) in premenopausal, estrogen receptor (ER)+HER2- breast cancer patients who have high clinical risk score and low genomic risk assessed by multigene assays. The TAILORx trial included a subgroup of premenopausal women with high clinical risk scores and midrange RS scores and found that CT, in addition to endocrine treatment (ET), offered clear benefits in terms of invasive disease-free survival (iDFS) and distant-recurrence-free survival (DRFS) compared to ET alone. However, a majority of the patients did not receive OFS, and the use of OFS as an alternative to chemotherapy in this population is still an area of ongoing research and debate. In addition, in premenopausal women of the RxPonder trial, which enrolled node-positive disease, it is noted that the addition of OFS to ET for at least 12 months improved iDFS numerically in the ET-alone arm, although this improvement did not reach statistical significance. We hypothesized that a favorable DRFS could be achieved by OFS plus ET without CT in premenopausal, pN1, ER+HER2- breast cancer with low genomic risk identified by an NGS-based multigene assay, the OncoFREE®.

Methods: The INTERSTELLAR trial is a prospective, multicenter, single-arm, non-inferiority clinical study. Premenopausal women aged ≤ 50 years with pT1-2 ER+HER2- breast cancer and 1-3 lymph node metastasis will be enrolled. They will be tested with OncoFREE®, an NGS-based breast cancer prognosis multigene assay developed and available in South Korea, where a higher portion of the patients is premenopausal. Patients with low genomic risk (Decision Index™ ≤ 20) are administered OFS plus tamoxifen or an aromatase inhibitor for five years. We hypothesize that the 5-year DRFS of the single arm treated with OFS plus ET would be not inferior to 96.1%, which is observed in the chemo-ET arm from the premenopausal subgroup of the RxPonder trial. The one-sided test with a non-inferiority margin of 3% and statistical power of 80% at a significance level of 0.05 resulted in a sample size of 380 patients with low genomic risk. Considering a 70% designation to low genomic risk by OncoFREE® and a 10% drop-out rate, 604 patients will be enrolled from 15 tertiary care hospitals in South Korea. The primary endpoint will be tested in the 380 patients with low genomic risk. The patients with high genomic risk will receive CT followed by ET and will be followed for survival analysis as a secondary endpoint. The trial has not enrolled its first patient yet at the time of submission. Clinical trial registry number: NCT05333328.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

Junior Doctors Forum

"Go Beyond Cure of Breast Cancer"

EXPERIENCES WITH SUCCESSFULLY ORGANIZING AND OPERATING EDUCATION PROGRAMS

Yazan Masannat

Broomfield Hospital, Department of Surgery, United Kingdom

Medical education has undergone significant evolution over the years, with various new innovative ways of delivering educational content. While online medical education has been an important tool for years, Covid-19 pandemic underscored its importance as an accessible way of delivering knowledge and education, leading to substantial advancements in its utilization.

The landscape of online education has broadened beyond institutional delivery, with new technologies becoming increasingly user-friendly and accessible even for individuals to create meaningful content. In this presentation, we'll delve into the journey of iBreastBook, tracing its inception as a concept over a decade ago during my training, to its evolution into a comprehensive platform for knowledge sharing.

Originally conceived as a website, iBreastBook has transformed into a dynamic platform hosting international webinars with thousands of followers. It facilitates the dissemination of courses, events, and the planning of in-person sessions, fostering a vibrant community of learners.

What made this transformation possible is the technological shift, particularly the transition from Web 1.0 to Web 2.0, and looking forward for all the opportunities and doors that Web 3.0 will open. We explore how the ideas are transferred into action with the help of a group of colleagues that became friends from across the world. Emphasis will be placed on the strategies employed to deliver content in a manner that captivates audiences, maintains engagement, and ensures that this is accessible to anybody anywhere in the world for free, aligning with the ethos that "education is a right, not a privilege."

Furthermore, we'll examine the ripple effects of this endeavour, including international surveys, collaborative projects, publications, and other outcomes stemming from our collective efforts.

FIFTEEN-YEAR JOURNEY OF ASTRRA TRIAL

Woochul Noh

Konkuk Univ. Medical Center, Department of Surgery, Korea

Outline of ASTRRA

For patients with ER+ breast cancer who remain in premenopausal-or resume ovarian function-following chemotherapy, 2 years of ovarian suppression (OFS) in addition to adjuvant endocrine therapy could be beneficial, according to long-term follow up of the ASTRRA trial (NCT00912548), which was published in J Clin Oncol 2023.

At 106.4 months of median follow-up time, patients who received OFS in addition to adjuvant tamoxifen (n = 610) experienced continued significant reduction in DFS events compared with patients who received tamoxifen alone (n = 612). The 8-year DFS rate between 2 arms, respectively, was 85.4% vs 80.2% (HR, 0.67; 95% CI, 0.51-0.87; $p = .003$)

"The ASTRRA trial highlights both the benefit of OFS in young patients with HR+ disease and overall excellent prognosis in this population", We wrote in this study.

Other studies have demonstrated that adding OFS to adjuvant therapy can be beneficial for women with high risk of recurrence. In the SOFT/TEXT trial, an 8-year follow-up showed that premenopausal patients who received OFS to adjuvant tamoxifen achieved higher DFS than those who received tamoxifen alone.

The ASTRRA trial was a randomized controlled trial designed to assess the benefit of 2 years of OFS in women who were either premenopausal, or who had regained ovarian function after chemotherapy which had been conducted in Korea. At a median follow-up of 63 months, patients who received OFS had improved DFS and OS. ASTRRA enrolled patients from across 35 institutions in Korea between Mar 2009 and Mar 2014. To be eligible to enroll, patients needed to be premenopausal, 45 years or younger, with a diagnosis of stage I-III ER+ breast cancer.

Optimizing OFS

Based on SOFT/TEXT results, 5 years of OFS are now recommended. However, in ASTRRA follow-up, 95% of patients were alive at the 8-year mark, suggesting that 2 years of OFS may be acceptable for selected patients. Recently this concept was reflected in 2024 NCCN guideline along with 2 years of OFS as an efficient alternative.

We also pointed out that OFS delivery is not yet to be optimized. For instance, in the TEXT trial, the therapy was delivered during chemotherapy, whereas in SOFT, it was administered post chemotherapy. In ASTRRA trial, the start of OFS was determined through the monitoring of ovarian function after chemotherapy. Notably, 5.9% of patients did not regain ovarian function within 2 years of chemotherapy completion.

Because age is a key factor in whether a patient recovers ovarian function after chemotherapy, we suggested that the optimal starting point of OFS may also depend on age.

"Personalized treatment decisions requires an individual risk assessment and consideration of long-term toxicity." we concluded. "The study findings support the possibility of endocrine therapy tailored to an appropriate subset of women who may benefit from adding 2 years of OFS to tamoxifen."

Post-ASTRRA, Trans-ASTRRA, and Beyond

After ASTRRA trial was handed over to junior co = workers, we have seen a great progression and evolution as the form of post-ASTRRA which features long-term follow-up study including diverse sub-studies, and trans-ASTRRA in which translational research is integrated.

Despite challenges, we are convinced that ASTRRA and ongoing follow-up studies will play a crucial role in resolving unanswered issues regarding endocrine therapy for premenopausal women.

References

1. Kim HA, Lee JW, Nam SJ, et al: Adding ovarian suppression to tamxifen for premenopausal breast cancer J Clin Oncol 38:434,2020
2. Baek SY, Noh WC, Ahn SH, et al: Adding ovarian suppression to tamoxifen for premenopausal women with hormon receptor-positive breast cancer after chemotherapy: An 8-tear follow up of ASTRRA trial J Clin Oncol 41:4864,2023
3. Francis PA, Pagani O, Fleming GF, et al: Tailoring adjuvant endocrine therapy for premenopausal breast cancer. N Engl J Med 379:122,2018
4. National Comprehensive Cancer Network, Inc: NCCN Clinical Practice Guidelines in Oncology (NCCN guidelines) for breast cancer 2024, 2024

www.gbcc.kr

Nursing Session

"Go Beyond Cure of Breast Cancer"

THE EXPERIENCE OF BREAST CANCER PRACTICE NURSES' JOB PERFORMANCE

Insook Lee[1], Eun-Young Jun[2]

[1]*Changwon National Univ., Department of Nursing, Korea,* [2]*Daejeon Univ., Department of Nursing, Korea*

Background: The aims of this study was to explore the experience of breast cancer practice nurses' job performance. The main interview question was, "What do you think your job experience is?" To obtain an answer for this question from the interviews, we used the following questions: "What do you want to talk about your job performance?", "What do you think is the difference between nursing practice and breast care practice?", "What are your experiences with breast care job performance?", "What factors do you think affect your job?" and so on.

Methods: We used qualitative content analysis. Qualitative content analysis is an appropriate method for understanding phenomena. Participants were recruited using the snowball sampling from Korean Breast Cancer Society (K-BCS) in April and September 2023. Participants were 8 nurses who perform nursing practice for patients with breast cancer. Data were collected through focus group interviews (FGI). Initial FGI conducted from 7 to 14 September 2023 through ZOOM during 70~90 minute and second additional interview conducted from October to November 2023 through participates' individual e-mail. This study was approved by the institutional review board. Participants were informed of the purpose of the study and the interview process and that the interview contents would be used for research purposes only, with anonymity and confidentiality guaranteed.

After the interviews concluded, participants were provided with compensation for their participation. Data analysed using the qualitative content analysis through code-subcategory-category-theme as follows: Read the transcribed interview repeatedly to get a sense of the material as a whole; Isolate meaningful words, phrases, and sentences related to the nurse practitioner's job role into units of content analysis; Create subcategories by consolidating similar content and grouping related things together; Categorize into categories from the list of subcategories created. We identify the rigour of the study through credibility, transferability, auditability, and confirmability of Lincoln & Guba (1985)'s criteria of validation of qualitative study.

Result: The findings revealed the following five major themes with categories: 1) Nursing practice-commitment to patients with breast cancer; 2) Nursing practice capabilities-competency; 3) Importance of nursing profession to enhance professional nursing; 4) Difficulties in nursing practice due to lack of manpower; and 5) Strategies for professional nursing.

Conclusions: We identified the desired direction of current and future professional nursing practice for patients with breast cancer by understanding the experiences of nurses' job performance of breast cancer practice. The findings have both practical and theoretical implications and can help to improve nursing practice for breast cancer patients with a focus on health-centered rather than disease-centered practice. Legal and institutional improvements and the development of breast care nurses' Standard Operating Procedures (SOPs) are needed to support the quality and safe professional practice of breast cancer nursing.

PRESENT AND FUTURE OF SPECIALIST BREAST CANCER CARE NURSES

Jayoung Ahn

ASAN Medical Center, Department of Oncology, Korea

The role of Advanced Practice Nurses(APNs) in charge of breast cancer patients varies, and includes several aspects of patient management. Based on a high level of education and clinical experience, it plays an important role in the diagnosis, treatment, and rehabilitation process of patients depending on the situation of a medical institution or medical department.

The APN system in Korea began with four 'nurses by field' in 1973, and in 2000, the name was revised to professional nurses, and the field of practice was expanded. The APN system was legislated in 2003, and the medical law was revised in March 2018 to specify the scope of work of professional nurses and establish a legal basis for the job. In 2022, the rules on the recognition of qualifications for APNs were revised, and regulations on the requirements for recognizing qualifications for APNs and the scope of work in 13 areas of APNs were specified. However, specialized nursing personnel who are still working as specialized nurses, coordinators, and PA other than APNs have no institutional mechanisms as specialized nursing personnel such as education, qualification certification, and legalization of the scope of work.

It will be meaningful to look at the situation in the United States, where the APRN system is well established, and to explore our direction. In the United States, professional support personnel are collectively referred to as Advanced Practice Providers(APPs), including NP, CNS, CRNA, CNM, and PA. Although it varies from institution to institution, cancer centers in higher-level medical institutions mainly involve APPs such as NP, CNS, and PA, and there are special nurses called ONNs that deal with cancer patients. APPs and ONNs in the United States have specific standards in education, qualification, authority, and regulation, and legal and institutional arrangements are in place at the national organization, state board, and Institution level. In addition, many medical institutions in the United States operate support programs such as Fellowship programs, Mentorship programs, and Continuous Education programs for APPs, and demonstrate their career development through a career development program called APPs Clinical Ladder and provide compensation for it to promote APPs development.

In Korea, various development directions are also being discussed starting with the legalization of the scope of work of APNs. There is a need to integrate APNs in 13 fields based on their job, and there is also a growing demand for systematic curriculum changes tailored to the scope of APNs work according to legal standards, competency-oriented education and practice for performing APN practice, operation of additional and continuous education and training courses for detailed specialties by medical department, and coaching, communication, and leadership other than higher practice.

Policy efforts are also needed. Until now, the demand for APNs has been led by medical institutions, and

accordingly, APNs have been self-managing qualitative management of competency and performance. However, there is no objective standard for evaluation of them, and compensation is insufficient. It is necessary to recognize contributions in medical services of advanced nursing practices and develop health insurance fees, such as reflecting the standards for the placement and proper management of APNs in medical quality evaluation, and to provide legal compensation. In addition, institutional arrangements for quality management of APNs are needed, and administrative support from institutions to efficiently support professional human resource management is also required.

Breast cancer APNs should also contribute to policy efforts such as education, certification, and legalization of the scope of work of these APNs and specialized nursing personnel, and the number of insurance policies in the practice they are contributing should contribute to development. In addition, it can contribute to satisfying the various needs of breast cancer patients by expanding the work area of breast cancer APNs such as supportive care, wound care, and survivorship care.

BEST PRACTICE OF ADVANCED NUESE PRACTITIONER IN BREAST CANCER PATIENT CARE

Byonghee Jeon

Yonsei Univ. Severance Hospital, Department of Surgery, Korea

Breast cancer accounts for 20.6% of cancers occurring in women, making it the number one cancer among women in Korea. The survival rate of breast cancer treatment has increased due to several factors, including the development of chemotherapy, targeted therapy, radiation therapy, and hormone therapy, including surgery, and the development of early screening and surgical techniques.

Accordingly, measures must be taken to improve the quality of life.

However, depending on these various treatment methods, breast cancer patients experience various complications and stress, such as fatigue, pain, swelling, decreased sexual function, and depression, during or after treatment. Breast cancer patients visit the hospital several times when diagnosed with breast cancer and to receive outpatient treatment and diagnostic tests, and receive a lot of information from medical staff during this process. However, in the stressful situation of being diagnosed with breast cancer, the complex diagnostic process and new treatment decisions are verbally told, and the information is often provided one-time, so there are many cases where it is not fully understood or remembered. During this repeated process for months to years, patients diagnosed with breast cancer often complain of anxiety, depression, etc. and experience a decrease in their role at work or in society.

The role of a nurse caring for breast cancer patients is to intervene in the screening process and help with early detection. In addition, the diversity of patients must be reflected and expanded to clearly convey information and provide systematic education during the process of breast cancer diagnosis, examination, and treatment. Even in outpatient clinics at the beginning of treatment, rather than giving verbal explanations, it is useful to provide information that can be seen with the eyes rather than relying solely on memory by conducting a questionnaire in advance or imaging the diagnostic process before treatment, rather than providing a verbal explanation.

Patients need counseling about symptoms that arise during breast cancer treatment, but realistically, it may be difficult to receive counseling from their attending physician. Breast care nurses must play an important role in communicating closely with patients, providing education and promoting patient understanding, supporting breast cancer patients and helping them cope with the impact of the disease on their lives do. In fact, nurses work in the form of 'advanced nurse practioner', 'coordinators', and 'physician assistant', and during this period, they are in charge of counseling and education on coping methods and symptom management, and provide medical information.

MANAGEMENT OF SKIN CHANGES IN BREAST CANCER PATIENTS

Kyungmin Na

Daerim St. Mary's Hospital, Department of Surgery, Korea

The management of dermatological conditions in breast cancer patients represents a pivotal aspect of holistic oncological care. As breast cancer treatments evolve, so too must our strategies for managing the accompanying skin changes. This presentation aims to introduce groundbreaking methodologies in the care and treatment of skin alterations experienced by breast cancer patients, transcending traditional management practices.

Skin changes, ranging from mild dryness and rashes to severe radiation dermatitis and chemotherapy-induced acral erythema, significantly impact patients' quality of life and treatment adherence. Acknowledging the complex interplay between cancer therapies and dermatological health, we delve into the pathophysiology of skin reactions specific to different breast cancer treatments, including chemotherapy, radiation, targeted therapies, and immunotherapies.

Building on current understanding, this presentation will unveil innovative approaches that incorporate cutting-edge research and technology in dermatological care. We will explore the utilization of bioengineered topical treatments, advancements in barrier creams, and the role of microbiome restoration in skin health. Furthermore, we introduce the concept of "dermato-oncology clinics," specialized units that provide integrated care by dermatologists, oncologists, and nurses trained in both oncology and dermatology.

The implementation of personalized skin care regimens, tailored to individual treatment protocols and genetic predispositions, will be discussed. The potential of digital health in monitoring and managing skin changes, including tele-dermatology and mobile applications, will be highlighted, demonstrating how these technologies can enhance patient engagement and self-management.

Case studies showcasing successful interventions and patient outcomes will be presented, providing tangible examples of how novel approaches can be effectively integrated into patient care. These case studies will not only illustrate the improvement in skin conditions but also how these improvements can lead to better overall treatment experiences and quality of life for breast cancer patients.

In conclusion, the presentation will call for a paradigm shift towards more proactive and innovative management of skin changes in breast cancer patients. By adopting these new approaches, healthcare professionals can significantly improve dermatological care, leading to enhanced patient satisfaction, reduced treatment interruptions, and ultimately, improved oncological outcomes. Attendees will leave equipped with knowledge of the latest advancements and practical strategies to implement in their clinical practice, driving forward the standard of care for breast cancer patients worldwide.

EFFECTIVENESS OF COOLING CAP TO PREVENT PERSISTENT CHEMOTHERAPY-INDUCED ALOPECIA AMONG PATIENTS WITH BREAST CANCER: A RANDOMIZED CONTROLLED TRIAL

Juhee Cho

SAIHST, Sungkyunkwan Univ., Department of Clinical Research Design and Evaluation, Korea

Purpose: Current studies of the efficacy of scalp cooling are limited by short-term duration. Therefore, we conducted a randomized controlled trial to evaluate the efficacy of scalp cooling in reducing persistent chemotherapy-induced alopecia (PCIA) 6 months after chemotherapy.

Patients and methods: We conducted an open-label randomized controlled trial comparing scalp cooling vs. control in newly diagnosed patients with breast cancer stages IIII scheduled to receive neoadjuvant or adjuvant chemotherapy with curative intent between December, 2020 and August, 2021. Patients were randomly assigned (2:1 ratio) to scalp cooling or usual clinical practice. The primary outcome was PCIA 6 months after chemotherapy. Hair thickness and density were measured using Folliscope 5.0. CIA-related distress was assessed using the CIA distress scale (CADS), with a higher score reflecting higher stress.

Results: The proportion of patients with PCIA at 6 months was 13.5% (12/89) in the scalp cooling group and 52.0% (26/50) in the control group. The average difference in the change in hair thickness from baseline between the scalp cooling and control groups was 9.0 m in favor of the intervention group. The average difference in the change in hair density between intervention and control at the end of the study 3.3 hairs/cm2. At 6 months after chemotherapy, the average difference in the change in CADS score between the intervention and control groups was 3.2 points, reflecting reduced CIA-related stress in the intervention group.

Conclusion: Scalp cooling reduced the incidence of PCIA, primarily by increasing hair thickness compared to control. Scalp cooling is helpful in promoting qualitative hair regrowth. Yet further research is necessary to observe longer-term benefits of scalp cooling.

EXPERIENCE OF SCALP COOLING AMONG BREAST CANCER

Nayeon Kim

Samsung Medical Center, Department of Cancer Education Center, Korea

Introduction: Chemotherapy causes substantial thinning or loss of hair, termed chemotherapy-induced alopecia (CIA). CIA is often ranked as one of the most distressing adverse effects of chemotherapy. Scalp cooling (SC) aims to prevent CIA. To date, only scalp cooling has been cleared by the US Food and Drug Administration (FDA) to prevent CIA. But it is not yet approved for use in South Korea. The purpose of this study was to explore breast cancer patients' perceptions and experience of scalp cooling in South Korea.

Methods: Newly diagnosed patients with breast cancer stages IIII scheduled to receive neo-adjuvant or adjuvant chemotherapy with curative intent between December, 2020 and July, 2022. 157 Korean women with a diagnosis of breast cancer participated in semi-structured interview. Participant perceptions and experiences of scalp cooling were discussed as part of patients' overall chemotherapy experience and a thematic analysis conducted.

Results: Most women described losing more hair than they expected. Concomitantly, tolerance and side-effects of the scalp cooling were also recorded in 48 accepting patients. The satisfaction of participant hair condition with the current at pre chemotherapy was 6.7 points out of 10. And it was 7.5 point at 6 month after chemotherapy. Even if you use a cooling cap, hair will fall out. However, since it falls out less, there is no problem in wearing a hat and doing daily lives. Because hair grows faster and you will be able to return to normal life. Cancer patients were worried that I wouldn't be able to stand it because it was so cold, it was bearable after 15minutes. Hot packs, blankets, and Painkillers helped a lot. The most difficult thing to endure was the long time spent wearing the cooling cap. It can be seen that 90% of those who responded that they would recommend it to other patients were very satisfied. After a year and a half, hair grew even better, so it was difficult, but I think I did a good job.

Conclusion: In our study, Cancer patients' expectations when using SC need to be adjusted to reduce the potential distress associated with hair loss. To optimize experience of scalp cooling, women need comprehensive preparatory information about variability in efficacy of scalp cooling; time needed to accommodate scalp cooling; hair care during treatment, and the potential discomfort associated with it.

Patient or public contribution: An environment where cooling cap devices can be used must be created, and patients must be provided with detailed education so that they can respond well. It is also necessary to prepare an insurance covering. As a result of this study, we learned that even if you use a cooling cap, hair will fall out, but it will grow back faster, which has the advantage of allowing you to quickly return to work after treatment. Therefore, it will be necessary to inform patients who want to quickly return to society that this is an advantage.

Keywords: chemotherapy-induced alopecia; Scalp cooling; breast cancer; patient experience

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

Satellite Symposium

"Go Beyond Cure of Breast Cancer"

보건의료전문가용

ENHERTU®
trastuzumab deruxtecan

PUSH THE PARADIGM
with UNPARALLELED PFS

NOW REIMBURSED

엔허투® 유방암 급여 기준[1]

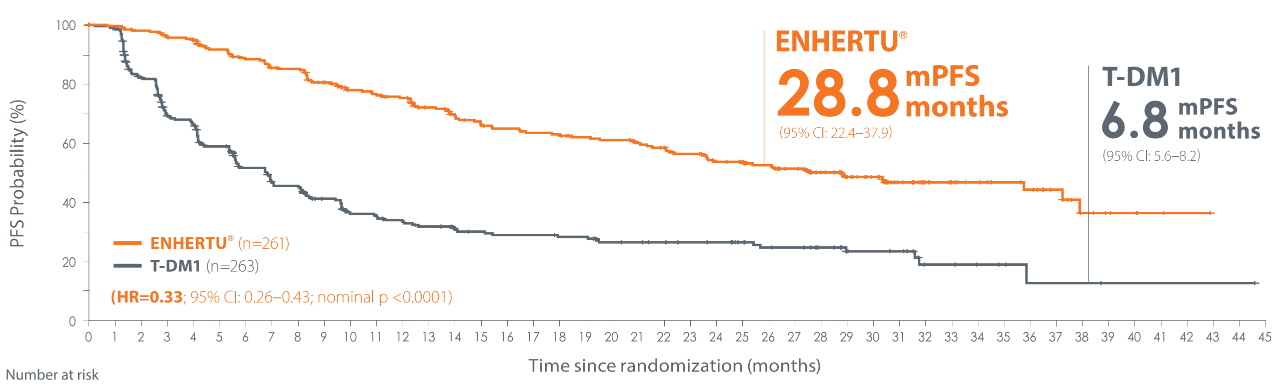
투여요법 고식적 항암화학요법(palliative chemotherapy)

투여단계 2차 이상

투여대상 Trastuzumab과 taxane계에 모두 실패한
HER2 양성인 절제 불가능한 또는 전이성 유방암 환자
(수술 후 보조요법을 받는 도중 또는 투여 종료 후 6개월 이내 재발한 경우도 인정함)

엔허투®는 DESTINY-Breast03 연구를 통해, HER2 양성 전이성 유방암 2차 치료에서 T-DM1 대비 유의하게 긴 mPFS를 입증하였으며, NCCN 가이드라인에서 권고하는 새로운 2차 표준 치료제(SOC)입니다.[2,3]

PFS assessed by BICR[2,a]



Number at risk

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
ENHERTU®	261	256	250	244	240	225	216	207	205	191	176	173	167	154	146	140	134	131	130	125	123	117	113	107	99	96	90	82	73	64	55	41	32	28	23	20	18	13	7	5	4	2	1	0		
T-DM1	263	253	201	164	156	134	111	99	96	81	69	67	63	58	54	51	49	49	47	47	42	41	39	37	36	32	28	27	22	19	15	14	8	7	6	4	2	2	2	1	1	1	1	1	1	0

[a] Data cutoff: July 25, 2022

DESTINY-Breast03[2]: A Phase 3, multicenter, open-label, randomized, head-to-head study to compare efficacy and safety of ENHERTU® vs T-DM1 of 524 adults with HER2+ unresectable and/or mBC who received prior trastuzumab and taxane therapy for metastatic disease or developed disease recurrence during or within 6 months of completing adjuvant therapy. ENHERTU® patients received 5.4 mg/kg IV Q3W until unacceptable toxicity or disease progression. Primary endpoint was PFS (BICR) according to RECIST v1.1. Secondary endpoints included OS, ORR, DOR, and PFS (investigator).

BICR, blinded independent central review; **CI**, confidence interval; **DOR**, duration of response; **HER2**, human epidermal growth factor receptor 2; **HR**, hormone receptor; **IV**, intravenous; **mBC**, metastatic breast cancer; **mPFS**, median progression free survival; **NCCN**, National Comprehensive Cancer Network; **ORR**, objective response rate; **OS**, overall survival; **PFS**, progression-free survival; **Q3W**, every 3 weeks; **RECIST**, Response Evaluation Criteria in Solid Tumors; **SOC**, standard of care; **T-DM1**, trastuzumab emtansine.

References 1. 건강보험심사평가원공고 제2024-85호. **2.** Hurvitz, Sara A., et al. "Trastuzumab deruxtecan versus trastuzumab emtansine in patients with HER2-positive metastatic breast cancer: updated results from DESTINY-Breast03, randomised, open-label, phase 3 trial." *The Lancet* 401.10371 (2023): 105-117. **3.** National Comprehensive Cancer Network. Breast Cancer (Version 2. 2024). https://www.nccn.org /professionals/physician_gls/pdf/breast.pdf. Accessed on Mar. 6, 2024.

※ 보다 자세한 정보는 식품의약품안전처 의약품통합정보시스템(http://nedrug.mfds.go.kr) 또는 QR 코드를 통해 제품설명서 전문을 참고하시기 바랍니다.

Product Information
엔허투® 주 100mg
(트라스투주맙데룩스테칸)

P24-184-2026.04-V1
KR-16105 I Exp.2026-04(Prep.2024-04)

Daiichi-Sankyo | AstraZeneca

[수입판매원] 한국다이이찌산쿄(주) 서울 중구 을지로5길 26 미래에셋 센터원빌딩 동관 15층 TEL: 02-3453-3300
[공동판매원] 한국아스트라제네카(주) 서울시 강남구 영동대로 517 아셈타워 21층 TEL: 02-2188-0800 FAX: 02-2188-0852

ENHERTU, UNLOCKING NEW FRONTIERS IN MBC TREATMENT: FROM HER2-POSITIVE TO HER2-LOW

Jieun Lee

The Catholic Univ. of Korea, Seoul St. Mary's Hospital, Department of Medical Oncology, Korea

Enhertu® (Trastuzumab Deruxtecan) is a potent antibody-drug conjugate, with high potency of topoiosomerase I inhibitor payload.

Enhertu has proved its efficacy in heavily-pretreated HER2 positive mBC patients with median PFS of 19.4 months (95% CI 14.1~25.0) in phase 2 DESTINY-Breast01, and lead to accelerated FDA approval as 3rd line treatment in December 2019. Phase 3 DESTINY-Breast02 has confirmed prior outcome, doubling-up the mPFS data of Enhertu compared to treatment of physician's choice (17.8 vs. 6.9 months, $P = 0.0001$).

Before development of Enhertu, trastuzumab emtansine (T-DM1) was the standard 2nd-line treatment with PFS of 9.6 months in EMILIA trial. Based on outstanding results of DESTINY-Breast01 and 02, DESTINY-03 compared the activity of Enhertu vs. T-DM1 as 2nd-line treatment in HER2 positive mBC. Enhertu has proven its superiority in mPFS (28.8 vs. 6.8 months) and mOS (data not reached), and achieved FDA approval as 2nd line treatment in May 2022. Subgroup analysis of DESTINY-Breast03 showed superior efficacy of Enhertu compared to T-DM1 in patients with brain metastasis, suggesting new treatment option in HER2 positive mBC patients with brain metastasis.

Enhertu has a bystander effect, leading to apoptosis of neighboring cancer cells. Based on this mechanism of action, efficacy of Enhertu was validated in HER2-low (HER2 1+ or 2+ based on immunohistochemical stain) mBC patients. DESTINY-Breast04 trial is a phase 3 trial comparing the survival outcome of Enhertu vs. treatment of physicians's choice in HER2-low mBC. Patients were previously treated with median 3 lines of systemic treatment before study enrollment. Survival outcome reported in Jan 2022 showed PFS of 9.9 vs. 5.1 months and OS of 23.4 vs. 16.8 months, extending survival outcomes with statistical significance in total patient population. This survival outcome was consistent in HR positive and HR negative subgroups. Based in this data, FDA approved Enhertu for HER2-low breast cancer in Aug 2022.

At present, KFDA have approved Enhertu for HER2 positive mBC for 2nd and 3rd line treatment at Sep 2022. Enhertu have achieved reimbursement by government on Apr 1, 2024, and looking forward to gain its approval for HER2-low mBC.

KISQALI®
ribociclib

LIFE CHANGING

TRIPLE CROWN OS data achieved by KISQALI

Proven OS benefit regardless of menopausal status or ET partner

Now KISQALI with evidence

MONALEESA-2: N=668, 1:1 randomization. As 1L in advanced disease. KISQALI 600 mg or placebo once daily (3 weeks on/1 week off) + letrozole 2.5 mg.

MONALEESA-3: N=726, 2:1 randomization. As 1L or after 1L progression for advanced disease. KISQALI 600 mg or placebo once daily (3 weeks on/1 week off) + fulvestrant 500 mg.

MONALEESA-7: N=672, 1:1 randomization. As 1L in advanced disease. KISQALI 600 mg or placebo once daily (3 weeks on/1 week off) + ET (letrozole 2.5 mg or anastrozole 1 mg or tamoxifen 20 mg orally) + LHRH agonist 3.6 mg. KISQALI is not indicated for concomitant use with tamoxifen.

ABC, advanced breast cancer; **AI,** aromatase inhibitor; **CDK4/6,** cyclin-dependent kinase 4/6; **ET,** endocrine therapy; **GnRHa,** gonadotropin-releasing hormone agonist; **HR,** hazard ratio; **mOS,** median overall survival; **OS,** overall survival.

References 1. Hortobagyi GN, et al. *N Engl J Med*. 2022;386:942-50. **2.** Slamon DJ, et al. *Annals of Oncology*. 2021; 32:1015-1024. **3.** Lu YS, et al. *Clin Cancer Res*. 2022;28:851–9.

Product Information

처방하시기 전 QR 코드 또는
식품의약품안전처 의약품통합정보시스템
(https://nedrug.mfds.go.kr)을 통해
상세 제품정보를 참조하시기 바랍니다.

키스칼리정200밀리그램(리보시클립숙신산염)

KR22071111903

NOVARTIS 한국노바티스주식회사 서울특별시 영등포구 국제금융로 10 Three IFC 49층
Tel. 02-768-9000 I Fax. 02-785-1939 I www.novartis.co.kr

KISQALI®
ribociclib

RIBOCICLIB, PUSHING THE BOUNDARY OF CDK4/6 INHIBITOR

Soo Jung Lee

Kyungpook National Univ. Chilgok Hospital, Korea

KEYTRUDA
(pembrolizumab) Injection 100mg

MAKING A DIFFERENCE IN BREAST CANCER, NOW

키트루다-삼중음성유방암 : 허가사항[1]

1. **고위험 조기 삼중음성 유방암 환자의 치료**로서 **수술 전 보조요법**(**neoadjuvant**)으로 **항암화학요법**과 **병용요법**, 그리고 이어서 **수술 후 보조요법**(**adjuvant**)으로 **단독요법**
2. PD-L1 발현 양성(CPS ≥10)이며, 수술이 불가능한 국소 재발성 또는 전이성 삼중음성 유방암 환자의 치료로서 항암화학요법과의 병용요법

References 1. 키트루다 허가사항. 식품의약품안전처.

[제품명] 키트루다®주 (펨브롤리주맙) 100 ㎎ **[금기] 다음 환자에는 투여하지 말 것** 이 약 및 그 구성 성분에 과민증인 환자 **[신중투여] 다음 환자에는 신중히 투여할 것** 자가면역질환이 있거나 만성적 혹은 재발성 자가면역질환의 기왕력이 있는 환자 **[이상사례] *임상시험에서 보고된 이상사례:** 대조 및 비대조 임상시험에서 총 2799명을 대상으로 이 약의 안전성을 분석하였다. 치료 기간의 중앙값은 4.2개월(범위: 1일 ~ 30.4개월)이었고, 6개월 이상 치료받은 환자는 1153명, 1년 이상 치료받은 환자는 600명이었다. 환자의 5%가 치료 관련 약물이상반응으로 이 약 투여를 중단하였다. 최종 투여 후 90일째까지 보고된 치료 관련 중대한 이상사례(SAE)는 이 약을 투여받은 환자의 10%에서 발생하였다. 발생한 치료 관련 중대한 이상사례 중 가장 흔하게 발생한 이상사례는 다음과 같다; 폐염증, 결장염, 설사, 발열. 치료 관련 중대한 이상사례로 자가면역성 간염과 부신기능저하증도 보고되었다. ***면역-매개 약물이상반응:** 흑색종 및 비소세포폐암 환자 2799명에 대한 면역-매개 약물이상반응은 다음과 같다. 갑상선 저하증, 갑상선기능항진증, 폐염증, 결장염, 부신부전, 간염, 뇌하수체염, 신장염, 제1형 당뇨병. **[일반적 주의]** 1) 면역-매개 약물이상반응: 면역-매개 폐염증, 면역-매개 결장염, 면역-매개 간염 (이 약) 및 간독성 (이 약과 엑시티닙 병용요법), 면역-매개 신장염, 면역-매개 내분비병증, 중증의 피부반응, 기타 면역-매개 약물이상반응, 이식 관련 약물이상반응. 이 약 투여 환자에서 중증인 사례와 치명적인 사례를 포함한 면역-매개 약물이상반응이 발생한 바 있다. 면역-매개 약물이상반응은 치료를 중단한 이후에도 발생할 수 있다. 의심되는 면역-매개 약물이상반응에 대해서는 적절한 평가를 통해 병인을 확인하고 약물이상반응의 중증도를 토대로 이 약 투여를 보류하고 코르티코스테로이드 투여를 고려한다. 1등급 이하로 개선되면 코르티코스테로이드를 최소 1개월 이상의 기간을 두고 점감 절차를 시작해야 한다. 면역 관련 약물이상반응이 코르티코스테로이드 사용으로 조절이 되지 않는 환자의 경우 다른 전신 면역억제제의 투여를 고려할 수 있다. 코르티코스테로이드 점감 절차를 실시한 이후에 약물이상반응이 1 등급 이하에 머무르면 이 약 투여를 재개한다. 중증 약물이상반응 사례가 다시 발생하면, 이 약 투여를 영구 중단한다. 작성일자: 2023년 8월 1일 **※ 키트루다를 처방하시기 전에 제품설명서를 참조하시기 바랍니다.**

키트루다 제품설명서 전문

※ QR 코드를 스캔하실 경우 MSD의 사이트가 아닌 외부 사이트로 이동합니다. MSD는 해당 사이트에서 제공하는 컨텐츠에 대해 책임지지 않습니다. 이동을 원하실 경우 QR 코드를 스캔하시기 바랍니다.

KR-KEY-01451 09/2025

MSD

 우)04637 서울특별시 중구 한강대로 416 서울스퀘어 23층 한국엠에스디(주) (전화) 02-331-2000 http://www.msd-korea.com

THE PROMISING ROLE OF PEMBROLIZUMAB IN TRANSFORMING THE LANDSCAPE FOR ETNBC

Dae-Won Lee

Seoul National Univ. Hospital, Korea

Neulasta®
(pegfilgrastim)

FN Prophylaxis through every cycle

Neulasta® used first and every cycle
helps reduce the incidence of
febrile neutropenia

KYOWA KIRIN
11F,Asia Tower,430,nonhyeon-ro,Gangnam-gu,Seoul,06223,Rep,of Korea
TEL:02-3471-4321 FAX:02-3471-4322 Http://www.kyowa-kirin-korea.com

THE EFFECTIVENESS AND SAFETY OF PEGFILGRASTIM IN KOREAN FEMALE PATIENTS WITH BREAST CANCER OLDIES BUT GOODIES

Anbok Lee

Chung-ang Univ. Gwangmyeong Hospital, Department of Surgery, Korea

Pegfilgrastim is a widely used long-acting granulocyte colony-stimulating factor (G-CSF) that prevents febrile neutropenia (FN) in patients with breast cancer receiving chemotherapy. This study aimed to evaluate the incidence of chemotherapy-related FN events and other adverse events (AEs) during chemotherapy in Korean patients with breast cancer treated with pegfilgrastim as secondary prophylactic support. This was a multicenter, open-label, prospective, observational study. A total of 1255 patients were enrolled from 43 institutions. The incidence of FN was evaluated as the primary endpoint. The secondary endpoints included (1) incidence of bone pain, (2) proportion of patients with a relative dose intensity (RDI) of ≥ 85%, and (3) proportion of patients with AE. Pegfilgrastim administration reduced FN by 11.81.6%. The highest incidence of bone pain was observed at the time point of the 1st day after the administration and mild bone pain was the most common of all bone pain severity. The mean RDI was 98.5 ± 7.3%, and the proportion of the patients with and RDI ≥ 85% was 96.9% (1169/1233). AEs were reported in 52.6% of the patients, and serious drug reactions occurred in only 0.7%. The use of pegfilgrastim as secondary prophylaxis was effective and safe for preventing FN in patients with breast cancer who were treated with chemotherapy.

Think about time stuck on an IV

Her2+ breast cancer patients may need up to **100 clinic hours each year** for treatment.[1,2]

Reimagine HER2+ breast cancer care.

With PHESGO, **effective treatment in minutes,** not hours is possible [3]

Reference 1.퍼제타 제품정보(Perjeta-2022-12-20-1.0) 2.허셉틴 IV 제품정보(Herceptin 150mg-2022-04-28-1.0) 3.퍼스코 제품정보(Phesgo-2021-09-30-1.0)

페스코피하주사 1200/600, 600/600 밀리그램 (퍼투주맙/트라스투주맙) 전문의약품

[원료약품 및 그 분량] 페스코피하주사 1200/600 밀리그램 1 바이알(15밀리미터) 중 유효성분: 퍼투주맙(별규)…1200.00mg 유효성분: 트라스투주맙(별규)…600.00mg, 페스코피하주사 600/600 밀리그램 1 바이알(10밀리미터) 중 유효성분: 퍼투주맙(별규)…600.00mg 유효성분: 트라스투주맙(별규)…600.00mg
[성상] 무색내지 옅은 황색의 액체가 충전된 무색투명한 바이알 주사제
[효능·효과] • 전이성 유방암: 전이성 질환에 대해 항-HER2 치료 또는 화학요법 치료를 받은 적이 없는, HER2 양성 환자로서 전이성 또는 절제 불가능한 국소 재발성 유방암 환자에게 도세탁셀과 병용투여 ○ 조기 유방암: 국소진행성, 염증성 또는 초기 단계(지름 2cm 초과)인 HER2 양성 유방암 환자의 수술 전 보조요법으로서 화학요법과 병용투여-재발 위험이 높은 HER2 양성 조기 유방암 환자의 수술 후 보조요법으로서 화학요법과 병용투여
[용법·용량] 이 약은 검증된 방법으로 측정된 IHC 3+ 및/또는 ISH≥2.0 비율로 정의된 HER2 양성 종양 환자에게 투여해야 한다. 이 약은 항암제 치료 경험이 있는 의료전문가의 감독 하에 투여되어야 한다. 투약 오류를 방지하기 위해, 조제하여 투여하는 약이 페스코피하주사(퍼투주맙/트라스투주맙)가 맞는지 바이알 라벨을 확인해야 한다. 이 약은 허벅지에 피하주사로만 투여해야 하며, 정맥주사하면 안된다. 현재 퍼투주맙과 트라스투주맙 정맥주사를 투여받는 환자는 이 약으로 교체(또는 그 반대)할 수 있다. ○ 전이성 및 조기 유방암: 전이성 및 조기 유방암에서 이 약의 용량 권장사항은 아래 표 1 을 참고한다.

표1. 용법용량

	용량(체중에 관계 없음)	피하주사투여소요시간	관찰시간
초기용량	퍼투주맙 1200mg/트라스트주맙 600mg	8분	30분
유지용량(매 3주마다)	퍼투주맙 60mg/트라스트주맙 600mg	5분	15분

*환자의 주입관련반응과 과민반응을 관찰해야한다. *관찰은 이 약 투여 후 시작되어야 하며, 이후 화학요법의 투여 시작 전에 관찰이 완료되어야 한다. 퍼투주맙과 트라스투주맙 정맥주사 마지막 투여 후 6주 미만 경과한 환자에게는 이 약을 퍼투주맙 600mg/트라스투주맙 600mg의 유지 량으로 투여해야 하며, 그 후 매 3주마다 투여한다. 퍼투주맙과 트라스투주맙 정맥주사 마지막 투여 후 6주 이상 경과한 환자에게는 이 약을 퍼투주맙 1200mg/트라스투주맙 600mg의 초기 용량으로 투여해야 하며, 그 후 퍼투주맙 600mg/트라스투주맙 600mg의 유지 용량을 매 3주마다 투여한다. 최우 허벅지에 번갈아 가며 주사해야 한다. 새로 주사하는 곳은 이전에 주사했던 곳과 2.5cm 이상 떨어져 있어야 하고, 붉거나 멍들었거나 아프거나 딱딱한 피부에는 절대 주사하지 않는다. 두 주사기 간 또는 두 주사 부위 간 용량을 나누어 투여하면 안된다. 이 약 치료 중 다른피하주사 약물을 투여할 경우, 이 약 주사 부위와 다른 곳에 주사하는 것이 바람직하다. 탁산계 약물을 투여 받는 환자의 경우에는 이 약 투여 후에 탁산계 약물을 투여한다. 이 약과 병용투여 시, 도세탁셀은 초기용량으로 75mg/m²를 투여한다. 안트라싸이클린계 약물을 포함하는 요법을 투여 받는 환자는 전체 안트라싸이클린계 약물 요법을 완료한 후 이 약을 투여해야 한다. ○ 조기 유방암: 수술 전 보조요법(Neoadjuvant): 조기유방암에 대한 다음의 요법 중 하나로서 이 약을 매 3주마다 한번씩, 3-6주기 동안 투여한다. • 수술 전 이 약과 도세탁셀을 4 주기 투여한 뒤, 수술 후 보조요법으로 FEC 요법 (플루오로우라실, 에피루비신과 싸이클로포스파마이드) 3주기 투여 • 수술 전 FEC 요법 3 또는 4주기 투여 후 이 약과 도세탁셀을 3 또는 4주기 투여 • 수술 전 이 약과 도세탁셀, 카보플라틴을 6주기 투여(75mg/m²을 넘는 도세탁셀 용량 투여는 권장하지 않음) • 수술 전 ddAC 요법 (용량집중 독소루비신과 싸이클로포스파미드) 4주기 투여 후 이 약과 파클리탁셀 또는 도세탁셀 4주기 투여 • 수술 전 AC 요법 (독소루비신과 싸이클로포스파미드) 4주기 투여 후 이 약과 도세탁셀 4주기 투여 수술 후, 환자는 이 약 투여를 지속하여 총 1년의 투여를 완료해야 한다(최대 18주기). 수술 후 보조요법(Adjuvant): 표준 안트라싸이클린계 및 / 또는 탁산계 약물을 포함하는 화학요법 등 조기유방암에 대한 전체 요법의 일부로서 이 약을 총 1년간 병용투여한다(최대 18주기 또는 질병 재발이나 관리 불가능한 독성이 나타날 때까지). 이 약은 첫 탁산계 약물 포함 치료 주기의 제 1일에 시작해야 하며, 화학요법이 중단되더라도 투여를 지속해야 한다. ○ 전이성 유방암: 질병의 진행이나 조절할 수 없는 독성이 발생할 때까지 이 약을 도세탁셀과 병용투여한다. 도세탁셀 투여가 중단되더라도 이 약은 계속 투여할 수 있다. ○ 투약일이 지났거나 투약을 놓친 경우: 연속 투약일 간격이 6주 미만인 경우, 이 약 유지 용량인 퍼투주맙 600mg/트라스투주맙 600mg을 가능한 한 빨리 투약한다. 계획된 다음 투여일까지 기다리지 않는다. 연속 투약일 간격이 6주 이상인 경우, 다시 이 약 초기 용량인 퍼투주맙 1200mg/트라스투주맙 600mg을 투약하고, 이후 매 3주마다 유지 용량 퍼투주맙 600mg/트라스투주맙 600mg을 투여한다. ○ 용량조절: 이 약의 감량은 권장되지 않는다. 화학요법제의 용량조절은 해당 품목의 허가사항에 따른다.
[사용상의 주의사항] 1. 경고 1) 좌심실 기능부전 ① 이 약을 포함하여 HER2 활성을 차단하는 약물을 투여하는 경우 좌심실박출률(LVEF, left ventricular ejection fraction) 감소가 보고되었다. 트라스투주맙과 화학요법을 투여한 환자군과 비교해 이 약과 화학요법을 병용투여한 환자군에서 증후성 좌심실 기능부전(LVSD, left ventricular systolic dysfunction)의 발생률이 더 높았다. 수술 후 보조요법에서 보고된 증후성 심부전 사례의 대부분은 안트라싸이클린계 약물을 포함하는 화학요법을 받았던 환자들이었다. 퍼투주맙 정맥주사와 트라스투주맙 및 화학요법을 병용투여한 연구에 의하면, 이전에 안트라싸이클린계 약물을 투여받았거나 가슴 부위에 방사선요법을 받은 시험대상자는 좌심실박출률 감소 위험이 높을 수 있다. ② 다음의 환자들은 이 약 또는 퍼투주맙과 트라스투주맙 정맥투여에 대한 연구가 실시되지 않았다. 치료 전 좌심실박출률 수치가 55%(조기 유방암) 또는 50%(전이성 유방암) 미만인 환자, 울혈성 심부전(CHF) 병력이 있는 환자, 조절되지 않는 고혈압이 있는 환자, 최근 심근경색증이 발병한 환자, 치료가 필요한 중대한 심장부정맥이 있는 환자, 이전에 독소루비신 360mg/m² 초과 또는 이와 동등한 안트라싸이클린 노출이 누적된 환자와 같이 좌심실 기능에 장애가 있는 상태를 포함하는 경우이다. 이전에 수술 후 보조요법(adjuvant therapy)으로 트라스투주맙을 투여한 기간에 좌심실박출률이 50% 미만으로 감소한 환자에서 퍼투주맙 트라스투주맙 정맥주사 및 화학요법 병용투여에 대한 연구가 실시되지 않았다. ③ 이 약 투여 전에 좌심실박출률을 평가하고, 치료기간 동안 정상범위의 좌심실박출률을 유지하기 위하여 정기적 간격으로 좌심실박출률을 평가한다(아래 표 2 참조). 좌심실박출률이 표 2 와 같이 감소한 후 개선되지 않거나 이후 평가에서 더 감소한 경우에는, 환자에 대한 유익성이 위험성을 상회하지 않는 한 이 약의 투여 중단을 심각하게 고려해야 한다.

표 2. 좌심실 기능부전에 대한 권장용량

	투여 전 LVEF	LVEF 모니터간격	최소 3주간 이 약 휴약이 필요한 LVEF 감소	3주 후 이 약 투여재개가 가능한 LVEF 회복
전이성 유방암	50% 이상	약 매 12주	LVEF가 40% 미만으로 감소하거나 투여 전 수치보다 10% 이상 감소하여 LVEF가 40-45% 인 경우	LVEF가 45%를 초과하거나 투여전 수치보다 10% 미만 감소 하여 LVEF가 40-45% 인 경우
조기 유방암	55%** 이상	약 매 12주(수술 전 보조 요법 중 1회)	투여 전 수치보다 10% 이상 감소하여 LVEF가 50% 미만일 경우	LVEF가 50% 이상 이거나 투여 전 수치보다 10% 미만으로 감소했을 때

퍼투주맙 정맥주사 자료에 근거 (CLEOPATRA 연구)

** 안트라싸이클린계 약물을 포함하는 화학요법을 받은 환자의 경우, 안트라싸이클린 투여 완료 후 이 약 투여를 시작하기 전에 LVEF 가 50% 이상이어야 한다. 2) 주입관련반응: 이 약은 주입관련반응과 연관성이 있다. 주입관련반응은 이 약 투여 후 24시간 이내에 발생하는 사이토카인 방출로 인한 열, 오한, 두통 등의 증상을 동반하는 전신 반응으로 정의된다. 이 약의 초기 용량 투여 시는 주입시간 및 주입 후 30분간, 유지 용량 투여 시는 주입시간 및 주입 후 15분간 환자를 면밀하게 관찰한다. 유의한 주입관련반응이 발생한 경우에는 주사 속도를 줄이거나 멈추어야 하며 적절한 처치를 해야 한다. 증상 및 증후가 완전하게 개선될 때까지 환자를 면밀하게 모니터하고 평가해야 한다. 중증 주입관련반응이 발생한 경우에는 이 약의 투여를 영구 중단해야 한다. 반응의 중증도 및 이상사례에 따라 투여한 치료법을 기반으로 임상적 평가를 해야 한다. 이 약에 대해 주입관련반응으로 인한 치명적인 결과는 관찰되지 않았지만, 퍼투주맙 정맥주사와 트라스투주맙 정맥투여 및 화학요법 병용투여에서 치명적인 주입관련반응이 연관되어 있었으므로 주의를 기울여야 한다. 3) 발열성 호중구감소증: 이 약은 화학요법에 의한 호중구감소증을 악화시킬 수 있다. 무작위 배정된 통제된 임상시험에서 3-4 등급의 호중구 감소증 및 발열성 호중구 감소증이 화학요법군 대비 화학요법과 트라스투주맙을 투여받은 군에서 높게 발생하였다. 패혈증성 사망 발생비율은 두 군간 차이를 보이지 않았다. 4) 과민반응/아나필락시스: 과민반응에 대해 환자를 면밀히 관찰한다. 이 약에 대해 아나필락시스 및 치명적인 결과를 포함한 중증의 과민반응이 관찰되지 않았지만, 퍼투주맙과 트라스투주맙 정맥투여 및 화학요법 병용투여에서 이러한 중증 과민반응이 연관되어 있었으므로 주의를 기울여야 한다.(3.약물이상반응 항 참고) 응급장치뿐만 아니라 이러한 반응을 치료하기 위한 약물 처치가 즉시 가능해야 한다. 이 약 또는 이 약의 구성성분에 과민반응이 알려진 환자에게 이 약을 투여하지 않는다. 5) 폐이상사례: 드물게 중증 폐이상사례가 트라스투주맙의 시판후 조사에서 보고되었으므로 이 약 투여 시 주의한다. 이는 때때로 치명적일 수도 있다. 이러한 이상사례로 폐침윤을 포함한 간질성 폐질환, 급성 호흡곤란 증후군, 폐렴, 간질성 폐렴, 흉막 삼출, 호흡곤란, 급성 폐부종 및 호흡부전 등이 보고되었다. 간질성 폐질환과 연관된 위험 요소로는 탁산계 약물, 젬시타빈, 비노렐빈, 방사선 요법과 같이 이러한 질환과 연관이 있는 것으로 알려진 여타의 항종양약물 요법을 이전에 투여 받았거나 동시에 투여하는 경우가 있다. 이는 주입관련 이상사례의 일부분이거나 지연형 이상사례와 함께 나타날 수 있다. 전이성 악성종양과 그에 따른 합병증의 발병으로 인해 안정 시 호흡곤란을 나타내는 환자는 폐질환의 위험성이 증가할 수 있다. 따라서 이러한 환자에 이 약을 투여하지 않는다. 폐렴환자, 특히 탁산계 약물을 병용 투여하는 경우 주의해야 한다. **2. 다음 환자에는 투여하지 말 것** 1) 이 약의 구성성분에 과민반응이 알려진 환자

Phesgo-2021-09-30-1.0

• PHESGO® 투약 중 또는 마지막 투약일로부터 7개월 이내에 임신한 경우 (주)한국로슈(02-3451-3600)로 즉시 보고해주시기 바랍니다.
• PHESGO® 투여 후 임신 기간 및 영아의 생후 1년 동안 추가적인 정보가 요청될 수 있습니다. 이는 로슈가 PHESGO®의 안전성을 보다 잘 이해하도록 하고, 보건당국, 보건의료전문가 및 환자들에게 적절한 정보 제공을 가능하도록 할 것입니다.
• 보다 자세한 제품정보 및 제품관련 유해사례 보고는 ㈜**한국로슈** 02-3451-3600으로 문의 하시기 바랍니다. • 가장 최신 제품정보는 ㈜**한국로슈 홈페이지** (www.roche.co.kr)에서 확인하실 수 있습니다.

Roche 주식회사 한국로슈 서울특별시 서초구 서초대로 411 GT tower (East) 17층 (우)06615

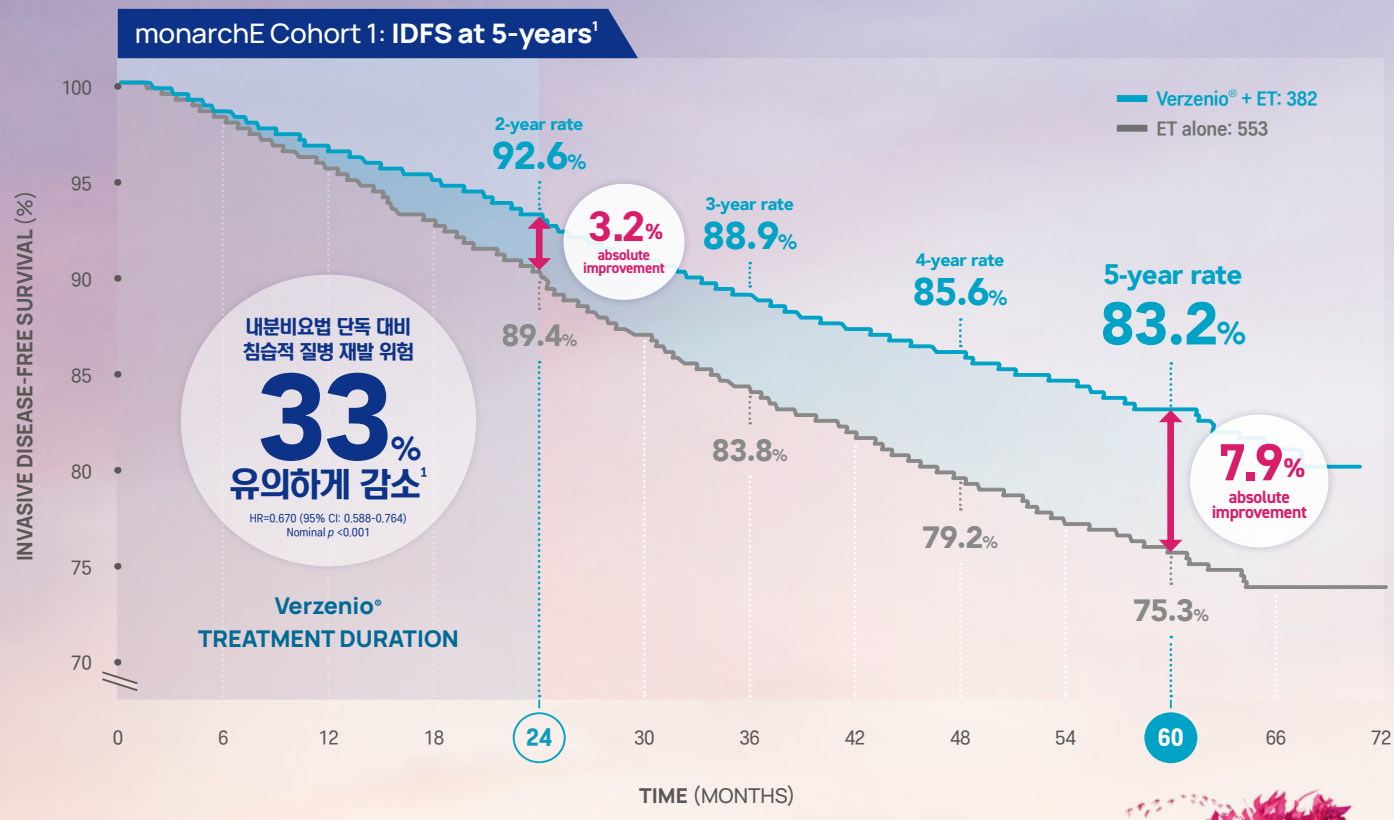
PHESGO®
PERTUZUMAB-TRASTUZUMAB

M-KR-00002553

TAKE HOPE *FURTHER* with VERZENIO®

In patients with HR+, HER2-, node-positive EBC at high risk of recurrence

버제니오+내분비요법의 IDFS benefit은 치료 종료 이후에도 5년째 지속적으로 유지되었습니다![1]



Verzenio Indication[2, 3]

1. HR+, HER2-인 진행성 또는 전이성 유방암이 있는 폐경 후 여성의 치료를 위한 일차 내분비 기반 요법으로서 아로마타제 억제제와 병용
2. 내분비 요법 후 질병이 진행된 HR+, HER2-인 진행성 또는 전이성 유방암 여성의 치료에 풀베스트란트와 병용*
3. HR+, HER2-, 림프절 양성의 재발 위험이 높은 조기 유방암이 있는 성인 환자의 보조 치료로서 내분비 요법과 병용, 폐경 전 또는 폐경 이행기 여성에서, 아로마타제 억제제 내분비 요법은 LHRH 작용제와 병용

*풀베스트란트를 병용 투여 받은 폐경 전 및 폐경 이행기 여성들은 현재 임상진료지침(clinical practice standards)에 따라 생식샘자극 분비 호르몬 작용제를 투여 받아야 한다.

버제니오정50밀리그램 제품상세정보 자세히보기

버제니오정100밀리그램 제품상세정보 자세히보기

버제니오정150밀리그램 제품상세정보 자세히보기

IDFS: Invasive disease-free survival, **HR+:** hormone receptor positive, **HER2-:** human epidermal growth factor receptor 2 negative, **EBC:** early breast cancer, **ET:** endocrine therapy, **LHRH:** Luteinizing hormone releasing hormone

Reference 1. Rastogi P, *et al. J Clin Oncol.* Published online January 9, 2024. **2.** 버제니오 식약처 허가사항(식약처 의약품통합정보시스템 https://nedrug.mfds.go.kr/) [Revised on 2023-11-03], **3.** 풀베스트란트 식약처 허가사항(식약처 의약품통합정보시스템 https://nedrug.mfds.go.kr/) [Revised on 2020-07-20].

Verzenio® abemaciclib

Lilly | 한국릴리 유한회사 | 서울특별시 중구 후암로 98 LG 서울역 빌딩 4층 우)04637 대표전화번호 : 02-3459-2676 www.lilly.com/kr

PP-AL-KR-0750 [20260118]

BORYUNG

DITAXEL inj.
DOCETAXEL 20mg / 80mg / 120mg

Non-Alcohol Docetaxel, 디탁셀

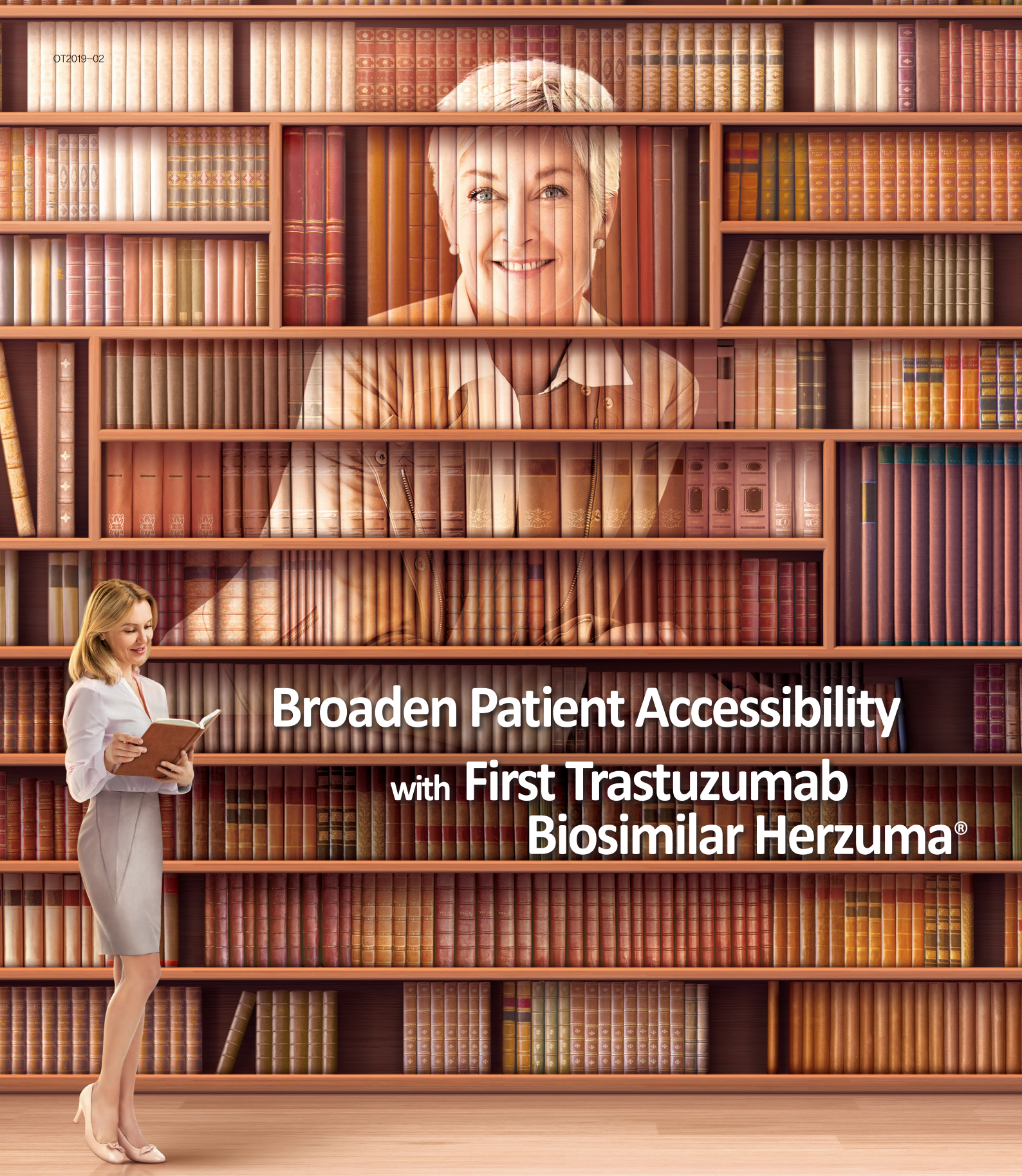
디탁셀주는
Alcohol을 함유한
Docetaxel 제제 투여 시
발생할 수 있는
중독위험†으로부터
안전합니다[1,2]

0%

PRODUCT INFORMATION

[제품명] 디탁셀1-바이알주(도세탁셀삼수화물) **[성분]** 도세탁셀삼수화물 **[포장정보]** 20mg/1mL/바이알, 80mg/4mL/바이알, 120mg/6mL/바이알 **[성상]** 무색투명한 바이알에 든 미황색 - 황갈색을 띤 맑은 유상의 주사제 **[효능/효과]** **1. 유방암** ○ 국소적으로 진행된 또는 전이성 유방암 1) 독소루비신과 병용하여 국소적으로 진행된 또는 전이된 유방암의 1차 치료 2) HER2(Human Epidermal growth factor Receptor 2 protein)가 과발현(IHC 3+ 또는 FISH 양성)되고 화학요법 치료를 받은 경험이 없는 전이성 유방암에 트라스투주맙과 병용요법 3) 이전의 화학요법에 실패한 국소적으로 진행된 유방암 또는 전이성 유방암 4) 카페시타빈과 병용하여 안트라사이클린계 약물을 포함한 화학요법에 실패한 국소적으로 진행된 유방암 또는 전이성 유방암 ○ 수술 후 보조요법 1) 독소루비신과 시클로포스파미드와 병용하여 다음 환자의 수술 후 보조요법 (TAC regimen) (1) 림프절 양성의 수술 가능한 유방암 (2) 림프절 음성의 수술 가능한 유방암(고위험인자가 하나 이상 있는 환자(종양크기 > 2 cm, 연령 < 35세, 호르몬수용체음성, 종양분화도 2 ~ 3)) 2) 독소루비신과 시클로포스파미드 사용 후, 트라스투주맙과 병용하여, HER2가 과발현된 수술 가능한 유방암 환자의 수술 후 보조요법 (AC-TH regimen) 3) 카보플라틴과 트라스투주맙과 병용하여, HER2가 과발현한 수술 가능한 유방암 환자의 수술 후 보조요법 (TCH regimen) 4) 시클로포스파미드와 병용하여 수술가능한 유방암 환자의 수술 후 보조요법 (1cm≤원발종양크기<7cm) (TC regimen) **2. 비소세포 폐암** 백금화학요법제로 치료효과를 얻지 못한 환자들을 포함한 국소적으로 진행된 비소세포폐암 또는 전이성 비소세포폐암 **3. 전립샘암** 프레드니솔론과 병용하여 안드로겐 비의존성(호르몬불응성) 전이성 전립샘암 **4. 난소암** 카보플라틴과 병용하는 1차요법제로서 진행된 또는 전이된 상피성 난소암 **5. 두·경부암** 시스플라틴 및 플루오로우라실과 병용하여 국소진행성 두경부 편평세포암의 유도화학요법 **6. 위암** 1) 진행성 및 전이성 또는 국소재발성 위암의 단독요법 2) 시스플라틴 및 플루오로우라실과 병용하여 전이성 또는 국소재발성 위암의 1차 치료 **7. 식도암** 진행성 또는 재발성 식도 편평세포암 **[저장방법]** 밀봉용기, 2~25℃ 차광보관 **[사용기간]** 제조일로부터 36 개월 **[제조 및 판매사]** ㈜보령 서울특별시 종로구 창경궁로 136(보령빌딩) Tel.080-708-8088(소비자상담실)
※ 기타 자세한 내용은 제품설명서를 참고하시기 바랍니다.

Reference 1. 제품허가 및 약가사항. 식약처의약품안전나라. accessed on 2023.06.27 2. Available at http://wayback.archive-it.org/7993/20170113112100/http://www.fda.gov/downloads/Drugs/DrugSafety/UCM401754.pdf 3. Won YW et al. Cancer Res Treat. 2023 Apr 7. 4. 제품사용설명서
† 첨가제에 alcohol을 함유한 docetaxel 제제의 투여 시 발생할 수 있는 중독, 중추신경계에 영향, 숙취등의 위험에 대한 내용으로서, 당시 FDA는 alcohol을 함유한 모든 docetaxel 제제에 대해 해당 risk의 위험성을 경고하였고, 특정 제품을 지칭하지 않습니다.



[제품명] 허즈마주 150mg, 440mg(트라스투주맙) 다클론항체, 유전자재조합 **[주성분]** 트라스투주맙다클론항체, 유전자재조합 **[효능·효과]** HER2/human Epidermal growth factor Receptor 2 protein) 양성 조기 유방암 · 전이성 유방암 **[용법·용량]** 트라스투주맙 치료를 시작하기 전 HER2 시험이 필수적이다. 트라스투주맙은 자격을 갖춘 전문 의료인에 의해 투여되어야 한다. 투여 전 투여하려는 제형이 환자에 처방된 것이 맞는지 제품라벨을 확인하여야 한다. 이 약은 정맥 주사용이다. 투약 오류를 방지하기 위해 조제해 투여하는 약이 케싸일라트라스투주맙엠탄신이 아닌 트라스투주맙이 맞는지 바이알 라벨을 확인해야 한다. **유방암 · 전이성 유방암** : HER2 양성 전이성 유방암 환자 치료에 다음과 같이 투여한다. 이 약 단독요법 및 파클리탁셀, 도세탁셀, 아로마타제 억제제와의 병용요법 시 이 약의 권장용량은 다음과 같다. **1) 1주 요법** : 초기부하용량 : 권장 초기부하용량은 4mg/kg이다. 유지용량 : 권장 유지용량은 매주 2mg/kg이며 초기부하용량 투여 1주일 후부터 투여를 시작한다. **2) 3주 요법** : 초기부하용량 : 권장 초기부하용량은 8mg/kg이다 • 유지용량 : 권장 유지용량은 6mg/kg이며 초기부하용량 투여 3주 후부터 투여를 시작한다. **도세탁셀과 파클리탁셀의 병용요법** : 이 약의 최초 투여시에는 이 약 투여 다음날에 파클리탁셀 또는 도세탁셀을 투여한다. 최초 투여에 내약성이 우수한 경우, 이후 투여시에는 이 약 투여후 즉시 파클리탁셀 또는 도세탁셀을 투여할 수 있다. **아로마타제 억제제와의 병용요법** : 이 약과 아로마타제 억제제는 첫날에 모두 투여한다(투여순서는 상관없음). 조기 유방암 : 다음의 2가지 투여요법중 선택하여 투여할 수 있다. **1) 3주 요법** : 초기 부하용량으로 8mg/kg을 투여하고 이후 매 3주마다 유지용량으로 6mg/kg을 투여한다. **2) 1주 요법** : 안트라사이클린과 비이클로포스파미드 병용 화학요법실시후, 초기부하용량으로 4mg/kg을 투여하고 이후 1주 마다 2mg/kg을 유지용량으로 투여한다. 이때는 파클리탁셀과 병용투여한다. **전이성 위암 • 3주 요법** : 초기 부하용량으로 8mg/kg을 투여하고 이후 매 3주마다 유지용량으로 6mg/kg을 약 90분에 걸쳐 점적주입 한다. 초기 부하 용량에 내약성이 우수한 경우 유지용량은 30분에 걸쳐 주입할 수 있다. **유방암(조기 유방암 및 전이성 유방암) 및 전이성 위암** : 전이성 유방암이나 전이성 위암환자는 질병진행시까지 이 약을 투여한다. 조기 유방암의 경우는 1년 동안 또는 질병재발까지 이 약을 투여해야한다. 조기 유방암 치료를 1년 넘게 지속하는 것은 권장되지 않는다. **[사용상의 주의사항]** 이 약은 허셉틴주(트라스투주맙다클론항체, 유전자재조합)를 대조약으로 한 중등상을 의약품이다. **1. 경고** 1) 심기능 장애(Cardiac dysfunction) 트라스투주맙 투여 시 좌혈성 심부전(뉴욕심장학회(NYHA) 2-4등급) 또는 무증상 심기능 장애의 위험이 증가한다. 심질환 위험성이 큰 환자(고혈압, 입증된 관상동맥질환, 울혈성 심부전, 이환기 장애, 55% 이만 LVEF, 고령)에 투여 시 주의를 기울여야 한다. 2) 주입관련 반응, 알러지양 반응 및 과민 반응 3) 폐 이상사례 4) 백혈구감소증은 미숙아에게서 지정적인 기본 호흡증상과 연관이 있는 것으로 보고되었다.(허즈마주 440mg에 한함) **2. 다음 환자에는 투여하지 말 것** 1) 트라스투주맙, 설치류 유래 단백 또는 이 약의 구성성분에 과민반응 병력이 있는 환자 2) 진행성 악성종양에 의한 중증 만성 시 호흡곤란 또는 산소보충이 필요한 환자 3) 신생아; 미숙아(변질일교을을 참유하고 있다. 허즈마주 440mg에 한함) **※셀트리온 제약 홈페이지 www.celltrionph.com 또는 전화 080-850-3611(~2)에서 확인하실 수 있습니다.**

셀트리온제약
CELLTRION 서울특별시 송파구 중대로 135 아이티벤처타워 서관 17층 Tel. 080-850-3611(3612) www.celltrionph.com

Herzuma®
Trastuzumab

GC녹십자 JEIL 제일약품

지금

건강예방문자

[GC녹십자] 항암치료에 호중구감소증이 걱정된다면 뉴라펙 프리필드시린지주로 효과적으로 예방하세요.

쉽게 넘기지 마세요.

생명을 지키는 알람.

효과적인 중증 호중구 감소증 사전 예방
뉴라펙 프리필드시린주

뉴라펙®은 항암화학요법 1주기 동안 절대호중구수 (ANC:Absolute Neutrophil Count) 2,000/mm³ 이 회복되는 기간을 대조약 대비 하루 더 앞당겼습니다.[1]

뉴라펙®
프리필드시린지 주
pegteograstim

- 효과적인 중증 호중구 감소증 사전 예방
- 항암주기당 단 1회 투여
- 검증된 효과(단기간 내 회복)와 내약성

ref. 1) Lee KH, et al. Support Care Cancer 2016;24:1709–17.

루프린® 주/DPS
류프로렐린아세트산염 3.75mg/11.25mg/22.5mg

루프린®
나의 아름다운 삶을 위해

- 폐경 전 호르몬 수용체 양성 유방암 환자에서 Tamoxifen과 루프린® DPS주 11.25 mg 병용 요법에 의한 **Survival Benefit과 Safety Profile을 확인**[1]

- 폐경 전 호르몬 수용체 양성, 림프절 양성인 유방암 환자에서 수술 후 루프린® DPS주 11.25 mg 보조 요법은 **CMF* 보조 화학 요법**과 **동등한 Recurrence-Free Survival**을 나타냄[2]

루프린®은 Microsphere 기술로 개발되었으며[3], 투여 직후 환자의 불편감이 적었던 것으로 나타났습니다.[4]

*CMF, Cyclophosphamide / Methotrexate / Fluorouracil

[1]Study summary: An open-label, randomized controlled pilot study to evaluate the safety and efficacy of leuprorelin 11.25mg subcutaneously administered every-3-months for 2 versus 3 or more, up to 5 years, together with daily tamoxifen for 5 years in premenopausal endocrine-responsive breast cancer patients. Primary endpoints were disease-free survival (DFS) and safety. Adjuvant leuprorelin treatment for 3 or more years with tamoxifen showed a survival benefit and safety profile similar to that for 2 years in premenopausal endocrine-responsive breast cancer patients. **[2]Study summary:** A randomized phase III trial was performed to compare the Leuplin 3 month (n=299) and chemotherapy with CMF (n=300) in pre- or perimenopausal patients with ER-positive, node-positive breast cancer. The primary study objective was to compare RFS between both treatment groups. With a median follow-up of 5.8 years, recurrence-free survival was similar for patients treated with Leuplin 3M or CMF (hazard ratio [HR], 1.19; 95% CI, 0.94 to 1.51; P=0.15) Chemotherapy-related adverse effects were more common with CMF, whereas symptoms of estrogen suppression were initially more pronounced with Leuplin 3M. **[4]Study summary:** A crossover trial was conducted to compare patient comfort and tolerability between two commonly used LH-RH analogues: goserelin acetate and leuprorelin acetate. A total of 50 patients were randomised into two groups, each receiving 6-monthly injections of leuprorelin acetate (a liquid presentation) and goserelin acetate (a depot pellet) and crossing over between treatments. Patients completed a simple visual analogue score for the discomfort felt from the injections. An analysis of variance model was used, and the results found that patients do tolerate leuprorelin acetate (0.589) better than goserelin acetate (1.343) (P <0.001).

References. 1. Shiba E, et al. A randomized controlled study evaluating safety and efficacy of leuprorelin acetate every-3-months depot for 2 versus 3 or more years with tamoxifen for 5 years as adjuvant in premenopausal patients with endocrine-responsive breast cancer. Breast Cancer. 2016 May;23(3):499-509. **2.** Schmid P, et al. Leuprorelin Acetate Every-3-Months Depot Versus Cyclophosphamide, Methotrexate and Fluorouracil As Adjuvant Treatment in Premenopausal Patients With Node-Positive Breast Cancer : The TABLE Study. J Clin Oncol. 2007 Jun 20;25(18):2509-15. **3.** Okada H. One-and three-month release injectable microspheres of the LH-RH super agonist leuprorelin acetate. Adv Drug Deliv Rev. 1997 Oct 13;28(1):43-70. **4.** Williams G et al. Randomised crossover trial to assess the tolerability of LHRH analogue administration. Prostate Cancer Prostatic Dis. 2003;6(2):187-9.

Prescribing Information

루프린주 (Vial) 3.75mg / 루프린 디피에스주 (DPS) 3.75mg, 11.25mg, 22.5mg (류프로렐린아세트산염) [유효성분] 류프로렐린아세트산염 (JP) **[효능 · 효과]** (1)~(5) 3.75mg vial, 3.75mg DPS, (1) 진행성 전립선암 (2) 폐경전 유방암 (3) 자궁내막증 (4) 과다월경, 하복통, 요통 및 빈혈 등을 수반한 자궁근종에서 근종핵의 축소 및 증상의 개선 (5) 중추성 사춘기 조발증 **[용법 · 용량] (1) 진행성 전립선암 (2) 폐경전 유방암** 보통 성인에는 류프로렐린아세트산염으로서 4주 1회3.75mg/12주 1회 11.25mg/24주 1회 22.5mg을 피하주사한다. **(3) 자궁내막증** 보통 성인에는 4주 1회3.75mg (루프린주 3.75mg: 체중 50 kg 미만의 환자에게는 1.88 mg을 투여)/12주 1회 11.25mg을 피하주사하며, 초회투여는 월경주기 1~5일째에 한다. **(4) 자궁근종** 보통 성인에는 4주 1회1.88mg 피하주사한다. (루프린주 3.75mg만 해당) 단, 체중과다 환자, 자궁종대가 고도인 환자에는 4주 1회 3.75 mg/12주 1회 11.25mg을 투여하며, 초회투여는 월경주기 1~5일째에 한다. **(5) 중추성 사춘기 조발증** : 3.75mg vial 보통 4주 1회 체중 kg당 30 ㎍을 피하주사하며, 증상에 따라 체중 kg당 90 ㎍까지 증량할 수 있다. : 3.75mg DPS 보통 4주 1회 류프로렐린아세트산염으로서 체중 kg당 30 ㎍을 피하주사한다. 또한 증상에 따라 체중 kg당 90 ㎍까지 증량할 수 있다. 단, 이 제제는 1/2 시린지 용량 또는1시린지 용량 투여가 필요한 경우에 한하며, 남은 현탁 주사액은 폐기할 것 : 11.25mg DPS 용법용량은 개인별로 조절되어야 하며, 권장 초기용량은 체중에 따라 조절한다. -체중 20kg 이상의 소아: 1mL (11.25mg 류프로렐린아세트산염) 현탁액을 3개월마다 1회 피하주사한다. -체중 20kg 미만의 소아: 이러한 드문 경우에는 중추성 사춘기 조발증의 임상적 활성도에 따라 다음의 용량을 투여한다. 0.5Ml (5.625mg) 현탁액을 3개월마다 1회 피하주사하며, 남은 현탁 주사액은 폐기한다. 체중 증가를 관찰하여야 한다. **사용상의 주의사항 [경고]** 1)전이성 척추 손상이나 요로폐쇄증을 수반한 환자는 치료 초기 몇 주 동안 세심하게 관찰하여야 한다2)남성환자에서 심근경색, 급성심장사, 뇌졸중으로의 발생위험의 증가가 GnRH 작용제의 사용과 연관 있음이 보고되었다. 3)맹틀주사제는 용기 절단 시 유리 파편이 혼입되어 부작용을 초래할 수 있으므로 사용 시 유리 파편 혼입이 최소화될 수 있도록 신중하게 절단 사용하되, 특히 어린이, 노약자에게 사용 시에는 각별히 주의할 것 (루프린주3.75mg에 한함) **[다음 환자에는 투여하지 말 것]** 1)이 약의 성분, LHRH 유사약물에 대해 과민반응의 병력이 있는 환자 2)임부 또는 임신하고 있을 가능성이 있는 여성 및 수유부 3)호르몬 비의존성 전립선암 환자 4)양쪽 고환 절제술을 받은 후, 이 약에 의해 더 이상 테스토스테론의 감소를 기대할 수 없는 환자 5)진단된 뇌하수체 샘종 환자 6)자궁내막증, 자궁근종, 중추성사춘기조발증: 원인불명의 질출혈이 있는 환자 (루프린디피에스주 22.5mg 제외) 7)진행성 뇌종양 소아 환자 (루프린주 3.75mg만 해당) 8)소아 (루프린디피에스주 22.5mg 만 해당) **[다음 환자에는 신중히 투여할 것]** 1)자궁내막증, 자궁근종, 폐경전 유방암: 자궁에 점막하 근종이 있는 환자 2)당뇨병 환자 3)고혈압 환자 4)우울증의 병력이 있는 환자 5) 젤라틴 함유제제 또는 젤라틴 함유 식품에 대해서 속, 아나필락시양 증상 (두드러기, 호흡곤란, 구진부종, 후두부종 등) 등의 과민반응의 병력이 있는 환자 (단, 과민반응의 원인이 젤라틴인 것이 명확한 경우에는 투여해서는 안됨) (루프린주3.75mg에 한함) **[저장방법]** 밀봉용기, 실온 (1~30℃)보관 **[수입자]** 한국다케다제약 주식회사/서울특별시 송파구 올림픽로 300 롯데월드타워 37층 [Pharmaceutical Company Limited/Hikari Plant (Japan)] ***이 내용은 허가사항을 요약한 것으로 자세한 정보는 제품의 첨부문서 또는 의약품통합정보시스템 (https://nedrug.mfds.go.kr)를 확인하십시오.**

C-APROM/KR/LEU/0020 Date of preparation:May/2022

서울특별시 송파구 올림픽로 300 롯데월드타워 37층 (우)05551 **[대표번호]** 02-3484-0800 / www.takeda.co.kr **[제품 의약정보(학술)문의]** Tel. 080-908-0971/ Email. medinfoAPAC@takeda.com **[이상사례보고]** AE.SouthKorea@takeda.com

보건의료전문가용

goserelin
Zoladex®*

Arimidex**
anastrozole

a link for your lovely life

- ASCO guideline update recommends standard duration of ovarian suppression up to 5 years[1]
- ARIMIDEX demonstrated comparable efficacy compared to letrozole in either DFS or OS, with no new safety concerns identified†,[2]

* 호르몬요법이 적합한 폐경기전 및 주폐경기 여성의 진행성 유방암
** 폐경기 이후 여성의 진행성 유방암(이 요법 이전의 타목시펜 치료시 임상반응을 나타내지 않는 에스트로겐 수용체 음성인 환자에서, 이 약의 유효성은 입증되지 않았다.)

† Study design: phase IIIb, open-label, multicenter trial conducted across 271 international centers. postmenopausal women with HR-positive were randomly assigned 1:1 to receive either adjuvant letrozole (2.5 mg) or anastrozole (1 mg) once per day until disease recurrence/relapse or for a maximum of 5 years.

REFERENCES

1. Burstein HJ, Lacchetti C, Anderson H, et al. Adjuvant Endocrine Therapy for Women With Hormone Receptor-Positive Breast Cancer: American Society of Clinical Oncology Clinical Practice Guideline Update on Ovarian Suppression. J Clin Oncol. 2016;34(14):1689-1701. doi:10.1200/JCO.2015.65.9573 2. Smith I, Yardley D, Burris H, et al. Comparative Efficacy and Safety of Adjuvant Letrozole Versus Anastrozole in Postmenopausal Patients With Hormone Receptor-Positive, Node-Positive Early Breast Cancer: Final Results of the Randomized Phase III Femara Versus Anastrozole Clinical Evaluation (FACE) Trial [published correction appears in J Clin Oncol. 2019 Feb 1;37(4):359]. J Clin Oncol. 2017;35(10):1041-1048. doi:10.1200/JCO.2016.69.2871

전문의약품

PRODUCT INFORMATION

졸라덱스 데포주사 (초산고세렐린) 【 성분 · 함량 】 이 약 1 프리필드실린지 (18.0 mg) 중 유효성분: 고세렐린아세트산염 (별규) 3.78 mg(고세렐린으로서 3.6 mg)첨가제: 락타이드/글리콜라이드공중합체 18.0 mg프리필드시린지 **【 성 상 】**1회용 실린지 어프리케이터 속에 살균된 흰색~미황색의 원주형 데포가 들어있으며 이 속에 고세렐린아세트산염(고세렐린으로서 3.6mg)이 생체내에서 분해되는 매트릭스에 분산되어 있다. **【 효능 · 효과 】**1. 호르몬요법이 적합한 전립선암 2. 호르몬요법이 적합한 폐경기전 및 주폐경기 여성의 진행성 유방암 3. 조기유방암의 보조요법: 에스트로겐 수용체(ER) 양성인 폐경기전 및 주폐경기 여성의 조기 유방암에 대한 표준 화학 요법의 대체요법 4. 자궁내막증 5. 자궁내막조직의 퇴축: 자궁내막 제거나 절제 전에 자궁내막을 얇게 함을 목적으로 투여함 6. 자궁근종: 자궁근종을 가진 빈혈환자에서 수술 전 철분요법과 병행하여 환자의 혈액상태를 개선함을 목적으로 투여함 7. 보조생식술: 배란촉진 과정 시 뇌하수체 억제 목적 **【 용법 · 용량 】** 성인: 고세렐린으로서 3.6 mg 을 28 일 간격으로 전방복벽에 피하주사한다. 신장애, 간장애 환자나 고령자의 경우에도 용량을 조절할 필요는 없다. 1. 전립선암, 유방암: 호르몬요법이 적합한 전립선암 또는 유방암의 관리에 고세렐린으로서 3.6 mg 1 데포를28 일마다 전방복벽에 피하주사한다. 국소진행 전립선암에 있어서 방사선요법과 병용하는 보조 호르몬요법의 경우 36 개월로 사용이 제한된다. 2. 자궁내막증: 자궁내막증을 이 약으로서 6 개월 이상 치료한 임상자료가 없으므로 치료기간은 6 개월 이하가 되도록 한다. 뼈 무기질 밀도 감소의 우려가 있으므로 반복적인 치료는 하지 않도록 한다. 이 약 투여 시 호르몬 대체요법(에스트로겐 및 프로게스테론 제제)을 병행하면 뼈 무기질 밀도 감소 및 혈관운동성 증상이 감소된다. 3. 자궁내막조직의 퇴축: 자궁내막의 퇴축을 목적으로 투여할 때는 4 주 또는 8 주간 치료한다. 자궁의 크기가 큰 환자에게 투여 시 또는 적당한 수술 일정을 결정하기 위해서 2 번째 데포를 투여할 수 있다.4. 자궁근종: 자궁근종에 의한 빈혈이 있는 여성에게는 고세렐린으로서 3.6 mg 에 철분을 보충하여 수술 전3 개월까지 투여할 수 있다.5. 보조생식술: 에스트라디올 농도가 초기 황체기 수준이(약 150 pmol/L) 되도록 뇌하수체를 억제하기 위해 고세렐린으로서 3.6 mg 1 데포를 투여한다. 이는 7~21 일 사이에 일어난다. 뇌하수체가 억제되면 생식샘자극호르몬(gonadotrophin)으로 배란을 촉진시킨다. 이 약에 의한 뇌하수체 억제는 일정하여 일부 경우, 성선자극호르몬 요구량이 증가될 수 있다. 적당한 시기의 황체기에 성선자극호르몬을 중지하고 사람융모성생식샘자극호르몬(hCG)을 투여하여 배란시킨다. 치료관찰, 난자 회수 및 임신기법은 각 병원의 일반적 방법에 따른다. **【 사용상의 주의사항 】**1. 경고: 전이성 척추 손상(metastatic vertebral lesion)이나 요로폐쇄증을 수반한 환자는 치료 초기 몇 주 동안 세심하게 관찰하여야 한다. 2. 다음 환자에는 투여하지 말 것.1) 이 약의 성분 및 LHRH 유사약물에 대하여 과민반응 환자 2) 임부 및 수유부 3) 호르몬 비의존성 전립선암 환자 4) 양쪽 고환 절제술을 받은 후, 이 약에 의해 더 이상 테스토스테론의 감소를 기대할 수 없는 환자 5) 원인 불명의 질 출혈 환자 6) 소아 7) 진단된 뇌하수체 생종 환자 3. 다음 환자에는 신중히 투여할 것. 보조생식술의 경우: 다낭포성 난소 환자 문헌개정연월일: 2020 년 8 월 5 일 수입자: 한국아스트라제네카, 서울시 강남구 영동대로 517 아셈타워 21 층, 전화: (02) 2188-0800 공동판매자: 알보젠코리아주식회사, 서울시 영등포구 국제금융로 10 21FC 13 층, 전화: (02) 2047-7700 aZOL20200924

전문의약품

PRODUCT INFORMATION

아리미덱스 정(아나스트로졸) Arimidex tablet (Anastrozole) 【성분 • 함량】 1정(약 103mg)중 주성분 : 아나스트로졸 (별규) 1.0mg **【성 상】** 백색의 원형 필름코팅정 **【효능 • 효과】** 1. 폐경기 이후 여성의 진행성 유방암의 치료(이 요법 이전의 타목시펜 치료시 임상반응을 나타내지 않는 에스트로겐 수용체 음성인 환자에서, 이 약의 유효성은 입증되지 않았다.) 2. 호르몬 수용체 양성인 폐경기 이후 여성의 조기 유방암의 보조 치료. 조기 유방암의 보조 요법으로 2~3 년간 타목시펜을 투여 받아온 호르몬 수용체 양성인 폐경기 이후 여성 환자의 조기 유방암의 보조 치료. **【용법 • 용량】** ○ 성인 : 아나스트로졸로서 1일 1회 1mg을 경구투여한다. ○ 소아 : 18세 이하 소아에게는 투여하지 않는다. ○ 신장애 환자 : 경증 또는 중등도의 신장애 환자는 용량을 변경할 필요가 없다. 중증 신기능장애 환자(크레아티닌청소율이 30 mL/min 이하인 환자)에서는 이 약을 투여하지 않는다. ○ 간장애 환자 : 경증의 간장애 환자는 용량을 변경할 필요가 없다. 중등도 이상의 간장 질환자에서는 이 약을 투여하지 않는다. **【사용상의 주의사항】** 1. 경고 1) 이 약은 폐경기 이전의 여성에게는 안전성 및 유효성이 입증되지 않았기 때문에 사용하지 않아야 한다. 폐경기 상태가 의심스러운 경우 폐경기 여부를 생화학적으로 확인 하여야 한다. 2) 이 약은 중등도 또는 중증의 간장애 및 중증의 신장애 환자(크레아티닌 클리어런스가 30mL/min 이하)에 대해서는 시험되지 않았다. 3) 이 약은 순환 에스트로겐을 낮추므로 골무기질 밀도를 감소시켜서 골절의 위험을 증가시킬 수 있다. 4) 골다공증 및 골다공증 위험이 있는 환자에게 치료 시작 및 그 후 일정한 간격으로 골밀도에 대하여 시험(예, DEXA scanning)하여야 한다. 골다공증 치료 및 예방법이 적절하게 시행되어야 하고 주의 깊게 모니터링 해야 한다. 2. 다음의 환자에는 투여하지 말 것. 1) 폐경기 이전의 여성 2) 임부 또는 임신하고 있을 가능성이 있는 여성, 수유부 3) 중증의 신장애 환자 (크레아티닌청소율이 30mL/min 이하인 환자) 4) 중등도 이상의 간장애 환자 5) 이 약 또는 이 약의 구성성분에 과민반응이 있다고 알려진 환자 6) 타목시펜 병용투여 환자 또는 에스트로겐을 함유하는 요법중인 환자(이 약의 약리작용을 감소시키기 때문에 병용해서는 안된다.) 7) 이 약은 락토오스를 포함하고 있다. 드물게 나타나는 갈락토오스 불내성(galactose intolerance), Lapp유당분해효소 결핍증(Lapp lactase deficiency) 또는 포도당-갈락토스 흡수장애(glucose-galactose malabsorption) 등의 유전적인 문제가 있는 환자에게는 투여하면 안 된다.유전적인 문제가 있는 환자에게는 투여하면 안 된다. **【저장방법】** 밀폐용기, 30℃ 미만에서 보관 **【포장단위】** 28 정(14 정/PTP×2) ※ 만약 구입시 사용기한이 경과되었거나 변질, 변패 또는 오손된 제품인 경우에는 구입처를 통하여 교환하여 드리며, 공정거래위원회 고시 "소비자분쟁해결기준"에 의거 소비자의 정당한 피해는 보상하여 드립니다. 의약품 부작용 발생 시 한국의약품안전관리원에 피해구제를 신청하실 수 있습니다(피해구제 상담 번호 14-3330, 의약품 부작용 신고/피해구제 상담 번호 1644-6223). 문헌개정연월일 : 2021 년 7 월 19 일 수입자 : 한국아스트라제네카 보다 자세한 사항은 제품설명서 전문을 참고하시기 바랍니다 .aARI20210721

KR-136611 Exp. 2025-05 (Prep. 2023-05)

AstraZeneca Alvogen

【수입자】 한국아스트라제네카 서울시 강남구 영동대로 517 아셈타워 21 층 **전화:** (02) 2188-0800 **【공동판매자】 알보젠코리아주식회사** 서울시 영등포구 국제금융로 10 21FC 13층 **소비자상담번호:** 02-2047-7700

IBRANCE®
palbociclib
Made *for* mBC[1]

FOR YOUR ADULT PATIENTS
WITH HR+/HER2- mBC[1]

YOU MEASURE SUCCESS BY MEANINGFUL MOMENTS.

환자의 소중한 일상,
입랜스가 함께 합니다.

SO DOES IBRANCE.

HR+/HER2- = hormone receptor-positive, human epidermal growth factor receptor 2-negative; **mBC** = metastatic breast cancer.
Reference 1. 입랜스® 제품설명서(2023.11.16)

자세한 제품설명서 확인은 QR을 통해 확인해주십시오.

[안전성 정보] 임상시험에서 가장 빈번하게 보고된 이상반응은 호중구 감소증이었으며, 주기적인 혈액검사가 필요합니다. 호중구 감소증과 관련된 자세한 용량 조절 정보는 제품설명서를 참고해주세요.

입랜스® 캡슐 75 mg, 100 mg, 125 mg(팔보시클립)

Pfizer 한국화이자제약
04631 서울특별시 중구 퇴계로 100, 5층, 6층 TEL : (02)317-2114 수신자부담 080-022-1400 website : www.pfizer.co.kr /제품 의학정보 문의 Website : www.pfizermedinfo.co.kr TEL. 080-210-2114 I Email : MIS.Korea@pfizer.com

PP-IBR-KOR-1057_20AUG2025

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

Oral Presentation

"Go Beyond Cure of Breast Cancer"

EFFECT OF BRCA 1/2 MUTATION ON THE LONG-TERM ONCOLOGIC OUTCOME OF BREAST CANCER PATIENTS WHO UNDERWENT BREAST-CONSERVING SURGERY (KOREA-BSG 06)

Chihwan Cha[1], Janghee Lee[2], Sae Byul Lee[3], Jai Min Ryu[4], Hong Kyu Kim[5], Hyung Seok Park[6], Byeongju Kang[7], Sung Gwe Ahn[8], Min Sung Chung[1], Seon-Hi Shin[9], Junwon Go[9], Sanghwa Kim[10], Eun Young Kim[11], Young-Joon Kang[12], Min Sun Young[13], Moohyun Lee[14]

[1]Hanyang Univ. Seoul Hospital, Department of Surgery, Korea, [2]Dongtan Sacred Heart Hospital, Department of Surgery, Korea, [3]ASAN Medical Center, Department of Surgery, Korea, [4]Samsung Medical Center, Department of Surgery, Korea, [5]Seoul National Univ. Hospital, Department of Surgery, Korea, [6]Yonsei Univ. College of Medicine, Department of Surgery, Korea, [7]Kyungpook National Univ. Chilgok Hospital, Department of Surgery, Korea, [8]Gangnam Severance Hospital, Department of Surgery, Korea, [9]Hanyang Univ. College of Medicine, Department of Biostatistical Consulting and Research Lab, Korea, [10]Hallym Univ. Sacred Heart Hospital, Department of Surgery, Korea, [11]Kangbuk Samsung Hospital, Department of Surgery, Korea, [12]The Catholic Univ. of Korea, Incheon St. Mary's Hospital, Department of Surgery, Korea, [13]Kyung Hee Univ. Medical Center, Department of Surgery, Korea, [14]Keimyung Univ. School of Medicine, Department of Surgery, Korea

Background: Despite of association between BRCA mutation and breast cancer risk, prognosis of breast cancer patients with BRCA mutation remains controversial. Some studies have found that BRCA1 mutation correlated with poor survival, however, others have shown that BRCA carrier had similar oncologic outcome compared with non-carrier. Thus, we aimed to investigate the long-term oncologic outcome of patients who underwent BRCA test and breast-conserving surgery (BCS).

Methods: Patients who were diagnosed with invasive cancer (with stage T1-3N0-3M0) and underwent BRCA test from January 2008 to December 2015 were included. To compensate for limitation of the retrospective study, propensity score matching (PSM) was performed. Covariates such as age, tumor stage, molecular subtype, and tumor grade were adjusted between two groups according to the BRCA 1/2 mutation.

Result: A total of 2,505 patients with BRCA test and BCS were included. After performing 1:2 PSM according to the BRCA mutation, 367 patients were BRCA carrier and 727 patients were non-carrier. Among them, 24.9% had lymph node metastasis, and 49.1% had triple-negative subtype. There was no statistical difference in age, stage, molecular subtype, and tumor grade between two groups. At a median follow-up of 8.2 years, locoregional recurrence occurred in 54 patients, and there was no difference between carriers and non-carriers (4.1% and 5.4%, respectively, log-rank $p = 0.271$). Distant metastasis occurred in 85 patients, and there was no difference between two groups (7.1% and 8.1%, respectively, log-rank $p = 0.429$). Metachronous contralateral breast cancer was more common in carriers (14.6% and 6.9%, respectively, $p < 0.001$). Multivariate regression analysis revealed that BRCA mutation was not significantly associated with the overall survival ($p > 0.05$).

Conclusions: Our findings suggested that BRCA 1/2 mutations had no impact on long-term survival outcomes among breast cancer patients who underwent BCS. Further studies with prospectively collected data would be warranted to validate our findings.

SUMMARIZING PATIENT MEDICAL RECORDS FOR ACCURATE PHYSICIAN COMMUNICATION: A COMPARISON OF HUMAN VS. AI-BASED APPROACHES

Jijung Jung[1], Yoona Kim[2], Minjung Lee[2], Rodrigo Sanchez-Bayona[3], Paul J Brockelmann[4], Robert Olson[5], Denise Bernhardt[6], Christopher Goodman[7], Matthew Cecchini[8], Michael Yan[9], Houda Bahig[10], Sherman Lin[11], Joseph Cheng[2], Petros Giannikopoulos[2,12,13], William R. Polkinghorn[2], David Palma[2,7], Han-Byoel Lee[1], Po-Hsuan Cameron Chen[2]

[1]Seoul National Univ., Department of Surgery, Korea, [2]Need Inc., Santa Monica, California, USA, Department of Medical Oncology, U.S.A., [3]Hospital Universitario 12 de Octubre, Madrid, Spain, Department of Medical Oncology, Germany, [4]Univ. Hospital of Cologne, Germany, Department of Medical Oncology, Canada, [5]BC Cancer, Centre for the North, Prince George, BC, Canada, Department of Radiation Oncology, Canada, [6]Klinikum rechts der Isar, Technical Univ. of Munich, Munich, Germany, Department of Radiation Oncology, Germany, [7]London Health Sciences Centre, London, ON, Canada, Department of Radiation Oncology, Canada, [8]London Health Sciences Centre, London, ON, Canada, Department of Pathology, Canada, [9]Princess Margaret Cancer Centre Univ. Health Network, Department of Radiation Oncology, Canada, [10]Centre Hospitalier de lUniversit de Montral, Universit de Montral, Montreal, Quebec, Canad, Department of Radiation Oncology, Canada, [11]Western Univ. and London Health Sciences Centre, London, Ontario, Canada, Department of Radiation Oncology, Canada, [12]Univ. of California, San Francisco, California, USA, Department of Pathology, U.S.A., [13]Univ. of California, Berkeley, California, USA, Department of Pathology, U.S.A.

Background: Understanding a patient's clinical narrative, timeline, and history is critical for accurate treatment decision-making, communication between providers, quality improvement, and patient education. However, summarizing complex records is time-consuming and error-prone. Recent advancements in artificial intelligence (AI), language learning models (LLM) specifically, offer paths to improve quality and efficiency.

Methods: A retrospective study was conducted on 30 breast cancer cases, including outpatient notes, pathology reports, and radiology reports from Seoul National University Hospital. All cases were processed in three different approaches: full-AI, AI-assisted, and human-only. In the Full-AI method, an LLM processed medical notes and created clinical summaries autonomously. The AI-assisted approach involved two oncology physician assistants revising AI-generated summaries, while the human-only method had the assistants compile summaries without AI. Eight board-certified international oncology specialists blindly rated the summaries on faithfulness, completeness, and brevity using a 3-point scale. Additionally, specialists ranked their preferred summaries and attempted to identify the full-AI summary. Rankings were assessed using a Friedman test followed by a post hoc Wilcoxon signed-rank test.

Result: The study found specialists favored full-AI, followed by AI-assisted, and then human-only summaries, with total ranks of 107, 110, 143 respectively (lower is better, $p < 0.001$). The difference between full-AI and AI-assisted was not significant ($p = 0.82$). Evaluation scores (mean ± 95%CI, higher is better) showed full-AI, AI-assisted, and human-only scored 2.20 ± 0.17, 2.35 ± 0.19, 2.13 ± 0.19 for faithfulness; 1.98 ± 0.15, 2.25 ± 0.15, 1.83 ± 0.18 for completeness; and 2.23 ± 0.16, 2.25 ± 0.17, 2.07 ± 0.15 for brevity. The average summarization time was 1.04, 23.18, 30.23 minutes, respectively. The accuracy in identifying the full-AI summary was 0.28 similar to 0.33 chance rate.

Conclusions: Integrating LLMs into medical summary creation significantly improves quality and efficiency (23% and 97% improvement for AI-assisted and full-AI, respectively). However, specialists' preferences don't always align with quantitative scores, indicating unmeasured aspects in clinical summaries that require further research. AI-assisted summarization tools could potentially be used to enhance quality of care in the clinic.

LOW DOSE BREAST CT USING DEEP LEARNING-BASED TECHNIQUE FOR NOISE REDUCTION

Myoung Kyoung Kim[1], Haejung Kim[1], Seon Hyeong Choi[2], Chang Won Kim[3], Sun Young Baek[1], Eun Young Ko[1]

[1]Samsung Medical Center, Department of Radiology, Korea, [2]Queen's U Clinic, Department of Radiology, Korea, [3]ClariPi Research, Department of Radiology, Korea

Background: To assess the feasibility of applying a deep learning-based denoising technique to breast CT in terms of radiation dose reduction and improving image quality.

Methods: We obtained images of mammography phantom with six different radiation dose (32, 16, 12.5, 10, 8, 6mAs) on Advanced Breast (AB)-CT. CT images with radiation dose lower than routine clinical use (32mA) were denoised using deep learning model (ClariCT.AI, ClariPI). We investigated the threshold dose lower the radiation dose without compromising the detection of lesions by comparing objective and subjective image quality. Then, we retrospectively included clinical breast CT images of 18 women (median, 46 years; range, 37-76 years) with 20 breast lesions (17 benign, 3 malignant; 11 masses, 9 calcifications). We noised to threshold dose obtained by phantom study, and denoised images. We compared objective and subjective image quality between the original and denoised images. Three blinded readers subjectively graded the image quality using 5-point scale.

Result: In phantom study, the threshold dose that lower radiation dose without compromising detection was 16mA. Objective image qualities of denoised at 16mA was superior to those of original images at 32mA (290.02 ± 425.26 vs. 105.64 ± 156.42; $p < 0.001$). The subjective score of lesions in mammography phantom (fiber, speck and mass) in denoised was superior to that of original ($p < 0.001$). Inter-observer agreement was higher at denoised than original (0.958 vs 0.895). In clinical study, objective image qualities were significantly higher in denoised than original (31.04 ± 02.42 vs. 22.07 ± 2.27; $p < 0.001$). In terms of subjective image qualities, masses were seen significantly better in denoised than original ($p < 0.001$). Detection of calcifications were similar between original and denoised low dose images ($p = 0.343$).

Conclusions: Application of the deep learning technique in breast CT can reduce the radiation dose by half and provide better objective and subjective image qualities of breast CT images.

PREOPERATIVE IMPACTING FACTORS ON TUMOR GROWTH DURING THE WAIT TIME FOR BREAST CANCER SURGERY

Ikbeom Shin[1], Eunhye Kang[1], Ji-Jung Jung[1], Hawjeong Lee[1], Jinyoung Byeon[1], Jong-Ho Cheun[2], Hong-Kyu Kim[1], Han-Byoel Lee[1], Wonshik Han[1], Hyeong-Gon Moon[1]

[1]Seoul National Univ., Department of Surgery, Korea, [2]SMG-SNU Boramae Medical Center, Department of Surgery, Korea

Background: This study aims to identify the factors that contribute to breast tumor growth during the interval between diagnosis and treatment.

Methods: We retrospectively reviewed patients newly diagnosed with invasive breast cancer between January 2010 and December 2022 at Seoul National University Hospital. Cases with multifocal tumors or intervals longer than 8 weeks between diagnosis and treatment were excluded. The specific growth rate (SGR) was used to determine the tumor growth rate by measuring the tumor size through ultrasonography (US) at diagnosis and the day before surgery. The cases were divided into two groups based on the median SGR value (0.29×10^{-2}), namely low and high growth rate groups.

Result: A total of 1,629 patients were analyzed, with a median duration of 37 days between diagnosis and surgery. The tumor size at the time of first diagnosis was significantly larger in the low growth group compared to the high growth group (1.7 ± 0.8 vs. 1.6 ± 0.7 cm, $p = 0.023$). On multivariable analysis, histologic grade (HG) II and III were found to have a significant impact on high SGR ($p = 0.037$; hazard ratio (HR) 1.43; 95% confidence interval (CI) 1.02-2.01, $p < 0.001$; HR 2.40; 95% CI 1.61-3. 58). Progesterone receptor (PR) negativity and Ki-67 $\geq$ 10% were significant independent factors of high SGR ($p = 0.040$; HR 1.36; 95% CI 1.01-1.82, $p = 0.038$; HR 1.34; 95% CI 1.02-1.78, respectively). The low SGR group had higher overall survival (OS) and distant metastasis-free survival (DMFS) rates, although the differences were not statistically significant (10-year OS rate: 92.7% vs. 91.8%, $p = 0.255$; 10-year DMFS rate: 95.9% vs. 92.9%, $p = 0.166$).

Conclusions: After the initial diagnosis, tumor with high HG, high Ki-67 and PR negativity had increased risk of rapid tumor growth during the waiting period in breast cancer patients.

A COHORT ON HEALTH-RELATED QUALITY OF LIFE AND PSYCHOLOGICAL HEALTH OF LONG-TERM BREAST CANCER SURVIVORS IN KOREA

Thi Xuan Mai Tran[1,2], Soyoun Jung[2], Eun-Gyeong Lee[2], Heeyoun Cho[2], Na Yeon Kim[3], Sungkeun Shim[3], Ho Young Kim[3], Danbee Kang[3], Juhee Cho[3], Eunsook Lee[2], Yoonjung Chang[2], Hyunsoon Cho[2]

[1]Hanyang Univ. College of Medicine, Department of Preventive Medicine, Vietnam, [2]National Cancer Center, Department of Medical Oncology, Korea, [3]Samsung Medical Center, Department of Medical Oncology, Korea

Background: With improved diagnostic and treatment modalities, the number of breast cancer (BC) survivors is quickly growing. BC survivors might experience a wide range of short-term to long-term effects from the treatment. A prospective cohort collecting health-related quality of life (HRQoL) and mental health from BC diagnosis time to long-term was conducted. This study aimed to introduce the design of this cohort and several main results relating to HRQoL and mental health status of long-term BC survivors.

Methods: Data were collected from the National Cancer Center and Samsung Medical Center through a recent long-term follow-up (LTFU) survey conducted between November 2019 and July 2020. Assessment tools included the EORTC QLQ-C30, EuroQoL-5D, and Fear of Cancer Recurrence Inventory (FCRI), among others. Sociodemographic factors were self-reported, and clinical information was obtained from electronic medical records.

Result: Results indicated that HRQoL functions deteriorated during the first-year post-diagnosis but gradually improved in subsequent years. BC survivors reported significant improvements in social and role functions during this period. At the LTFU, survivors reported a high incidence of fatigue, pain, and insomnia. 46% reported sub-clinical fear of cancer recurrence (FCR), and 31% reported clinical FCR, with younger age at diagnosis correlating with higher FCR levels. Higher FCR was associated with negative emotional function, increased depression, and diminished overall quality of life. In the comparison with women without a BC history, long-term BC survivors experienced more problems in usual activities, pain/discomfort, and anxiety/depression, leading to an overall lower HRQoL.

Conclusions: In conclusion, while HRQoL in BC survivors initially deteriorates during treatment, it gradually improves in the post-diagnosis years. However, chronic side effects persist, impacting long-term survivorship. Concerns and FCR persist even a decade post-diagnosis, particularly in those diagnosed at a younger age. Overall, long-term BC survivors exhibit lower HRQoL, mainly attributable to pain and anxiety.

A RANDOMIZED CONTROLLED TRIAL INVESTIGATING CLINICAL EFFICACY OF MHEALTH APPS IN BREAST CANCER SURVIVORS

Young-Jin Lee, Tae-Kyung Yoo, Sae Byul Lee, Jisun Kim, Il Yong Chung, Beom Seok Ko, Hee Jeong Kim, Byung Ho Son, Jong Won Lee

ASAN Medical Center, Department of Surgery, Korea

Background: The adjuvant therapy of breast cancer has been found to be linked to weight gain and negative effects on the metabolic profile, which can adversely affect the prognosis of breast cancer patients. This study aims to evaluate whether digital interventions utilizing mobile healthcare (mHealth) apps demonstrate potential for improving this issues.

Methods: This study adopts a randomized controlled trial design, with patients being allocated into one of three intervention groups or a control group at a 1:1:1:1 ratio. Patients in the intervention groups are encouraged to utilize their assigned mobile apps post-operatively. The primary outcomes are body composition and metabolic health markers, which will be assessed at both 6- and 12-month follow-up periods.

Result: In this study involving 249 participants divided into four groups (A, B, C, and D), there were no significant differences in baseline characteristics. Changes in body composition, such as BMI and waist circumference, remained consistent within each group and did not differ significantly between the CTx and NAC subgroups. Notably, the cohort receiving NAC exhibited significant reductions in waist circumference during the initial 6 months in Groups A ($p = 0.002$) and B ($p = 0.005$) compared to the control group. Regarding glucose profiles, Group B showed a significant decrease in fasting blood sugar (FBS) levels over 12 months ($p = 0.012$), while Group C displayed a decreasing trend, especially in the CTx and NAC subgroups. HbA1c levels remained unchanged. In terms of lipid profiles, HDL cholesterol levels did not improve in most intervention groups, except for a significant increase in Group C within the NAC subgroup at 6 months ($p = 0.005$). Lastly, only Group A showed a significant increase in the proportion of patients with normal BMI values ($p = 0.013$).

Conclusions: The findings of this study suggest that mHealth interventions can improve physical well-being of breast cancer survivor who received surgery and adjuvant therapy.

ESTABLISHING AN ADVANCED PRACTICE NURSE (APN)-LED BREAST CANCER SURVIVORSHIP CLINIC AT THE NATIONAL UNIVERSITY CANCER INSTITUTE (NCIS): A YEAR'S EXPERIENCE

Litang Chen[1], Ednajoy Lay Poh Ngo[1], Mei Chein Low[2], Samuel Guan Wei Ow[3]

[1]National Univ. Cancer Institute, Singapore, Division of Oncology Nursing, Singapore, [2]National Univ. Cancer Institute, Singapore, Department of Operations and Administration, Singapore, [3]National Univ. Cancer Institute, Singapore, Department of Medical Oncology, Singapore

Background: Early Breast Cancer (BC) is associated with excellent prognosis hence survivorship care is important. The traditional specialist-led surveillance model is not sustainable with the rising burden of BC.

Methods: An APN-led BC survivorship clinic was set up once a week at NCIS, supervised by an oncologist. Stage 0 BC survivors post-surgery, and Stage 1-3 BC survivors who remain disease-free 3 years post-surgery were referred for surveillance. Satisfaction surveys using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree) were conducted with each visit.

Result: From Feb 2023 to Feb 2024, 161 female BC survivors (8.1% Stage 0, 35.4% Stage 1, 43.5% Stage 2) were seen in the APN-led clinic. Median age was 63 (range 32-89), majority Chinese (80.1%), and most common subtype being hormone receptor-positive / HER2-negative (67.5%). Median disease-free interval was 4 years (range 0.3 - 21). 76.4% were still on endocrine therapy, while 30.9% were on bone modifying agents. 5.0% had abnormal mammogram or physical findings requiring investigations, none of whom relapsed. Preventative health measures were introduced including vaccinations for 30.4% and updated cancer screening for 23.0%. 2.5% had abnormal metabolic screen and were started on medications. 71/161 (44.1%) were eligible for discharge to primary care, with 29/71 (40.8%) transited, and the remaining preferring to be seen in NCIS. Despite 76.1% of survivors not being aware of the APN-led clinic, 100% rated a satisfaction score of 4 or 5 with the service, with >98% stating they were accorded sufficient time and advised thoroughly on their treatment plan. All reported a reduction in waiting time compared to their usual consult.

Conclusions: An APN-led BC clinic is feasible for the long-term management of stable BC survivors and can provide holistic care with high satisfaction rates. APN-led care can reduce waiting time and cost for patients, and right-site care to increase bandwidth for oncologists.

EVALUATION OF COMPLIANCE TO ADJUVANT ENDOCRINE THERAPY (ET) IN HORMONE RECEPTOR-POSITIVE (HR+) EARLY BREAST CANCER IN YOUNG WOMEN (Y-EBC) FROM A TERTIARY CARE CANCER CENTER IN INDIA

Jyoti Bajpai, Mehak Trikha, Sushmita Rath, Laboni Sarkar, Akash Pawar, Altaf Siddiqui, Revathy Kkrishnamurthy, Mitchelle Engineer, Dileep Hoysal, Rima Pathak, Ayushi Shahay, Palak Popat, Purvi Haria, Prabhat Bhargava, Seema Gulia, Tanuja Teni, Tabassum Wadasadawala, Shalaka Joshi, Vani Parmar, Nita Nair, Shripad Banavali, Rajiv Sarin, Rajendra Badwe, Sudeep Gupta

Tata Memorial Center, Department of Medical Oncology, India

Background: Compliance to ENDOCRINE THERAPY (ET) is important determinant for outcomes, however, underexplored.

Methods: EARLY BREAST CANCER IN YOUNG WOMEN (Y-EBC) who completed at-least six months of ET between 2015-2017 were analyzed. Compliance to ET is defined as taking ≥80% of prescribed doses of adjuvant ET (permissible interruptions of < a week per month in total).

Result: There were 704 women with a median age of 34.7 (Interquartile range, IQR-32-38) years; 44 (6.3%) were T1, 336 (47.7%)-T2, 146 (20.7%)-T3, 154 (21.9%) were T4 tumors; 527 (74.8%) were HR+/ HER2- status,177 (25.2%) triple-positive (HR+/ HER2+). The mean use of ET was 49 (IQR -23.7- 80.2) months. 51 women stopped ET within six months, of the remaining 653, 436 (66.7%) were compliant to treatment. The significant factors associated with noncompliance in 217 women were a combination of forgetfulness (79.2%), long duration therapy (67.2%), and side effects (66.3%); (p = <0.01) and a wish to conceive in 5 (2.27%). Overall, 464 women (65.9%) completed their families before diagnosis, while remaining nulliparous were not very keen to conceive. The adverse effects of any grade were experienced by 307 women (43.6%) including hot flushes in 68 (22.2%), fatigue -37 (12.0%) mood swings- 35 (11.4%), irregular menstruation-35 (11.4%), arthralgia - 31 (10.1%), vaginal dryness -26 (8.4%), insomnia- 22 (7.2%), and others (hypertension, nausea, transaminitis, loss of libido, osteoporosis, depression, carcinoma in endometrium) in <5% each. At a median follow-up of 72.8 (70.2-75.5) months, the median event-free survival (EFS) was not reached in the compliant group, while it was 87.4 [(95%CI: 74-NR) (p=0.042)] months in the noncompliant group. The estimated five-year EFS was 58.5% (95%CI: 54.6%-58.5%), while that of the complaint and the noncompliant group is 63.4% (58.5%-68.6%) and 55.5% (49.0%-62.9%). The median OS was not reached in either the compliant or the noncompliant groups.

Conclusions: This study underscores the relatively low compliance rate to ET in YBC women with various factors associated. Since it is an independent prognosticator, it merits adequate attention.

THE IMPACT OF ADDING GONADOTROPHIN-RELEASING HORMONE AGONIST TO ADJUVANT ENDOCRINE THERAPY IN PREMENOPAUSAL WITH SMALL NODE NEGATIVE HORMONE RECEPTOR-POSITIVE BREAST CANCER ON SURVIVAL AND DISEASE RECURRENCE

Sarah Alsafi[1], Hee Jeong Kim[2], Seon Ok Kim[3], Sae Byul Lee[2], Tae-Kyung Yoo[2], Jisun Kim[2], Il Yong Chung[2], Beon Seok Ko[2], Jon Won Lee[2], Byung Ho Son[2]

[1]Al Adan Hospital, Ministry of Health, Kuwait, Department of Surgery, Kuwait, [2]ASAN Medical Center, Department of Surgery, Korea, [3]ASAN Medical Center, Department of Clinical Epidemiology and Biostatistics, Korea

Background: Addition of gonadotrophin-releasing hormone agonist (GnRH) to tamoxifen showed improved survival in premenopausal women with high-risk hormone-sensitive breast cancer. However, benefit of adding GnRH to tamoxifen in premenopausal women with low-risk tumors is insufficient. We evaluated the impact of adding GnRH agonist to tamoxifen in premenopausal women with small (T1-T2) hormone receptor positive (HR+) node negative (N0) breast cancer who didn't receive adjuvant chemotherapy on overall survival and disease-free survival.

Methods: 4670 premenopausal women diagnosed with T1-2N0 HR+ breast cancer in Asan Medical Center in Seoul, Republic of Korea retrospectively between January 2006 till December 2019. We included patients aged 55 and below who received tamoxifen and didn't receive chemotherapy. Primary endpoints were overall survival and disease-free survival. Kaplan Meier curve and log-rank test were used to analyze the data. Subgroup analysis adjusted to age, tumor size, nuclear grade, Ki67%, progesterone receptor and HER2 status.

Result: There were 1,848 patients in TAM only versus 2,822 patients in TAM+OFS. Median age was 44 in cohort. Patients < 35 yrs represented 5.41% in TAM only and 4.54% in TAM+OFS.16% of the cohort were > 50. Tumor size ≤ 0.5 cm most prevalent in TAM only group (910 patients) whereas in TAM+OFS 1-2 cm was most prevalent (1,562 patients). > 50% had positive Ki67 and majority were progesterone receptor positive. 204 patients in TAM only were HER2 positive whereas 116 in TAM+OFS were positive. Subgroup analysis and forest plot statistically significant favoring TAM+OFS in HER2 status (p-value 0.011). Kaplan-Meier curve didn't show difference between groups with p-value of 0.25 for OS and mortality and 0.339 for DFS.

Conclusions: Adding GnRH agonist to tamoxifen in premenopausal HR+T1-T2N0 tumors didn't show benefit in terms of OS, mortality and DFS despite subgroup of patient had a significant result in terms of HER2 status. Further studies are advised to assess the benefit of GnRH agonist to this group of patients.

COMPARATIVE ONCOLOGICAL OUTCOMES OF PREMENOPAUSAL WOMEN WITH OVARIAN FUNCTION SUPPRESSION AND POSTMENOPAUSAL WOMEN IN ER+/HER2- BREAST CANCER

Jijung Jung[1], Jong-Ho Cheun[2], Eunhye Kang[1], Ikbeom Shin[1], Jinyoung Byeon[1], Hwajeong Lee[1], Hong-Kyu Kim[1], Han-Byoel Lee[1], Hyeong-Gon Moon[1], Wonshik Han[1]

[1]Seoul National Univ., Department of Surgery, Korea, [2]SMG-SNU Boramae Medical Center, Department of Surgery, Korea

Background: TAILORx and RxPONDER trials have highlighted that premenopausal women (PRE) with early-stage breast cancer benefit more from chemotherapy at lower Recurrence Scores than their postmenopausal counterparts (POST). Specifically, in node-positive disease within the RxPONDER trial, PRE patients who underwent chemotherapy exhibited superior survival rates compared to the POST, yet they showed worse survival without chemotherapy. This raises the question of whether the application of ovarian function suppression (OFS) in PRE aligns their cancer biology, treatment response, and outcomes with those observed in POST. This question emerges from an underlying hypothesis that despite the application of OFS, the intrinsic differences in breast cancer biology between PRE and POST could potentially influence treatment outcomes.

Methods: Data from Seoul National University Hospital breast cancer cohort, focusing on patients with stage pT1-3, pN0-1, ER+/HER2- cancer who underwent surgical intervention, were analyzed. Patients who did not receive standard adjuvant endocrine therapy were excluded. PRE treated with OFS plus tamoxifen or aromatase inhibitor were included. Survival outcomes between PRE receiving OFS and POST were compared, with chemotherapy usage as a stratification factor. Propensity score matching (PSM) was employed to mitigate selection bias.

Result: The study analyzed 3,483 patients, comprising 2,901 POST and 582 PRE undergoing OFS. In the cohort without chemotherapy, the 10-year invasive disease-free survival (iDFS) rates showed no significant difference: POST 90.3% vs. PRE 88.3% (multivariate hazard ratio [HR] 1.32; 95% confidence interval [CI] 0.90-1.94; $P = 0.16$). Similarly, among patients treated with chemotherapy, the 10-year iDFS rates were comparable (POST 83.0% vs. PRE 79.5%; HR 1.21; 95% CI 0.80-1.83; $P = 0.37$). These findings remained consistent across all subgroups and post-PSM analysis.

Conclusions: The oncological outcomes for premenopausal women receiving OFS are comparable to those of postmenopausal women in ER+/HER2- early breast cancer, irrespective of chemotherapy administration. Pending trials aim to further elucidate the outcomes for premenopausal women on OFS without chemotherapy in genomic low/pN1 or intermediate risk/pN0 scenarios.

A PHASE III TRIAL COMPARING T-DM1 WITH HPD IN OLDER PATIENTS WITH METASTATIC HER2-POSITIVE BREAST CANCER

Akihiko Shimomura[1], Kenji Tamura[2], Keita Sasaki[3], Ryo Sadate[3], Akihiko Suto[4], Masataka Sawaki[5], Yasuaki Sagara[6], Naohito Yamamoto[7], Tomoyuki Yoshiyama[8], Takako Hayashi[9], Eriko Tokunaga[10], Takashi Yamanaka[11], Chikako Shimizu[1], Tadahiko Shien[12], Hiroji Iwata[5]

[1]National Center for Global Health and Medicine, Department of Medical Oncology, Japan, [2]Shimane Univ. Hospital, Department of Medical Oncology, Japan, [3]National Cancer Center Hospital, Department of Cog Data Center/ Operations Office, Japan, [4]National Cancer Center Hospital, Department of Breast Surgery, Japan, [5]Aichi Cancer Center, Department of Breast Oncology, Japan, [6]Sagara Hospital, Department of Breast and Thyroid Surgical Oncology, Japan, [7]Chiba Cancer Center, Department of Breast Surgery, Japan, [8]NHO Kure Medical Center and Chugoku Cancer Center, Department of Breast Surgery, Japan, [9]NHO Nagoya Medical Center, Department of Breast Surgery, Japan, [10]NHO Kyushu Cancer Center, Department of Breast Oncology, Japan, [11]Kanagawa Cancer Center, Kanagawa, Department of Breast Surgery and Oncology, Japan, [12]Okayama Univ. Hospital, Okayama, Department of Breast and Endocrine Surgery, Japan

Background: Trastuzumab, pertuzumab, and docetaxel combination (HPD) is a standard 1st-line treatment for HER2-positive metastatic breast cancer (MBC). For older patients, it is difficult to maintain a relative dose intensity, which often impairs their quality of life.

Methods: The eligibility criteria were: age 65 years or older, HER2-positive MBC, no previous treatment with chemotherapy and anti-HER2 drug, ECOG PS 0-2 for 65-74 years or 0-1 for 75 years or older, adequate organ function. Trastuzumab emtansine (T-DM1) every 3 weeks or HPD every 3 weeks were administered after a 1:1 ratio randomization. The primary endpoint was overall survival (OS) to confirm the non-inferiority of T-DM1 to HPD with a margin of 1.35. Secondary endpoints were progression-free survival (PFS), response rate, adverse events, cumulative breast cancer-specific mortality, and deterioration of activities of daily living.

Result: Between January 2018 and March 2023, 148 patients were enrolled. The trial was terminated early due to futility at the planned first interim analysis. The median age was 72 years (65-88) in the T-DM1 arm and 71 (65-84) in the HPD arm. The ER-positive patients were 54.8% in T-DM1 and 50.7% in HPD. Of all patients, 64.8% had stage IV and 35.2% had recurrent disease. T-DM1 was not non-inferior for OS (HR 1.263; 95% CI, 0.677-2.357). The median PFS was 11.3 months in the T-DM1 arm and 15.6 months in the HPD arm (HR 1.358; 95%CI, 0.907-2.033). Grade 3 or more neutropenia was less common in the T-DM1 arm (0 vs. 30.1%); but thrombocytopenia was more common in the T-DM1 arm (16.7 vs. 0%). Grade 3 or more non-hematological adverse events were less common in the T-DM1 arm (34.7% vs. 56.8%).

Conclusions: Although T-DM1 showed better tolerability, HPD will remain the standard 1st-line treatment for older patients with HER2-positive MBC.

DYNAMIC IMPACT OF CLINICOPATHOLOGICAL FEATURES AND TREATMENTS ON SURVIVAL IN PATIENTS WITH SURGICAL BREAST CANCER: A RETROSPECTIVE POPULATION-BASED COHORT STUDY

Yan Yang[1], Fangfang Li[2], Dewu Mou[1], Heng Yin[1], Li Fan[1], Lei Yang[1], Yunhui Huang[1], Hongwei Yang[1], Maoshan Chen[1]

[1]*Suining Central Hospital, Department of Breast and Thyroid Surgery, China,*
[2]*Suining Central Hospital, Department of Operating Room, China*

Background: The prognostic impact on survival of clinicopathological features and treatment for breast cancer have been demonstrated. However, the dynamic impact between near- and long-term remains insufficient.

Methods: This retrospective cohort study identified breast cancer from the SEER database. The primary outcomes were breast cancer-specific survival (BCSS) and overall survival (OS). Multivariable Cox proportional hazards model was used to identify independent prognostic factor and proportional hazards (PH) test was used to evaluate the proportional impact of each factor. The segmented multivariable Cox model was used to estimate the annual adjusted hazard ratio if the PH test is not met.

Result: A total of 516,756 patients were enrolled in this study with a median age of 59 (Interquartile range: 50-69) years. The estimated 5-year and 10-year BCSS and OS were 93.7%, 89.1% and 88.1%, 75.5%. Multivariable Cox proportional hazards regression model showed that age, race, income, marital, grade, histology, TNM stage, hormone receptor, HER-2, surgery, radiotherapy, and chemotherapy were associated with survival. The PH test showed that all variables were not met the PH assumption. The segmented multivariable Cox model showed that the impaction of all clinical features and treatment have changed during the period. The influence of age, income, grade, surgery, chemotherapy, and radiotherapy on prognosis was mainly in the first few years after diagnosis. The influence of tumor stage and lymph node stage on prognosis lasted for more than 10 years after diagnosis. However, the effect of hormone receptor status on prognosis is bidirectional, the survival hormone receptor-positive patients is better than that of hormone receptor-negative patients within 6 years after diagnosis, while the prognosis of hormone receptor-negative patients is better than that of positive patients 6 years after diagnosis.

Conclusions: There are dynamic influence of clinicopathological features and treatment on breast cancer prognosis. The assessment and treatment at different follow-up should be considered individually.

NO SURVIVAL DIFFERENCE BETWEEN INITIAL INFILTRATING BREAST CANCERS EITHER DEVELOPING METACHRONOUS CONTRALATERAL BREAST CANCER OR NOT

Byeongkwan Park[1], Seung Taek Lim[1], Young Jin Suh[1], Young Yi An[2], Hyunjoo Choi[3]

[1]The Catholic Univ. of Korea, St. Vincent's Hospital, Department of Surgery, Korea, [2]The Catholic Univ. of Korea, St. Vincent's Hospital, Department of Radiology, Korea, [3]The Catholic Univ. of Korea, St. Vincent's Hospital, Department of Pathology, Korea

Background: Continued advances in the diagnosis and treatment of breast cancer have led to an increase in the number of long-term breast cancer survivors who are diagnosed with the disease, and an increase in the incidence of metachronous breast cancer in the contralateral breast. Therefore, it is important to understand the factors that influence the development of metachronous breast cancer.

Methods: We extracted 17,082 women with stage 0 to 3 ipsilateral breast cancer from the prospectively maintained Korean breast cancer registry from 1989 to 2013 and divided them into two groups, 88 with metachronous breast cancer and 16,994 without metachronous breast cancer, and screened for risk factors that showed significant differences in the first breast cancer that might be involved in causing metachronous breast cancer. Risks were assessed using the Fine-Gray subdistributional hazard model.

Result: Significant differences in baseline characteristics between metachronous contralateral breast cancer (MCBC) and non-MCBC groups were observed. Patients under 40, those with histologic and nuclear grade 3 tumors, and those with triple-negative breast cancer subtype were more prevalent in the MCBC group. Additionally, the cumulative incidence of MCBC increased over time, with a notable rise from 0.1% at year 1 to 1.6% by year 10. Survival analysis showed no significant differences in overall or breast cancer-specific survival between the two groups. Key predictive factors identified for MCBC included being under 40 at initial diagnosis, negative progesterone receptor status, and a Ki-67 score above 14.

Conclusions: The study revealed various factors associated with MCBC and emphasize the need for long-term monitoring of breast cancer survivors, considering these newly identified risk factors. Further research, particularly prospective studies, is essential to validate these findings and expand their clinical applicability.

SOCIODEMOGRAPHIC, CLINICAL, AND BIOMARKER PREDICTORS OF CHEMOTHERAPY-INDUCED PERIPHERAL NEUROPATHY IN PATIENTS WITH BREAST CANCER: A CLASSIFICATION AND REGRESSION TREE (CART) ANALYSIS

Juan Adrian Wiranata[1,2], Yufi Kartika Astari[3], Meita Ucche[4], Susanna Hilda Hutajulu[5], Dewi Kartikawati Paramita[6], Mardiah Suci Hardianti[5], Kartika Widayati Taroeno-Hariadi[5], Johan Kurnianda[5], Ibnu Purwanto[5]

[1]Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Department of Master In Clinical Medicine Program, Clinical Epidemiology Study Program, Indonesia, [2]Universitas Gadjah Mada, Yogyakarta, Indonesia, Department of Universitas Gadjah Mada Academic Hospital, Indonesia, [3]Dr. Sardjito General Hospital Yogyakarta, Indonesia, Division of Hematology and Medical Oncology, Department of Internal Medicine, Indonesia, [4]Dr. Sardjito General Hospital Yogyakarta, Indonesia, Department of Hematology and Medical Oncology Fellowship Study Program, Division of Hematology and Medical Oncology, Department of Internal Medicine, Indonesia, [5]Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada/Dr. Sardjito General Hospital Yogyakarta, Indonesia, Division of Hematology and Medical Oncology, Department of Internal Medicine, Indonesia, [6]Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia, Department of Histology and Cell Biology, Indonesia

Background: Chemotherapy-induced peripheral neuropathy (CIPN) poses a substantial challenge in breast cancer (BC) chemotherapy, affecting patients' quality of life. Contemporary studies have focused on exploring predictors and discerning patterns that can predict the onset of CIPN. We aimed to investigate and develop a prediction model for CIPN occurrence using a classification and regression tree (CART) algorithm.

Methods: In this prospective study of 170 patients with BC undergoing chemotherapy, the Common Toxicity Criteria for Adverse Events (CTCAE) version 4.0 was adapted into a patient-reported version to assess CIPN across chemotherapy cycles. Biomarkers were collected before chemotherapy initiation. Multivariate analysis using the CART model was tuned using 10-fold cross-validation and developed to identify sociodemographic, clinical, and biomarker predictors of CIPN throughout chemotherapy. The stopping criteria for the CART model were the number of observations in a parent node being <50, and in a child node being <10. A ROC curve analysis was conducted for the CART model.

Result: The incidence of CIPN was 64.7% in any cycle of chemotherapy. The CART model generated a decision tree with a depth level of four. The most decisive predictor of CIPN occurrence in the CART model was the subject's CRP level. All patients (100%) with a CRP level >3.91 mg/dl, BMI >21.84 kg/m^2, and a marital status of unmarried developed CIPN. The CART model showed an accuracy of 65.9%, sensitivity of 51.7%, specificity of 73.2%, positive predictive value of 50.0%, negative predictive value of 74.5%, and an area under the curve of 0.705.

Conclusions: Patients with BC with a baseline CRP level >3.91 mg/dl, BMI >21.84 kg/m^2, and unmarried status have the highest risk of developing CIPN throughout chemotherapy. Our CART model was better at identifying patients who would not develop CIPN. The CART model may provide insight to future development of individualize patient care and prevention strategies.

PROGNOSTIC ANALYSIS ACCORDING TO ADJUVANT CHEMOTHERAPY AND ANTI-HER2 THERAPY FOLLOWING SURGERY IN T1A/B HER2-POSITIVE BREAST CANCER

Woochan Park[1], Kyoung Jin Suh[2], Jeong Min Seo[2], Se Hyun Kim[2], Yu Jung Kim[2], Hee-Chul Shin[3], Eun-Kyu Kim[3], In Ah Kim[4], So Yeon Park[5], Jee Hyun Kim[2]

[1]Seoul National Univ. Hospital, Department of Medical Oncology, Korea, [2]Seoul National Univ. Bundang Hospital, Department of Medical Oncology, Korea, [3]Seoul National Univ. Bundang Hospital, Department of Surgery, Korea, [4]Seoul National Univ. Bundang Hospital, Department of Radiation Oncology, Korea, [5]Seoul National Univ. Bundang Hospital, Department of Pathology, Korea

Background: There is currently no established theory regarding the optimal adjuvant chemotherapy and anti-HER2 therapy regimen following surgery for T1a/b HER2-positive breast cancer.

Methods: This study undertook a retrospective analysis at a single center to examine the postoperative treatment strategies employed for patients diagnosed with T1a/b, node negative, HER2-positive breast cancer. IDFS was compared among the patients who received adjuvant trastuzumab and chemotherapy, patients who received chemotherapy only, and those who received no trastuzumab or chemotherapy.

Result: The analysis included 165 patients, with a median follow-up period of 70.0 (0-235.1) months. Of all patients, 85 (51.5%) had T1a tumors, while 80 (48.5%) had T1b tumors. Out of the total patient cohort, 51 (30.9%) received both trastuzumab and chemotherapy, 52 (31.5%) received chemotherapy alone, and 61 (37.0%) received no adjuvant therapy. Patients who did not receive any adjuvant therapy had a 15-year IDFS rate of 45.8% and those who received chemotherapy alone had a rate of 55.1%. In contrast, patients who received both trastuzumab and chemotherapy had a comparatively higher IDFS of 92.5%, showing a trend toward improved outcomes with trastuzumab ($p = 0.44$). Trastuzumab and chemotherapy was associated with a positive prognosis in patients with T1a tumors, with a 15-year IDFS rate of 93.3% compared to 60.8% of patients who received chemotherapy and 38.2% of patients who did not receive adjuvant treatment ($p = 0.42$). The 15-year OS rate for patients who received chemotherapy and/or trastuzumab was 100%, compared to 90.4% of women who did not receive adjuvant treatment ($p = 0.068$). Cardiac adverse events were rare.

Conclusions: Adjuvant trastuzumab and chemotherapy has been shown to reduce recurrence rates in HER2-positive, T1a/b breast cancer and improve overall survival. In particular, adjuvant therapy with trastuzumab has been associated with reduced recurrence rates even in T1a tumors, suggesting that adjuvant therapy should be considered in these smaller tumors.

CLINICAL OUTCOMES AND PROGNOSTIC FACTORS OF PATIENTS WITH EARLY METAPLASTIC BREAST CANCER

Dakyung Seo[1], Jaewon Hyung[2], Sae Byul Lee[3], Hee Jeong Kim[3], Jong Won Lee[3], Byung-Ho Son[3], Hee Jin Lee[4], Gyungyub Gong[4], Hyehyun Jeong[2], Jin-Hee Ahn[2], Kyung Hae Jung[2], Sung-Bae Kim[2], Jae Ho Jeong[2]

[1]Univ. of Ulsan College of Medicine, Department of College of Medicine, Korea, [2]ASAN Medical Center, Department of Medical Oncology, Korea, [3]ASAN Medical Center, Department of Surgery, Korea, [4]ASAN Medical Center, Department of Pathology, Korea

Background: Metaplastic breast cancer (MpBC) is a rare and heterogeneous subtype of breast cancer noted for its aggressive clinical behavior and poor prognosis, often presenting as triple-negative breast cancer (TNBC). This study aimed to assess clinical features and prognostic factors of MpBC, which remain unclear due to its rarity.

Methods: This study evaluated patients histologically diagnosed with early MpBC and treated at Asan Medical Center from January 2004 to January 2020. We reviewed clinical characteristics such as histopathologic features, stage, and treatment modalities. Survival outcomes, including recurrence-free survival (RFS) and overall survival (OS) were also analyzed.

Result: A total of 233 patients were included and the median age was 51 years (range, 24-84). The majority (88.8%) of MpBC cases were TNBC. Among 213 patients with histologic subtype data available, the most common subtype was MpBC with squamous differentiation (n = 91, 42.7%). After a median follow-up of 8.1 years (IQR, 4.4-13.0), the 5-year RFS and OS rates were 72.2% and 75.8%, respectively. Recurrences occurred in 30.0% of patients (n = 70), including 64 patients with distant metastasis. Seventy-one patients (30.5%) received neoadjuvant chemotherapy (NAC), and only 3 patients (4.2%) achieved a pathological complete response (pCR) while 15 patients (21.1%) progressed during NAC. Among 52 patients with available residual cancer burden (RCB) class, 31 patients (59.6%) and 10 patients (19.2%) had RCB class 2 and 3, respectively. Multivariable analysis showed that RCB class 3 was significantly associated with both poor RFS (adjusted hazard ratio [HR] 1.81, $p = 0.028$) and OS (adjusted HR 2.15, $p = 0.048$).

Conclusions: Our findings contribute to the understanding of the clinical landscape and outcomes of early MpBC patients. Notably, the pCR rate of MpBC was markedly lower compared to general TNBC, which may guide future therapeutic strategies and research.

INTRAOPERATIVE SUPINE MRI FOR BREAST CONSERVING THERAPY: FINAL RESULTS OF AMIGO (ADVANCED MULTI-MODALITY IMAGE GUIDED OPERATING SUITE) PHASE II CLINICAL TRIAL

Leah Kim[1], Joseph Canner[1], Eric Schneider[1], Jayender Jagadeesan[2], Leah Pornow[2], Melissa Mallory[3], Dylan Kwait[2], Eva Gombos[2], Nathalie Agar[5], Thanh Barbie[4], Mehra Golshan[1]

[1]Yale Univ. School of Medicine, Department of Surgery, U.S.A., [2]Brigham and Women's Hospital Department of Radiology, Department of Radiology, U.S.A., [3]Moffit Cancer Center, Department of Surgery, U.S.A., [4]Brigham and Women's Hospital Department of Surgery, Department of Surgery, U.S.A., [5]Brigham and Women's Hospital Department of Neurosurgery, Department of Surgery, U.S.A.

Background: Achieving clear margins remains challenging for breast surgeons despite changes in margin definition, the use of shave margins, and other techniques. Positive margins lead to delays in adjuvant therapy, increased costs, increased complications, increased mastectomy rates and a negative psychological impact to the patient. We completed our phase II trial (NCT02335671), evaluating the use of intraoperative MRI and mass spectrometry to determine margins in real-time. We present our final intraoperative MRI correlation to final histopathology.

Methods: Between 2015-2022, 40 consecutive women with upfront operable breast cancer underwent BCT with intraoperative MRI and lymph node evaluation. The technique involved standard lumpectomy +/- wire/seed localization, the lumpectomy cavity temporarily filled with saline, an intraoperative contrast-enhanced breast MRI in the supine position, and standard 6 shave margins sent as final margins to pathology. Positive margins that required re-excision were tumor on ink for invasive cancer and ≤ 2 mm for DCIS. Fisher's Exact Test was used for association between MRI enhancement and positive margins.

Result: Mean invasive tumor size was 1.9 cm. Of our 40 patients, 8 patients (20%) had intraoperative enhancement. Of these, 3 patients had pathologic clear margins on final histopathology shave margins (no tumor on ink). On final histopathology, 3 patients had positive margins for invasive breast cancer and 2 for DCIS. Three patients ultimately underwent mastectomy for persistently positive margins, while two underwent successful breast conservation. Intraoperative MRI sensitivity and specificity were 100% and 97% respectively, along with a PPV and NPV of 87.5% and 100% respectively for correlating to final histopathology. The association between MRI enhancement and positive margins was <0.001%.

Conclusions: Supine intraoperative breast MRI is feasible, accurate, and provides actionable information during surgery. Despite implementation limitations of intraoperative MRI, using supine MRI in the diagnostic setting warrants further evaluation in the surgical management of operable breast cancer.

THE OPTIMAL TIMING OF BREAST CANCER SURGERY AFTER COVID-19 INFECTION: AN OBSERVATIONAL STUDY

Xueer Wang, Zhao Bi, Wei-Hao Cheng, Wei-Li Wang, Yong-Sheng Wang

Shandong Cancer Hospital & Institute, Department of Surgery, China

Background: Purpose was to assess the risk of postoperative complication in breast cancer patients with COVID-19 infection, in order to select the optimal breast cancer surgery timing after COVID-19 infection.

Methods: Breast cancer patients infected with COVID-19 and performed surgery between December 20th, 2022 to March 20th, 2023 were included (n = 577). Patients performed surgery between May 1, 2019 to October 1, 2019 were listed as control group (n = 327). They had not been infected with COVID-19 before surgery. Patients were grouped by time of surgery relative to COVID-19 infection. Database was evaluated using logistic regression.

Result: Patients infected with COVID-19 had a higher incidence of overall complications after surgery compared to that not-COVID-19 infection (6.59% vs 3.04%). Multivariable logistic analysis demonstrated that timing of surgery was associated with overall complications (OR = 4.253; 95% CI: 0.855-21.153, $P = 0.044$). Patients performed surgery within 2 weeks after COVID-19 infection had the highest rates of overall complication (17.65%) when compared with other groups, while the incidence was decreased into 5.51% when surgery 2 weeks or more after COVID-19 infection. With a median follow-up was 10 months, all patients with complications after surgery were recovered without serious complications or death, which had no adverse effect on subsequent anti-tumor therapy.

Conclusions: It needs to be cautious when breast cancer surgery was performed within 2 weeks after COVID-19 infection. Although the incidence of complications in patients undergoing surgery 2 weeks after COVID-19 infection is still slightly high, surgery can be recommended considering the urgency of breast cancer treatment, the good prognosis of complications and the lack of influence on subsequent adjuvant therapy.

A COMPARATIVE STUDY OF LOCAL RECURRENCE AND PROGNOSIS OF MULTIPLE BREAST CONSERVING SURGERY VERSUS MASTECTOMY IN PATIENTS WITH MULTIPLE IPSILATERAL BREAST CANCER

Asuka Kawabata[1], Kumiko Kida[1], Yuka Kajiura[1], Tomohiro Ochi[1], Junko Takei[1], Hiroko Tsunoda[2], Naoki Kanomata[3], Atsushi Yoshida[1]

[1]St. Luke's International Hospital, Department of Surgery, Japan, [2]St. Luke's International Hospital, Department of Radiology, Japan, [3]St. Luke's International Hospital, Department of Pathology, Japan

Background: Multiple ipsilateral breast cancer (MIBC) is often found with progress of breast imaging. Mastectomy has remained the most common surgical choice for MIBC, because some retrospective studies reported MIBC had a higher local recurrence (LR) compared with a unifocal breast cancer. Although, the oncologic safety of multiple breast-conserving surgery (BCS) for MIBC has been controversial due to the progress of cancer management. The purpose of this study was to compare oncologic outcomes after BCS versus mastectomy for MIBC.

Methods: MIBC patients who received breast surgery from January 2000 to December 2020 were retrospectively identified from institutional database. MIBC was proven by pathology reports of surgery, and we excluded patients with: [1] known BRCA1, BRCA2 germline mutation, [2] who underwent additional mastectomy followed by BCS, [3] whose MIBC had not been detected before mastectomy. The patients were divided into a multiple BCS group and a mastectomy group. We compared LR rate, overall survival (OS) between two groups using by Kaplan-Meier method and log-rank test.

Result: A total of 220 eligible patients were included; 89 patients underwent multiple BCS and 131 underwent mastectomy. The median age was 50 years (range, 30-84 years). In BCS group, 91% of patients received whole-breast irradiation after surgery. At median follow-up of 116 months, cumulative 10-year LR rate was 9.6% in BCS group vs. 9.0% in mastectomy group ($p = 0.78$). OS did not statistically differ in the two groups ($p = 0.73$), with cumulative 10-year OS rates of 94.7% and 96.0%, respectively.

Conclusions: BCS may provide oncologic safety comparable to mastectomy regarding local recurrence and survival. Considering the surgical invasiveness and the aesthetics, BCS could be a reasonable option for MIBC patients.

MINIMALLY INVASIVE BIOPSY TECHNIQUE PREDICTING BREAST PATHOLOGICAL COMPLETE RESPONSE AFTER NEOADJUVANT CHEMOTHERAPY FOR BREAST CANCER

Zhiqiang Shi, Pengfei Qiu, Chunjian Wang, Xiao Sun, Yongshen Wang

Shandong Cancer Hospital & Institute, Department of Breast Cancer Center, China

Background: Neoadjuvant chemotherapy (NAC) has significantly promoted breast pathological complete response (bpCR). However, the need for breast surgery among patients with bpCR has been questioned. This study aims to explore the accuracy of minimally invasive biopsy in predicting bpCR.

Methods: 164 breast cancer patients who achieved breast radiologic complete response (brCR) or partial response after NAC were enrolled in the study from October 2021 to October 2023. A marker clip was placed in the center of the tumor bed before NAC, and iodine 125 was placed under the guidance of mammography for patients who reached brCR after NAC. Conventional breast surgery was performed after NAC, and then ultrasound-guided multipoint core needle biopsy (CNB) was performed on the postoperative specimens. The pathological results of CNB specimens were compared with the surgical specimens to evaluate the accuracy of CNB for predicting bpCR (ypT0).

Result: 68 patients (41.5%) achieved bpCR after NAC. Univariate analysis showed that molecular subtypes of the breast tumor, brCR and axillary pCR (apCR) were significantly associated with bpCR ($P = 0.013$, $P = 0.039$ and $P = 0.001$, respectively). Ultrasound-guided multipoint CNB for predicting the accuracy, negative predictive value (NPV) and false negative rate (FNR) of bpCR were 90.2%, 81.0% and 16.7%, respectively, which were superior to ultrasound, mammography and MRI. Imaging combined with ultrasound-guided multipoint CNB for predicting bpCR did not improve NPV compared with CNB alone, but FNR was significantly lower (8.3% vs 16.7%; $P < 0.001$).

Conclusions: Imaging combined with ultrasound-guided multipoint CNB has the potential to accurately predict bpCR, making it possible to selectively eliminate breast surgery after NAC for breast cancer.

IMPACT OF UNILATERAL MASTECTOMY WITH OR WITHOUT IMMEDIATE BREAST RECONSTRUCTION ON VERTEBRAL ALIGNMENT

Jong-Ho Cheun[1,2], Eunhye Kang[1], Ji-Jung Jung[1], Hong-Kyu Kim[1], Han-Byoel Lee[1], Hyeong-Gon Moon[1], Ung Sik Jin[3], Wonshik Han[1]

[1]Seoul National Univ., Department of Surgery, Korea, [2]SMG-SNU Boramae Medical Center, Department of Surgery, Korea, [3]Seoul National Univ., Department of Plastic Surgery, Korea

Background: Many patients concern about scoliosis following mastectomy due to the imbalance resulting from breast tissue removal, often justifying immediate-breast reconstruction. However, evidence on the impact of mastectomy or immediate reconstruction on scoliosis is scarce, while previous studies investigated only a small number of patients. Here, we investigated whether mastectomy impacts spine alignment compared to immediate breast reconstruction with large cohorts.

Methods: We retrospectively reviewed the patients who underwent breast cancer surgery between 2004 and 2016 in a single institution. Applying the deep learning-based algorithm (DeepNoid Inc.) on chest posteroanterior x-rays, we collected data on the Cobb's angle for each patient at three time points: pre-operation, postoperative one-year, and five-years. Patients whose preoperative chest x-ray was absent, and who underwent bilateral surgery, delayed-reconstruction, or LD-flap were excluded.

Result: Totally 6247 patients were included: 3442 (55.1%), 1912 (30.6%), and 893 (14.3%) patients underwent breast-conservation, mastectomy without reconstruction, and immediate-breast reconstruction, respectively. At postoperative five-years, repeated-measures ANOVA revealed that the mastectomy group had a significantly greater change in Cobb's angle compared to both the breast-conservation ($p = 0.013$) and reconstruction ($p = 0.034$) groups, while there was no significant difference between the breast-conservation and reconstruction groups ($p = 0.633$). The change in Cobb's angle was more prominent among patients under 50-years old ($p = 0.016$). After adjusting for other clinicopathologic variables, immediate-breast reconstruction, adjuvant hormone treatments, and the direction of surgery remained significant factors affecting vertebral alignment. However, there was no relationship with the reconstruction methods or excised breast weights. Lastly, significantly more patients reported lumbar pain after mastectomy (8.4%) than after breast-conservation (6.7%) or immediate reconstruction (4.1%) during the surveillance ($p < 0.001$).

Conclusions: This is the largest study that showed the significant change in thoracic spine alignment after mastectomy compared to breast-conservation and immediate-breast reconstruction. The results would provide the evidence on recommending immediate-breast reconstruction especially for young patients and educating post-mastectomy postural correction.

TO DISSECT OR NOT TO DISSECT? PREDICTING ≥ 4 AXILLARY LYMPH NODE METASTASES IN EARLY-STAGE BREAST CANCER FROM A SURGEON'S VIEWPOINT

Damiano Gentile, Wolfgang Gatzemeier, Andrea Sagona, Erika Barbieri, Alberto Bottini, Alberto Testori, Valentina Errico, Simone Di Maria Grimaldi, Giulia Caraceni, Giuseppe Canavese, Corrado Tinterri

IRCCS Humanitas Research Hospital, Department of Surgery, Italy

Background: The management of axillary surgery in breast cancer (BC) has significantly evolved over the past decades, moving from routine axillary lymph node dissection (ALND) towards selective approaches or omission in selected patients. This shift is supported by evidence from several trials, including NSABP B-04, AMAROS, ACOSOG Z0011, and SINODAR-ONE, indicating comparable disease-free survival (DFS) and overall survival (OS) between patients undergoing ALND and those receiving alternative treatments such as axillary radiotherapy or observation.

Methods: The SINODAR-ONE trial, a prospective non-inferiority multicenter randomized study, is central to this discussion. It aimed to assess the therapeutic role of ALND in patients with cN0 T1-2 BC and 1-2 positive sentinel lymph nodes (SLNs). Participants were randomized to either the removal of ≥ 10 axillary level I/II nodes followed by adjuvant therapy (standard arm) or no further axillary surgery (experimental arm). We performed a logistic regression model to identify predictors of ≥ 4 axillary lymph node metastasis.

Result: Out of 403 cN0 T1-2 BC patients, 65 presented with ≥ 4 axillary lymph node metastases, while 338 had 1-3 metastases. Invasive lobular BC (26.2% versus 14.5% if other histology, odds ratio (OR) = 4.185, 95% confidence interval (95%CI) = 1.284-1.443, $p = 0.041$), G3 (38.5% versus 21.3% if G1-2, OR = 5.930, 95%CI = 2.134-2.289, $p = 0.015$), pT2 (46.2% versus 30.5% if pT1, OR = 5.260, 95%CI = 15.330-16.346, $p = 0.022$), and 2 positive SLNs (32.3% versus 13.6% if 1 positive SLN, OR = 13.188, 95%CI = 1.179-1.280, $p < 0.0001$) were found to significantly increase the probability to present ≥ 4 axillary lymph node metastasis at definitive histopathological evaluation.

Conclusions: While ALND remains necessary in specific cases, its routine use in systemic therapy decision-making in the upfront surgical setting is being reconsidered. Advances in combination therapies, as well as findings from the SINODAR-ONE and other trials, suggest a potential reduction in the need for extensive axillary surgery, particularly in patients without specific high-risk factors.

ANALYSIS THE NUMBER OF ADDITIONAL NON-SENTINEL LYMPH NODE METASTASIS WHEN ONLY MICROMETASTASIS WAS DETECTED IN THE SENTINEL LYMPH NODE BIOPSY IN FROZEN SECTION AFTER NEOADJUVANT CHEMOTHERAPY FOLLOWED

Dong Seung Shin, Jai Min Ryu, Jonghan Yu, Jeong Eon Lee, Seok Won Kim, Seok Jin Nam, Byung Joo Chae

Samsung Medical Center, Department of Surgery, Korea

Background: There is a clinical unmet need for omitting axillary lymph node dissection (ALND) when the residual volume of disease in sentinel lymph node (SLN) is low after neoadjuvant chemotherapy (NAC). We aimed to clarify that the relationship between micrometastasis on SLN after NAC and additional non-SLN metastases by analyzing the results of SLN biopsy followed by ALND.

Methods: This retrospective study reviewed the clinical records of patients who underwent breast cancer surgery between January 2010 and June 2022 after NAC at Samsung Medical Center. Among the total of 3,944 patients, 806 patients underwent SLN biopsy followed by ALND. The patients confirmed with SLN micrometastasis underwent ALND, and we further investigated the number of additional non-SLN metastases in those cases.

Result: Among 95 patients, 23 patients (24.2%) exhibited positive additional non-SLNs after ALND. The presence of lymphovascular invasion (vs. absent, [OR 4.02] p-value = 0.0151) and having two or more positive SLNs (vs. a positive SLN, [OR 3.65] p-value = 0.0301) were significantly associated with additional non-SLN metastases on multivariate analysis. Tumor subtypes and breast pathological complete response after NAC showed no correlation with the additional non-SLN metastases.

Conclusions: In clinical practice under current treatment in the guidelines, the possibility of additional non-SLN metastasis was identified in 24.2%, even if only micrometastasis was detected in SLN biopsy after NAC. However, it is still unclear whether these results imply that ALND is necessarily required in these cases. It remains to be seen what the results of the ongoing clinical trials will be.

EVALUATING THE SURVIVAL OUTCOMES IN CLINICAL N2-3 BREAST CANCER PATIENTS AFTER NEOADJUVANT CHEMOTHERAPY: SENTINEL LYMPH NODE BIOPSY ALONE VS. AXILLARY LYMPH NODE DISSECTION

Eunju Shin, Tae-Kyung Yoo, Il Yong Chung, Jisun Kim, Beom Seok Ko, Hee Jeong Kim, Jong Won Lee, Byung Ho Son, Sae Byul Lee

ASAN Medical Center, Department of Surgery, Korea

Background: With the advancement of neoadjuvant chemotherapy (NAC), the reliance on surgical removal of axillary for high-risk breast cancer is diminishing. However, there is a lack of data on the oncologic safety of sentinel lymph node biopsy (SLNB) alone in patients with clinical node stages 2 and 3 who show a favorable response to NAC. This study aims to compare the oncologic outcomes of SLNB alone versus SLNB combined with axillary lymph node dissection (ALND) in this patient cohort.

Methods: Conducted at Asan Medical Center, this retrospective study analyzed data from breast cancer patients treated with NAC between 2008 and 2013. Propensity score matching (PSM) was employed to compare patients based on their baseline characteristics. SLNB was performed on patients demonstrating significant response to NAC with minimal nodal involvement and if SLNB is negative, ALND was done as determined by the operating surgeon. The study evaluated oncologic safety by comparing axillary recurrence-free survival (ARFS), distant metastasis-free survival (DMFS), and overall survival (OS) across surgical methods.

Result: 547 patients were enrolled, and the median follow-up period was 95 months. Univariate and multivariate analyses showed no statistically significant differences in ARFS, DMFS, and OS between the groups. Propensity score-matched analysis further confirmed the absence of significant differences in 5-year ARFS, DMFS, and OS outcomes between the SLNB-only and ALND groups.

Conclusions: SLNB alone may be a viable surgical option for patients with breast cancer presenting with clinical N2-3 nodal metastasis who respond well to NAC.

NEOADJUVANT PEMBROLIZUMAB OR PLACEBO PLUS CHEMOTHERAPY FOLLOWED BY ADJUVANT PEMBROLIZUMAB OR PLACEBO FOR EARLY-STAGE TNBC: UPDATED EVENT-FREE SURVIVAL RESULTS FROM THE PHASE 3 KEYNOTE-522 STUDY

Seock-Ah Im[1], Peter Schmid[2], Javier Cortes[3], Rebecca Dent[4], Lajos Pusztai[5], Heather Mcarthur[6], Sherko Kuemmel[7], Carsten Denkert[8], Yeon Hee Park[9], Rina Hui[10], Nadia Harbeck[11], Masato Takahashi[12], Theodoros Foukakis[13], Marie-Ange Mouret-Reynier[14], Marta Ferreira[15], Michael Untch[16], Peter A. Fasching[17], Fatima Cardoso[18], Yu Ding[19], Wilbur Pan[19], Jaime Mejia[19], Joyce O Shaughnessy[20]

[1]Seoul National Univ. Hospital, Department of Medical Oncology, Korea, [2]Centre for Experimental Cancer Medicine, Barts Cancer Institute, Queen Mary Univ. London, London, Department of Medical Oncology, United Kingdom, [3]International Breast Cancer Center (IBCC), Pangaea Oncology, Quironsalud Group, Barcelona, Spain; Medical Scientia Innovation Research (MedSIR), Barcelona, Spain; Faculty of Biomedical and Health Sciences, Universidad Europea de Madrid, Madrid, Department of Medicine, Spain, [4]National Cancer Center Singapore and Duke-NUS Medical School, Department of Medical Oncology, Singapore, [5]Yale Cancer Center, Yale School of Medicine, New Haven, CT, Department of Medical Oncology, U.S.A., [6]Univ. of Texas Southwestern Medical Center, Dallas, TX, Department of Medicine, U.S.A., [7]Breast Unit, Kliniken Essen-Mitte Evang, Huyssens-Stiftung, Essen, Germany; Charite - Universitaetsmedizin Berlin, Department of Gynecology With Breast Center, Berlin, Germany, [8]Institute of Pathology, Philipps Univ. Marburg, Marburg, Department of Medical Oncology, Germany, [9]Division of Hematology-Oncology, Samsung Medical Center, Sungkyunkwan Univ. School of Medicine, Seoul, Department of Medicine, Korea, [10]Westmead Breast Cancer Institute, Westmead Hospital and the Univ. of Sydney, Sydney, Department of Medical Oncology, NSW, Australia; Centre of Cancer Medicine, the Univ. of Hong Kong, Department of Medical Oncology, Hong Kong, [11]Breast Center, Dept. OB&GYN and CCC Munich, LMU Univ. Hospital, Munich, Department of Medical Oncology, Germany, [12]Hokkaido Univ. Hospital, Sapporo, Department of Breast Surgery, Japan, [13]Karolinska Institutet and Breast Center, Theme Cancer, Karolinska Univ. Hospital, Stockholm, Department of Oncology-pathology, Sweden, [14]Centre Jean-Perrin, Clermont-Ferrand, Department of Medical Oncology, France, [15]Instituto Portugues de Oncologia do Porto Francisco Gentil (IPO-Porto), Porto, Department of Medical Oncology, Portugal, [16]Breast Cancer Center, Helios Klinikum Berlin-Buch, Berlin, Department of Medical Oncology, Germany, [17]Univ. Hospital Erlangen, Comprehensive Cancer Center Erlangen-EMN, Bavarian Cancer Research Center (BZKF), Erlangen, Germany, Department of Gynecology and Obstetrics, Germany, [18]Breast Unit, Champalimaud Clinical Centre/Champalimaud Foundation, Lisbon, Portugal, Department of Medical Oncology, Portugal, [19]Merck & Co., Inc., Rahway, NJ, Department of Medical Oncology, U.S.A., [20]Baylor Univ. Medical Center, Texas Oncology, US Oncology Network, Dallas, TX, Department of Medical Oncology, U.S.A.

Background: In KEYNOTE-522 (NCT03036488), neoadjuvant pembrolizumab+chemotherapy followed by adjuvant pembrolizumab significantly improved pCR and event-free survival (EFS) versus neoadjuvant placebo+chemotherapy followed by adjuvant placebo in patients with early TNBC. We report updated 5-year EFS data.

Methods: Patients with previously untreated, nonmetastatic, centrally confirmed TNBC (stage T1c N1-2 or T2-4 N0-2 by AJCC) were randomized 2:1 to neoadjuvant pembrolizumab 200 mg Q3W or placebo for 8 cycles, both given with chemotherapy. After definitive surgery, patients received adjuvant pembrolizumab or placebo for 9 cycles or until recurrence/toxicity. Primary endpoints were pCR (ypT0/Tis ypN0) and EFS.

Result: Of 1,174 patients (pembrolizumab, n = 784; placebo, n = 390), median follow-up was 63.1 months (data cutoff: March 23, 2023). 5-year EFS rates (95% CIs) were 81.3% (78.4%-83.9%) with pembrolizumab versus 72.3% (67.5%-76.5%) with placebo (HR, 0.63 [95% CI, 0.49-0.81]). EFS benefit was consistent in prespecified subgroups (PD-L1 CPS, disease stage, nodal status, menopausal status, HER2 status, LDH). HRs (95% CIs) were 0.59 (0.43-0.82) and 0.71 (0.48-1.05) for stage II and III disease, respectively, and 0.56 (0.38-0.84) and 0.67 (0.49-0.93) for baseline clinical nodal status negative and positive, respectively. In post-hoc analyses, 5-year EFS rates (pembrolizumab vs placebo) for stage II disease were 94.2% versus 89.8% in patients with pCR and 69.2% versus 59.1% in patients without pCR; for stage III disease, rates were 85.1% versus 81.4% and 46.8% versus 38.2%. 5-year EFS rates for nodal status negative were 95.3% versus 91.0% in patients with pCR and 70.4% versus 56.9% in patients without pCR; for nodal status positive, rates were 89.3% versus 84.8% and 55.7% versus 48.8%. Rates of brain metastases as first EFS event were low (pembrolizumab, 2.3%; placebo, 3.3%).

Conclusions: Neoadjuvant pembrolizumab+chemotherapy and adjuvant pembrolizumab had clinically meaningful EFS benefits versus neoadjuvant chemotherapy alone across subgroups and regardless of pCR status in patients with early TNBC.

NEOADJUVANT PEMBROLIZUMAB OR PLACEBO+CHEMOTHERAPY FOLLOWED BY ADJUVANT PEMBROLIZUMAB OR PLACEBO+ENDOCRINE THERAPY FOR EARLY-STAGE HIGH-RISK ER+/HER2- BREAST CANCER: RESULTS FROM THE KEYNOTE-756 STUDY

Yeon Hee Park[1], Aditya Bardia[2], Joyce O Shaughnessy[3], Heather Mcarthur[4], Peter Schmid[5], Javier Cortes[6], Nadia Harbeck[7], Melinda L Telli[8], David W. Cescon[9], Peter A. Fasching[10], Zhimin Shao[11], Delphine Loirat[12], Manuel Gonzalez Fernandez[13], Gabor Rubovszky[14], Seock-Ah Im[15], Rina Hui[16], Toshimi Takano[17], Fabrice Andre[18], Hiroyuki Yasojima[19], Zhenzhen Liu[20], Yu Ding[21], Liyi Jia[21], Vassiliki Karantza[21], Konstantinos Tryfonidis[21], Fatima Cardoso[22]

[1]Samsung Medical Center, Department of Hematology-Oncology, Korea, [2]Division of Hematology/Oncology, Univ. of California, Los Angeles (UCLA), Los Angeles, CA, Department of Medicine, U.S.A., [3]Baylor Univ. Medical Center, Texas Oncology, US Oncology Network, Dallas, TX, Department of Medical Oncology, U.S.A., [4]Univ. of Texas Southwestern Medical Center, Dallas, TX, Department of Medicine, U.S.A., [5]Centre for Experimental Cancer Medicine, Barts Cancer Institute, Queen Mary Univ. London, London, Department of Medical Oncology, United Kingdom, [6]International Breast Cancer Center (IBCC), Pangaea Oncology, Quironsalud Group, Barcelona, Spain; Medical Scientia Innovation Research (MedSIR), Barcelona, Spain; Faculty of Biomedical and Health Sciences, Universidad Europea de Madrid, Madrid, Department of Medicine, Spain, [7]Breast Center, Dept. OB&GYN and CCC Munich, LMU Univ. Hospital, Munich, Germany, Department of Medical Oncology, Germany, [8]Stanford Univ. School of Medicine, Stanford, CA, Department of Medicine, U.S.A., [9]Princess Margaret Cancer Centre, Toronto, ON, Department of Medical Oncology, Canada, [10]Univ. Hospital Erlangen, Comprehensive Cancer Center Erlangen-EMN, Bavarian Cancer Research Center (BZKF), Erlangen, Department of Gynecology and Obstetrics, Germany, [11]Fudan Univ. Shanghai Cancer Center, Shanghai Medical College, Fudan Univ., Shanghai, Department of Oncology, China, [12]Institut Curie, Paris, Department of Medical Oncology, France, [13]Hemato Oncology, IMAT-Oncomedica, Monteria, Department of Medical Oncology, Colombia, [14]National Institute of Oncology, Budapest, Department of Thoracic and Abdominal Tumors and Clinical Pharmacology, Hungary, [15]Seoul National Univ. Hospital, Cancer Research Institute, Seoul National Univ. College of Medicine, Seoul, Department of Internal Medicine, Korea, [16]Westmead Breast Cancer Institute, Westmead Hospital and the Univ. of Sydney, Sydney, NSW, Australia; Department of Medical Oncology, Centre of Cancer Medicine, the Univ. of Hong Kong, Department of Medical Oncology, Hong Kong, [17]The Cancer Institute Hospital of JFCR, Tokyo, Department of Breast Medical Oncology, Japan, [18]Faculte de Medicine Paris-Sud XI, Gustave Roussy, Villejuif, Department of Medical Oncology, France, [19]NHO Osaka National Hospital, Osaka, Department of Surgery Breast Oncology, Japan, [20]Henan Breast Cancer Center, Affiliated Cancer Hospital of Zhengzhou Univ. & Henan Cancer Hospital, Zhengzhou, Henan, Department of Breast Disease, China, [21]Merck & Co., Inc., Rahway, NJ, Department of Oncology, U.S.A., [22]Breast Unit, Champalimaud Clinical Centre/Champalimaud Foundation, Lisbon, Department of Medical Oncology, Portugal

Background: KEYNOTE-756 (NCT03725059) is a phase 3 study of neoadjuvant pembrolizumab or placebo plus chemotherapy followed by adjuvant pembrolizumab or placebo plus endocrine therapy (ET) in patients with early-stage high-risk ER+/HER2- breast cancer. We report primary pCR results and residual cancer burden (RCB) outcomes.

Methods: Patients with T1c-2 (≥2 cm) cN1-2 or T3-4 cN0-2, centrally confirmed, grade 3, invasive ductal

ER+/HER2- breast cancer were randomized 1:1 to receive neoadjuvant pembrolizumab 200 mg Q3W or placebo, both given with chemotherapy. After definitive surgery (± radiation therapy), patients received pembrolizumab or placebo for 9 cycles plus standard ET. Dual primary endpoints were pCR (ypT0/Tis ypN0) and EFS. Secondary endpoints included OS, pCR (ypT0 ypN0, ypT0/Tis), and safety. RCB was an exploratory endpoint and was assessed by a local pathologist at the time of surgery. RCB-0, -1, -2, and -3 denote increasingly larger residual disease.

Result: 1278 patients were randomized to pembrolizumab plus chemotherapy (n = 635) or placebo plus chemotherapy (n = 643). At the final pCR analysis (May 25, 2023, first interim analysis data cutoff), median follow-up was 33.2 (range, 9.7-51.8) months. In the ITT population, pembrolizumab plus chemotherapy showed a statistically significant ($P = 0.00005$) improvement in pCR (ypT0/Tis ypN0) versus placebo plus chemotherapy: 24.3% (95% CI, 21.0%-27.8%) versus 15.6% (95% CI, 12.8%-18.6%). Results were consistent for the secondary pCR definitions. There were more patients with RCB-0 (24.7% vs 15.6%) and RCB-1 (10.2% vs 8.1%) and fewer patients with RCB-2 (40.8% vs 45.3%) and RCB-3 (20.5% vs 28.9%) in the pembrolizumab group versus the placebo group. EFS results are immature and continue to be evaluated. Safety was consistent with the known profiles of each regimen.

Conclusions: Addition of pembrolizumab to chemotherapy significantly increased the pCR rate and shifted RCB to lower residual disease categories in patients with early-stage high-risk ER+/HER2- breast cancer.

IMMUNE MARKER EXPRESSION AND PROGNOSIS OF EARLY BREAST CANCER EXPRESSING HER3

Dae-Won Lee[1,2,3], Han Suk Ryu[4], Jiwon Koh[4], Kyung-Hun Lee[1,5], Tae-Yong Kim[1,5], Han-Byoel Lee[6], Hyeong-Gon Moon[6], Wonshik Han[6], Seock-Ah Im[1,2,3,5]

[1]Seoul National Univ. Hospital, Department of Internal Medicine, Korea, [2]Seoul National Univ. College of Medicine, Department of Internal Medicine, Korea, [3]Seoul National Univ. College of Medicine, Department of Translational Medicine, Korea, [4]Seoul National Univ. Hospital, Department of Pathology, Korea, [5]Seoul National Univ. College of Medicine, Department of Cancer Research Institute, Korea, [6]Seoul National Univ. Hospital, Department of Surgery, Korea

Background: HER3 is an important heterodimer partner for EGFR and HER2, and is overexpressed in multiple cancer subtypes. This heterodimerization leads to the activation of downstream signaling pathways, such as the PI3K-Akt and MAPK pathways, which promote cell proliferation and survival. This study investigated the prognostic role of HER3 expression, and immunoregulatory marker expression according to HER3 status in early breast cancer patients.

Methods: HER3 expression and 10 immunoregulatory protein (PD-1/PD-L1/PD-L2/IDO/TIM-3/OX40/OX40L/B7-H2/ B7-H3/B7-H4) expression was identified in stage I-III breast cancer patients who received curative surgery.

Result: A total of 320 patients were included. Two-hundred and thirteen (67.2%) had luminal A disease, 30 (9.5%) had luminal B disease, 28 (8.8%) had HER2-positive disease, and 46 (14.5%) had triple negative disease. Among 320 patients, 153 patients (47.8%) had tumors with HER3 expression. Tumors with HER3-expression had more immunogenic tumor microenvironment compared to HER3-negative tumor. Expression of B7-H27, TIM3, IDO, OX40, and OX40L was higher in tumor with HER3 expression compared to HER3-negative tumors. Immunogenic tumor microenvironment of tumor with HER3 expression was shown in both luminal A and non-luminal A population. In addition, patients with HER3 expression had favorable 5-year disease free survival compared to HER3-negative patients (5-year DFS 92.5% vs. 85.2%, $p = 0.038$). The favorable prognostic role of HER3 expression was shown in luminal A patients but not in non-luminal A patients.

Conclusions: HER3-targeted antibody-drug conjugate patritumab deruxtecan (U3-1402) showed promising results in heavily pretreated breast cancer patients with HER3 expression. This study identified immunoregulatory protein expression according to HER3 status in breast cancer patients using 10 immune markers. As tumor with HER3 expression have more immunogenic microenvironment, investigating combination treatment of HER3 targeting agent and immunotherapy in HER3 expressing breast cancer may be promising.

THE IMPACT OF TREATMENT DELAY ON SURVIVAL OF BREAST CANCER PATIENTS: A NATIONWIDE DATA OF SOUTH KOREA

Young-Jin Lee[1], Woo-Ri Lee[2], Ho Hur[2], Il Yong Chung[1]

[1]ASAN Medical Center, Department of Surgery, Korea, [2]National Health Insurance Service Ilsan Hospital, Department of Surgery, Korea

Background: Studies on the impact of treatment delay on survival rates in breast cancer have shown varying results. The purpose of this study was to analyze the impact of the time interval between breast cancer diagnosis and treatment on patients' survival.

Methods: This nationwide retrospective cohort study was conducted using the Health Insurance Review and Assessment data. Subjects were classified according to the interval between diagnosis and surgery (< 30 days, 30~59 days, 60~89 days, ≥ 90 days). The 5 year overall survival (OS) was analyzed according to age, income, insurance type, residence, Charlson Comorbidity Index (CCI), diagnosed region, treated region, treatment, and whether there was a diagnosis of another cancer within 5 years of breast cancer diagnosis.

Result: A total of 117,962 participants newly diagnose between 2007 and 2019 were included in the study. All of them underwent surgery as their first treatment. The median waiting time for surgery was 12 days, 87.7% of patients underwent surgery within 30 days after diagnosis, while 97.8% of patients within 60 days. When using a reference of less than 30 days as the baseline for treatment waiting periods, there was no significant difference in OS for cases with waiting periods between 30 and 60 days (HR 1.00 [0.91- 1.10]). However, for cases with waiting periods between 60 and 90 days (HR 1.54 [1.21 - 1.97]), and cases with waiting periods exceeding 90 days, the OS was poorer. Meanwhile, there was a difference in the significance of OS based on a 90-day period for those who received only endocrine therapy as adjuvant therapy (60-89 days : HR 1.34 [0.79-2.29], ≥ 90 days : HR 2.41 [1.61-3.60]).

Conclusions: A delay of more than 60 days in surgery of breast cancer has a negative impact on survival rates. In the case of favorable breast caner, it was differentiated at 90 days.

CLINICAL-PATHOLOGICAL CHARACTERISTICS ASSOCIATED WITH MULTIGENE ASSAY RISK SCORES, AND PROGNOSTIC IMPACT OF MULTIGENE RISK SCORES IN PATIENTS WITH INVASIVE LOBULAR CARCINOMA

Young-Won Lee[1], Jisun Kim[1], Sae Byul Lee[1], Tae-Kyung Yoo[1], Il Yong Chung[1], Beom Seok Ko[1], Hee Jeong Kim[1], Jong Won Lee[1], Byung Ho Son[1], Hee Jin Lee[3], Gyungyub Gong[3], Hyehyun Jeong[2], Jae Ho Jung[2], Jin-Hee Ahn[2], Kyung Hae Jung[2], Sung-Bae Kim[2]

[1]ASAN Medical Center, Department of Breast Surgery, Korea, [2]ASAN Medical Center, Department of Medical Oncology, Korea, [3]ASAN Medical Center, Department of Pathology, Korea

Background: Invasive lobular carcinoma (ILC) presents unique challenges, necessitating personalized approaches. Multigene assays like Oncotype DX (ODX) provide personalized prognostic insights in breast cancer. However, a research gap exists for clinical-pathological characteristics affecting multigene assay risk scores in ILC. This study aims to address this gap, investigating factors specific to ILC, distinct from those in invasive ductal carcinoma (IDC), contributing to refined risk stratification and personalized treatment decisions for ILC patients.

Methods: A retrospective analysis encompassed 238 ILC patients at AMC (2012-2022) who underwent the ODX test. Recurrence (RS) categories included low (0-15), intermediate (16-25), and high (26 or above). Binary analysis employed a 25 cutoff, guided by existing research findings.

Result: Significant disparities in RS emerged between ILC and IDC patients undergoing ODX testing. Notably, ILC exhibited a higher percentage of high-risk cases (4.2% vs. 16.9%). Characteristics of the low-risk binary group included younger age, premenopausal status, and a preference for breast-conserving surgery. Multivariate analysis identified PR negativity as a substantial factor influencing ODX high risk (OR 23.224, 95% CI 3.732-144.527, $p = 0.001$). Subgroup analysis by age identified specific risk factors, including PR negativity in younger patients (OR 11.896, 95% CI 1.247-113.523, $p = 0.031$), larger tumor size (more than 2 cm) (OR 4.180, 95% CI 1.229-14.214, $p = 0.022$), and PR negativity in older patients (OR 25.030, 95% CI 3.505-178.756, $p = 0.001$).

Conclusions: Factors predicting ODX outcomes differ between ILC and IDC, emphasizing the necessity for tailored risk models. PR negativity consistently emerged as a key predictor, warranting attention in refining risk stratification. Recognizing these distinctions is vital for precise prognostic assessments and optimizing patient management in ILC, enhancing personalized treatment decisions.

PREDICTION OF PATHOLOGICAL COMPLETE RESPONSE IN ESTROGEN RECEPTOR POSITIVE, HER2 NEGATIVE BREAST CANCER FOLLOWING NEOADJUVANT CHEMOTHERAPY USING THE IHC4 EQUATION

Eunhye Kang, Ji-Jung Jung, Ik Beon Shin, Jinyoung Byeon, Hwajeong Lee, Hong-Kyu Kim, Han-Byoel Lee, Hyeong-Gon Moon, Wonshik Han

Seoul National Univ. Hospital, Department of Surgery, Korea

Background: ER positive, HER2 negative breast cancer is known to exhibit lower pathological complete response (pCR) rate after neoadjuvant chemotherapy (NAC) compared to other subtypes. In our study, we aim to assess risk using the IHC4 equation based on easily accessible ER, PR, HER2, and Ki67 values from core needle biopsy specimens. We seek to investigate the differences in NAC response, specifically pCR rates, based on these value.

Methods: We conducted study at Seoul National University Hospital which included patients who were treated for stage IIIA or lower, ER positive, HER2 negative breast cancer undergoing NAC from 2015 to 2023. Following the criteria outlined by IHC4 equation, we classified patients based on the IHC4 value. Those with an IHC4 value less than -29.9 were categorized into Q1, greater than 29.9 into Q3, and the remaining into Q2. We evaluated both breast and axilla node pCR rates for each of these three groups.

Result: Among total of 950 patients, the Q1 group had 393 (41.4%), the Q2 group had 333 (35.1%), and the Q3 group included 224 patients (23.6%). There were no significant differences in clinical T stage across the three groups. Examining the pCR rates for breast tumors, we observed rates of 5.6% in Q1 group, 14.4% in Q2 group, and notably higher at 38.4% in Q3 group, indicating a higher pCR rate in the high-risk group (Q3) ($p < 0.001$). For axilla nodes, the pCR rates were 26.5% in Q1 group, 32.7% in Q2 group, and substantially higher at 71.4% in Q3 group, reinforcing the trend of a higher pCR rate in the high-risk group ($p < 0.001$).

Conclusions: In conclusion, IHC4 value could serve as a valuable predictor for NAC response in ER positive, HER2 negative breast cancer. Further prospective studies are warranted to refine patient selection and optimize treatment strategies.

PROTEOMIC ANALYSIS IDENTIFIES ASSOCIATION OF PERIOSTIN, A MATRICELLULAR PROTEIN, WITH HIGH TUMOR STROMA AND IMMUNE EXCLUSION IN TRIPLE NEGATIVE BREAST CANCER

Yeonjin Jeon[1], Gunhee Lee[1], Byung-Kwan Jeong[1], Yoon Young Kim[1], Jisun Kim[2], Jae Ho Jeong[3], Kyunggon Kim[4], Hee Jin Lee[1,5]

[1]ASAN Medical Center, Department of Pathology, Korea, [2]ASAN Medical Center, Department of Surgery, Korea, [3]ASAN Medical Center, Department of Medical Oncology, Korea, [4]Univ. of Ulsan College of Medicine, Department of Digital Medicine, Korea, [5]NeogenTC Corp., Department of Research, Korea

Background: Immune excluded/desert tumors have diminished effectiveness of immunotherapy compared to inflamed tumors. Tumor stroma contributes to immune evasion. To identify factors associated with immune exclusion, we aimed to identify overexpressed proteins in tumors with high tumor stroma among immune excluded triple-negative breast cancer (TNBC).

Methods: Proteomic analysis from formalin-fixed paraffin-embedded 403 TNBC cases were performed. We analyzed overexpressed proteins in high-stroma and low-stroma cases within the immune excluded subtype. We investigated the correlation between the identified protein expression and other clinicopathologic features. Immunohistochemical (IHC) staining and single-cell analysis were conducted. Survival analysis was performed.

Result: Among the eligible 247 samples, the immune excluded subtype was 81 (32.8%) and the immune inflamed subtype was 166 (67.2%). Within the immune excluded subtype, periostin was the only extracellular matrix-related protein overexpressed in high-stroma cases. Periostin demonstrated a positive correlation with amount of stroma ($r = 0.51$, $p < .001$) and a negative correlation with tumor-infiltrating lymphocytes ($r = -0.30$, $p < .001$). Expression of periostin in the tumor stroma was confirmed by IHC. Single-cell analysis demonstrated that periostin originated from cancer-associated fibroblasts (CAFs). High periostin correlated with unfavorable recurrence-free survival (hazard ratio 1.422, $p = .005$).

Conclusions: Periostin was overexpressed in immune excluded subtype with high stroma and originated from CAFs in TNBC. Moreover, high periostin expression was associated with poor prognosis. The development of targeted agents against periostin+ CAFs to inhibit immune evasion of TNBC may improve the effectiveness of immunotherapy.

WHOLE-GENOME SEQUENCING OF GERMLINE BRCA1/2 SEQUENCING-NEGATIVE BREAST CANCER PATIENTS

Youngji Kwak[1], Jai Min Ryu[2], Byung-Joo Chae[2], Jonghan Yu[2], Jeong Eon Lee[2], Seok Won Kim[2], Seok Jin Nam[2]

[1]*Chung-Ang Univ. Hospital, Division of Breast Surgery, Department of General Surgery, Korea, Korea,*
[2]*SamsungMedical Center, Division of Breast Surgery, Department of General Surgery, Korea, Korea*

Background: The recognition of heightened breast cancer risks in individuals with pathogenic variants (PV) or likely pathogenic variants (LPV) has spurred widespread studies among breast cancer patients undergoing germline genetic testing with hereditary breast cancer multigene panels. The aim of the study was to assess the clinical and genetic implications through whole-genome sequencing (WGS) of beyond BRCA genes in Korean patients with BRCA1/2 mutation-negative breast cancer.

Methods: Total of 890 BRCA 1/2 mutation -negative breast cancer patients were received WGS and analyzed to produce raw data and variant data for 2 years between 2020 and 2021. With exclusion of 19 cases, total 871 patients were analyzed focused on the occurrence of pathogenic and likely pathogenic variants (PV/LPV) and clinicopathologic characteristic patterns of each PV/LPVs genes.

Result: In 43 out of 871 patients (4.9%), at least one PV/LPV was identified with 18 genes. In non-BRCA mutation breast cancer, the gene with the highest number of variants identified among Koreans was PALB2, followed by ATM and TP53 in order. In comparison of clinicopathologic characteristics, there were significantly much more premenopausal patients in the WGS detected group than not detected group. According to oncologic outcomes, recurrence rate and especially metachronous contralateral breast cancer rate were higher in pathologic variant detected group. Among detected group, ATM, PTEN, CHEK2 were ER-positive dominant and BARD1, PALB2, RAD51C/D, MSH2/6 and MLH1 were ER-negative dominant.

Conclusions: In this study, patients with negative for BRCA1/2 mutations underwent whole-genome sequencing rather than multigene panel testing, allowing for unbiased results in the testing process. PALB2 pathologic variant was the most common, followed by ATM and TP53 in order in analysis. No novel genes were identified within the spectrum of breast cancer susceptibility genes, with findings generally aligning with the prevalence observed in Asia.

CLINICAL AND BIOLOGICAL SIGNIFICANCE OF T-CELL RECEPTOR REPERTOIRE IN PATIENTS WITH BREAST CANCER

Chun-Yu Liu[1,2,4], Chi-Cheng Huang[2,3], Ji-Lin Chen[2], Yi-Fang Tsai[1,2,3], Ta-Chung Chao[1,2,4], Pei-Ju Lien[2,6], Yen-Shu Lin[2,3], Chin-Jung Feng[2], Yen-Jen Chen[1,2,3], Jiun-I Lai[1,4], Jen-Hwey Chiu[1,3], Chih-Yi Hsu[1,5], Ling-Ming Tseng[1,2,3]

[1]National Yang Ming Chiao Tung Univ., Department of School of Medicine, Taiwan, [2]Taipei Veterans General Hospital, Department of Comprehensive Breast Health Center, Taiwan, [3]Taipei Veterans General Hospital, Department of Surgery, Taiwan, [4]Taipei Veterans General Hospital, Department of Medical Oncology, Taiwan, [5]Taipei Veterans General Hospital, Department of Pathology, Taiwan, [6]Taipei Veterans General Hospital, Department of Nursing, Taiwan

Background: Targeted sequencing of the T-cell receptor (TCR) enables the identification and quantification of T-cell clones, providing a valuable tool for monitoring responses to antigens and treatments. This study aimed to explore the association of the TCR repertoire with clinicopathological characteristics, genetic alterations, and chemotherapy in breast cancer.

Methods: The TCR repertoire and genetic alterations were determined using next-generation sequencing (NGS)-based panels. Blood samples from recruited female breast cancer patients were collected for TCR sequencing using the Oncomine TCR Beta-LR Assay. The study assessed the convergence, clonality, richness, Shannon diversity, and usage frequency of TRB genes. Genetic alterations in tumor tissues were evaluated using the Oncomine Comprehensive Assay v3.

Result: Patients with late-stage and recurrent tumors exhibited higher TCR clonality. Luminal B2 breast cancer demonstrated lower Shannon diversity of TCR compared to luminal A and triple-negative breast cancer. NGS results revealed that 22.4% of patients harbored at least one homologous recombination repair (HRR) gene mutation, and 38.9% harbored a PIK3CA mutation. PALB2 and PTEN were the most altered HRR genes, and patients with more than one HRR gene mutation showed decreased TCR richness. The most common mutation in PIK3CA was H1047R, while patients with H1047L mutation in PIK3CA exhibited higher TCR diversity than wild-type and H1047R mutation. TCR convergence and clonality increased, whereas TCR diversity decreased after adjuvant and neoadjuvant chemotherapies. Remarkably, patients receiving neoadjuvant chemotherapy who achieved pathological complete response had lower TCR richness compared to those who did not.

Conclusions: These results demonstrate that the TCR repertoire is associated with characteristics, genetic alterations, and clinical outcomes. Monitoring changes in the TCR repertoire may serve as a prognostic biomarker for breast cancer patients.

BREAST CANCER CHARACTERISTICS AND MANAGEMENT IN ELDERLY BRCA MUTATION CARRIERS IN HONG KONG

Yuk-Kwan Chang[1,3], Wing-Pan Luk[2], Ling-Hiu Fung[2], Ava Kwong[1,4]

[1]Queen Mary Hospital, Department of Surgery, Hong Kong, [2]Hong Kong Sanatorium & Hospital, Department of Medical Physics & Research Department, Hong Kong, [3]Tung Wah Hospital, Department of Surgery, Hong Kong, [4]The Univ. of Hong Kong, Department of Surgery, Hong Kong

Background: Currently, there is limited data in the literature regarding elderly BRCA mutation carriers, particularly for the Asian population. In addition, the existing management recommendations predominantly focus on younger patients. The impact and acceptance of enhanced surveillance and other risk-reducing strategies in older patients remains unclear. Therefore, this study aims to describe the clinical characteristics of breast cancer and utilization of risk-reducing strategies among female patients with BRCA1 and BRCA2 pathogenic variants aged 65 and above in Hong Kong.

Methods: Data from the Hong Kong Hereditary Breast Cancer Registry were analyzed for female BRCA mutation carriers identified between 2007 and December 2022. Demographic and clinical information, cancer history, and utilization of risk-reducing strategies were recorded. Descriptive and bivariate analyses were conducted.

Result: Among 702 female BRCA mutation carriers, 127 (17.7%) reached the age of 65 or older. Their median age was 70 (range: 65-89), and the median age at the time of genetic testing was 65 (range: 68-79). Of these patients, 43% (n = 53) had a personal history of breast cancer, 19% (n = 24) had a history of gynecological cancer, and 20.2% (n = 25) had both. Among patients without bilateral mastectomy, 76% opted for enhanced surveillance, while 9% chose risk-reducing mastectomy. The rate of risk-reducing bilateral salpingo-oophorectomy was 45%. Eight patients developed breast cancer after genetic mutation confirmation, and 85% of these cases were diagnosed at stage 0 or 1 during surveillance. No new cases of other BRCA-related cancers were identified. Breast cancer-specific mortality in this cohort was 25%.

Conclusions: Among female BRCA mutation carriers aged 65 and above, a majority received their genetic test at an older age and had a history of BRCA-related cancer. The risk of breast cancer and breast cancer-specific mortality remained high in this elderly population, underscoring the importance of discussions regarding surveillance and risk-reducing strategies.

VITAMIN D SUPPLEMENTATION HAS A POSITIVE EFFECT ON PATHOLOGIC COMPLETE RESPONSE: A PROSPECTIVE RANDOMISED STUDY

Enver Ozkurt[1], Cetin Ordu[2], Caglar Unal[3], Ahmet Serkan Ilgun[4], Gursel Soybir[5], Filiz Celebi[6], Tolga Ozmen[7], Vahit Ozmen[8]

[1]Istanbul Demiroglu Bilim Univ., Department of Surgery, Republic of Turkiye, [2]Istanbul Florence Nightingale Hospital, Department of Medical Oncology, Republic of Turkiye, [3]Lutfi Kirdar EAH, Department of Medical Oncology, Republic of Turkiye, [4]Mater Dei Hospital, Msida, Department of Surgery, Republic of Turkiye, [5]Memorial Sisli, Department of Surgery, Republic of Turkiye, [6]Yeditepe Univ., Department of Radiology, Republic of Turkiye, [7]Massachusetts General Hospital, Department of Surgery, Republic of Turkiye, [8]Istanbul Florence Nightingale Hospital, Department of Surgery, Republic of Turkiye

Background: Achieving a pathologic complete response (pCR) after neoadjuvant systemic therapy (NST) serves as a biomarker indicating enhanced overall survival. In previous studies it is shown that vitamin D have a positive effect on breast cancer survival and pCR. In this prospective randomized clinical study, we aim to investigate the effect of oral vitamin D supplementation during NST on pCR.

Methods: Patients aged ≥ 18, who received NST (June 2019-June 2023) included in the study. Vitamin D levels were analysed before and after NST. Patients were randomized for the study group -vitamin D intake- (n = 114) and the control group -no vitamin D intake- (n = 113) on a 1:1 basis. Oral 50,000 IU vitamin D3 (cholecalciferol) supplementation was administered once a week during NST.

Result: There were 114 (50.2%) cases in the study group, 113 (49.8%) in the control group. When compared, there is no statistically significant difference between the clinicopathological characteristics of the study and control groups, except for primary biopsy histology, PgR expression, type of breast and axillary surgery, and 25(OH)D levels after NST. Patients in the study group has underwent conservative treatments more than the ones in the study group. Vitamin D intake has a significant effect on pCR, but not for the axilla, although there is a trend in favour of achieving pCR in the axillary lymph nodes. In the multivariate analysis, factors significantly affecting pCR were vitamin D intake (OR: 2.33, 95% CI 1.20-4.53; $p = 0.013$), hormone receptor negativity (OR: 2.22, 95% CI 1.11-4.43; $p = 0.024$), and Ki-67 ≥ 20% (OR: 3.27, 95% CI 1.03-10.34; $p = 0.044$).

Conclusions: This is the first and only study to compare the effect of oral vitamin D supplementation on pCR during NST. Vitamin D supplementation during NST has a significant effect on pCR. Vitamin D supplementation may have a positive effect on conservative surgery rates after NST.

RFA FOR EARLY BREAST CANCER, WHICH HAS RECENTLY BECOME COVERED BY MEDICAL INSURANCE IN JAPAN

Masato Takahashi[1], Shin Takayama[2], Tomomi Fujisawa[3], Naohito Yamamoto[4], Manabu Futamura[5], Tadahiko Shien[6], Mina Takahashi[7], Tatsuya Onishi[8], Mitsuya Ito[9], Takayuki Kinoshita[10]

[1]Hokkaido Univ. Hospital, Department of Breast Surgery, Japan, [2]National Cancer Center Hospital, Department of Breast Surgery, Japan, [3]Gunma Prefectural Cancer Center, Department of Breast Surgery, Japan, [4]Chiba Cancer Center, Department of Breast Surgery, Japan, [5]Gifu Univ. Hospital, Department of Breast Oncology, Japan, [6]Okayama Univ. Hospital, Department of Breast and Endocrine Surgery, Japan, [7]National Hospital Organization, Shikoku Cancer Center, Department of Breast Oncology, Japan, [8]National Cancer Center Hospital East, Department of Breast Surgery, Japan, [9]Hiroshima City Hroshima Citizens Hospital, Department of Breast Surgery, Japan, [10]National Hospital Organization, Tokyo Medical Center, Department of Breast Surgery, Japan

Background: Surgical resection is the standard treatment for early breast cancer, however, quite a few of them suffer from breast deformities. Breast cancer patients have requested methods other than surgery. Radiofrequency ablation therapy (RFA) is available as a non-surgical treatment. In Japan, RFA was first covered by medical insurance for liver cancer treatment in 2004. RFA for breast cancer was performed at several facilities in Japan, mainly clinics, without limiting the indications for treatment. While some patients were satisfied with the cosmesis, local recurrence occurred more frequently than surgery. The Japanese Breast Cancer Society took this situation very seriously and warned against RFA treatment for early-stage breast cancer unless there are clinical trial.

Methods: A multicenter RAFAELO study was conducted at 10 sites in Japan, to determine whether RFA for early-stage breast cancer is not inferior to standard breast-conserving surgery in terms of the rate of recurrence-free survival in the breast, residual lesions after treatment, and patient satisfaction. The indications were that less than 1.5 cm in diameter on mammography, ultrasound and MRI, only invasive or non-invasive ductal carcinoma, clinically no axillary lymph node metastasis, no residual active cancer must be confirmed by vacuum assisted breast biopsy 3 months after completion of radiotherapy, and surgery must be performed in principle if there is any residual active cancer.

Result: The enrollment of 372 patients was completed in 2017, and a 5-year follow-up report will be scheduled to be submitted in recent years. RFA has been evaluated by the PMDA and led to medical insurance coverage in December 2023, provided that the protocol is the same as that of the RAFAELO trial. RFA can only be performed under Japanese medical insurance if all of these conditions are met.

Conclusions: At this meeting, we will report on the specific techniques, merits and demerits, and future developments of RFA.

ASSESSING THE CUMULATIVE INCIDENCE OF CARDIAC EVENTS AND MAJOR ADVERSE CARDIAC EVENTS IN BREAST CANCER PATIENTS AFTER RADIATION THERAPY

Tae Hyun Kim[1,2], Ji Hyun Chang[1,2], Kyung Hwan Shin[1,2,3], Bum-Sup Jang[1,2]

[1]Seoul National Univ. College of Medicine, Department of Radiation Oncology, Korea, [2]Seoul National Univ. Hospital, Department of Radiation Oncology, Korea, [3]Seoul National Univ. Medical Research Center, Institute of Radiation Medicine, Korea

Background: The association between radiation exposure to the heart and post-radiation cardiac event (PRCE) or major adverse cardiac event (MACE) is widely acknowledged. However, the impact of various treatment parameters and risk factors on these events still require elucidation. This study aimed to identify prognostic factors for PRCE and MACE using institutional registry data.

Methods: A total of 9,116 breast cancer patients who underwent post-operative radiation (PORT) from 2012 to 2021 were included. Those who received partial breast irradiation or had persistent cardiac problems were excluded. PRCE was defined as a new diagnoses of any ischemic heart disease, coronary disease, heart failure, cardiomyopathy, or pericardial disease, while MACE was defined as cardiovascular mortality, myocardial infarction, unstable angina, or heart failure. The cumulative incidence of PRCE and MACE was estimated by competing risk regression analysis, taking breast cancer mortality as a competing risk.

Result: The cumulative incidence of PRCE at 1, 2, 3, and 5 years was 0.57%, 0.85%, 1.1%, and 1.6%, respectively, while that of MACE was 0.42%, 0.50%, 0.52%, and 0.69%. Competing risk regression analysis identified bilateral irradiation (Hazard ratio [HR] 1.98, $p = 0.009$), age (HR 1.05, $p < 0.001$), history of heart disease (HR 3.40, CI 1.60-7.22, $p = 0.001$), and use of Herceptin (HR 3.06, $p < 0.001$) as significantly associated with PRCE. Regarding MACE, bilateral irradiation (HR 2.83, $p = 0.007$), age (HR 1.03, $p = 0.018$), BMI (HR 1.08, $p = 0.008$), history of hypertension (HR 2.48, $p = 0.025$), and use of Herceptin (HR 4.24, $p < 0.001$) were statistically significant. In terms of laterality of radiation treatment, the cumulative incidence of PRCE at 5 years was 1.5%, 1.5%, and 2.6% for right, left, and bilateral irradiation, meanwhile for MACE the value was 0.50%, 0.81%, and 1.2%, respectively.

Conclusions: Bilateral irradiation, age, and use of Herceptin were significant risk factors for PRCE and MACE in patients receiving PORT for breast cancer.

RELATIONSHIP OF IMMEDIATE BREAST RECONSTRUCTION AND THE DEVELOPMENT OF LYMPHEDEMA IN BREAST CANCER PATIENTS WITH RADIOTHERAPY

Soon Woo Hong[1], Kyubo Kim[2,3], In Ah Kim[2,3]

[1]Seoul National Univ. Hospital, Department of Radiation Oncology, Korea, [2]Seoul National Univ. Bundang Hospital, Department of Radiation Oncology, Korea, [3]Seoul National Univ. College of Medicine, Department of Radiation Oncology, Korea

Background: Upper extremity lymphedema, a common complication following breast cancer treatments, often poses management challenges with limited knowledge of prevention. While several factors are well known for their contribution, recent studies have also suggested the potential association of immediate breast reconstruction with lower incidence. Given the inconclusive results, we explored the impact of immediate reconstruction on lymphedema incidence in breast cancer patients who underwent a mastectomy and radiotherapy.

Methods: Our study included 471 breast cancer patients who underwent a mastectomy with subsequent radiotherapy from 2012 to 2020, and clinical data were retrospectively collected. Of these, 229 underwent immediate breast reconstruction, whereas 242 did not. Upper extremity lymphedema events were defined and graded on a scale of 0 to 3, following the International Society of Lymphology (ISL) staging system. We utilized univariate and multivariate Cox regression models to identify associated factors.

Result: After a median follow-up period of 49 months, 121 patients developed upper extremity lymphedema. Regarding the stage 2 or 3 lymphedema events (n = 91), patients who underwent axillary lymph node dissection (ALND) were more likely to develop the event (3-year actuarial rate 16.6% vs. 4.9%; $p < 0.001$), while the immediate breast reconstruction was linked to a lower incidence (3-year actuarial rate 8.5% vs. 18.1%; $p < 0.001$) in univariate Cox analysis. This pattern persisted in the multivariate Cox analysis ($p = 0.038$ and 0.018) and was still observable when including stage 1 lymphedema, although the impact of immediate reconstruction was less pronounced(3-year actuarial rate 12.5% vs. 20.7%; $p = 0.092$).

Conclusions: In terms of the factors that are related to the upper extremity lymphedema events in postmastectomy breast cancer patients, the lymph node dissection method was found to be the most significant. Besides, immediate breast reconstruction is also noteworthy for its association with a lower incidence of lymphedema in these patients. Validation is needed to confirm this finding in future studies.

COMPARISON OF POST-RADIOTHERAPY SIDE EFFECTS BETWEEN MODERATELY HYPOFRACTIONATED AND ULTRA-HYPOFRACTIONATED WHOLE-BREAST IRRADIATION FOR BREAST CANCER: AN ANALYSIS OF A PROSPECTIVE COHORT STUDY

Tae Hoon Lee[1], Haeyoung Kim[1], Won Kyung Cho[1], Won Park[1], Seok Jin Nam[2], Seok Won Kim[2], Jeong Eon Lee[2], Jonghan Yu[2], Byung Joo Chae[2], Sei Kyung Lee[2], Jai-Min Ryu[2]

[1]Samsung Medical Center, Department of Radiation Oncology, Korea, [2]Samsung Medical Center, Department of Surgery, Korea

Background: Recently, ultra-hypofractionated whole breast radiation therapy (U-HypoWBRT) has been confirmed to be equivalent to moderately hypofractionated radiation therapy (M-HypoWBRT). In our hospital, U-HypoWBRT has been implemented since January 2023. The current study aims to analyze side effects following U-HypoWBRT and M-HypoWBRT among the patients enrolled in our prospective cohort study that evaluating toxicities/cosmetic outcomes after hypofractionated radiotherapy (RASCO, NCT05775757).

Methods: A total of 355 patients were enrolled in the RASCO study until October 2023. Of these, 220 patients who underwent post-operative whole-breast irradiation were eligible for this analysis. M-HypoWBRT (42.4 Gy /16 fractions) was conducted for 169 patients, while U-HypoWBRT (26 Gy/5 fractions) was given to 51 patients. Patients were assessed for breast changes, cosmesis, and patient-reported BREAST-Q questionnaires at baseline, 2-3 weeks (T1), and 6 months after radiotherapy (T2). Cosmesis was graded by two blinded physicians based on photographs. Breast fibrosis was measured with FibroMeterTM, and toxicities was graded by CTCAE ver 4.0.

Result: At T1 and T2, U-HypoWBRT showed significantly lower frequencies of skin toxicities (induration, edema, and hyperpigmentation) compared to M-HypoWBRT. The rate of grade ≥ 2 dermatitis was lower for U-HypoWBRT compared to M-HypoWBRT (2.4% vs. 0.0%, $p < 0.001$) at T1, without a significant difference at T2. Cosmesis favored U-HypoWBRT over M-HypoWBRT (Excellent/Good: 90.9% vs. 63.1%, $p < 0.001$) at T1, with no significant difference at T2 (82.0% vs. 78.8%, $p = 0.242$). Changes in cosmesis from baseline were more pronounced in M-HypoWBRT (Mild/Marked change: 65.8% vs. 21.2% at T1, 40.8% vs. 21.2% at T2). No significant differences were observed in breast fibrosis and BREAST-Q scores between the two groups at T1 and T2.

Conclusions: U-HypoWBRT resulted in lower rates of acute/subacute skin toxicities compared to M-HypoWBRT, with no discernible differences in breast fibrosis and BREAST-Q scores. A long-term follow-up is awaited.

ASSOCIATION BETWEEN GENOMIC FEATURES AND RADIATION RESPONSE IN METASTATIC BREAST CANCER PATIENTS UNDERGOING PALLIATIVE RADIOTHERAPY

Hyeonseok Choi[1,2], Seung Hyuck Jeon[3], Sejoon Lee[4,5], So Yeon Park[4], Jee Hyun Kim[6], In Ah Kim[2,3]

[1]Seoul National Univ. Hospital, Department of Radiation Oncology, Korea, [2]Seoul National Univ. College of Medicine, Department of Radiation Oncology, Korea, [3]Seoul National Univ. Bundang Hospital, Department of Radiation Oncology, Korea, [4]Seoul National Univ. Bundang Hospital, Department of Pathology, Korea, [5]Seoul National Univ. Bundang Hospital, Department of Precision Medicine Center, Korea, [6]Seoul National Univ. Bundang Hospital, Department of Medical Oncology, Korea

Background: Responses to palliative radiation therapy (RT) for metastatic lesions are highly variable. In this study, we analyzed the genomic features of breast cancer in relation to local progression-free survival (LPFS) using NGS-based tumor panel testing in patients undergoing palliative RT.

Methods: This retrospective study included 52 metastatic breast cancer patients, who underwent panel sequencing targeting 546 cancer-related genes as a routine clinical practice between June 2020 to April 2022. The mean age was 53 years and luminal A, luminal B, and triple-negative subtype accounted for 35%, 40%, and 25% of patients, respectively. Palliative RT was delivered to a total of 69 metastatic lesions. The biologically effective dose (BED) was calculated using the linear-quadratic model with an α/β ratio of 3 Gy. Any radiologic evidence of local progression within the RT field was recorded. Clinical factors and mutation status of individual genes or Kyoto Encyclopedia of Genes and Genomes (KEGG) pathways were examined to identify factors associated with LPFS.

Result: Among these patients, 320 mutations were identified, and 239 KEGG pathways were associated with these mutations. A higher BED (>88 Gy) was significantly associated with lower LPFS ($P=0.011$). Any mutations in a single gene showed a significant association with LPFS. Pathway analysis revealed that 28 pathways, including PI3K-Akt signaling pathway and Ras signaling pathway, were associated with LPFS. Higher BED was associated with improved LPFS in patients with mutations in PI3K-Akt signaling pathway or Ras signaling pathway. In contrast, no significant difference in LPFS was observed in patients without mutations in these pathways according to BED.

Conclusions: This study demonstrated that mutations in PI3K-Akt signaling pathway or Ras signaling pathway may confer the radio-resistance to the tumor, suggesting that a higher radiation dose is necessary to achieve local control compared to tumors without mutations in these pathways.

BREAST OUTCOMES OF REPEAT LUMPECTOMY IN PATIENTS WITH IPSILATERAL BREAST TUMOR RECURRENCE (IBTR) WITH OR WITHOUT RADIOTHERAPY: A COMPREHENSIVE ANALYSIS

Eunju Shin[1], Tae-Kyung Yoo[1], Sae Byul Lee[1], Il Yong Chung[1], Jisun Kim[1], Beom Seok Ko[1], Hee Jeong Kim[1], Jong Won Lee[1], Su Ssan Kim[2], Byung Ho Son[1]

[1]ASAN Medical Center, Department of Surgery, Korea, [2]ASAN Medical Center, Department of Radiation Oncology, Korea

Background: Despite the growing interest in repeat lumpectomy for IBTR, there remains a lack of data with outcomes of repeat lumpectomy with or without adjuvant radiotherapy. This study aimed to investigate the breast outcomes of repeat lumpectomy in patients with IBTR, with or without radiotherapy, and to identify factors associated with second IBTR.

Methods: We retrospectively analyzed 128 patients underwent repeat lumpectomy for IBTR between 1994 and 2018. Patients were divided into four groups based on radiotherapy status: no radiotherapy, radiotherapy after the first operation, radiotherapy after the second operation, and radiotherapy both after the first and second operations. Clinicopathological characteristics were compared, Kaplan-Meier survival analyses were performed to evaluate second IBTR-free survival rates, and Cox regression analysis was used to identify independent prognostic factors.

Result: The median follow-up period was 59.2 months, and within the overall population, the rate of second IBTR was observed to be 19.5%. Patients aged above 50 years at the time of the second operation demonstrated a significantly lower rate of second IBTR ($p = 0.033$). Other factors, such as radiotherapy after the operations, showed a trend towards significance but did not reach the threshold for statistical significance. On Kaplan-Meier curves, there was a trend towards improved outcomes in groups receiving radiotherapy after second operation and in those with radiotherapy after both the first and second operations. When conducted subgroup analysis, patients who received radiotherapy after the second operation had a significantly lower rate of second IBTR ($p = 0.007$). In the multivariate analysis, the administration of radiotherapy after the second operation was found to be significantly associated with a reduced risk of second IBTR (Hazard Ratio: 0.13, 95% CI: 0.017-0.965, $p = 0.046$).

Conclusions: Our findings suggest that radiotherapy after the 2nd operation is beneficial in improving second IBTR-free survival rates in patients undergoing repeat lumpectomy whether or not they received RT after initial operation.

EFFICACY AND SAFETY OF RESPIRATORY MOTION MANAGEMENT USING CONTINUOUS POSITIVE AIRWAY PRESSURE IN RADIOTHERAPY FOR BREAST CANCER : A PROSPECTIVE TRIAL

Jung Bin Park[1], Tosol Yu[2,5], Bum-Sup Jang[1,2], Hak Jae Kim[1,2], Jaeman Son[1], Seho Kwon[3], Hyun-Woo Shin[4], Ji Hyun Chang[1,2]

[1]Seoul National Univ. Hospital, Department of Radiation Oncology, Korea, [2]Seoul National Univ. College of Medicine, Department of Radiation Oncology, Korea, [3]Seoul National Univ. College of Medicine, Department of Na, Korea, [4]Seoul National Univ. College of Medicine, Department of Obstructive Upper Airway Research Laboratory, Korea, [5]Dongnam Institute of Radiological & Medical Sciences, Department of Radiation Oncology, Korea

Background: This study evaluated the organ-sparing effects and tolerability of continuous positive airway pressure (CPAP) in breast cancer radiotherapy with changes in lung volume and cardiac position.

Methods: Patients were trained to breathe with a CPAP device using a facial mask with pressures ranging from 6 to a maximum of 20 cm H2O. 4D-CT simulation and treatment planning were performed twice for each patient: once with free breathing (FB) and again with CPAP (CPAP). The radiation dose to the breast and/or regional nodes ranged from 43.2 to 45.9 Gy in 16 to 17 fractions, and a tumor bed boost was sequentially delivered with 9.6 to 12.5 Gy in 4 to 5 fractions using volumetric modulated arc therapy planning. In treatment plans, volumetric and dosimetric parameters of organs at risk and the deviation of heart centroid were compared.

Result: Out of 20 enrolled patients, 4 withdrew because of discomfort during the simulation. CPAP increased lung volume by 47.4% (mean, 2974.7 to 4712.9 cm3; $p < .001$) and decreased heart volume by 9.1%. CPAP was associated with significant benefits in V5 - V40 and mean dose (4.4 vs. 3.6 Gy in the FB arm vs. CPAP arm) of the ipsilateral lung (all $p < .001$). Mean heart dose (7.3 vs. 4.8 Gy) and V5 - V30 of the left ventricle and left anterior descending artery were significantly decreased (all $p < .05$). The mean vector of heart centroid consistently displaced to the right (4.8 mm), ventral (8.1 mm), and caudal (16.3 mm) direction with CPAP, moving away from the radiation field. No more than grade 2 adverse events were observed in the trial.

Conclusions: In this prospective trial, CPAP demonstrated notable improvements in dosimetric parameters, minimizing radiation exposure to critical organs. CPAP proved to be safe, easily implementable, and well-tolerated for patients with no severe toxicity.

CLINICOPATHOLOGICAL CHARACTERISTICS AND PROGNOSTIC IMPLICATIONS OF SUBTYPES IN DUCTAL CARCINOMA IN SITU: A RETROSPECTIVE ANALYSIS

Je Hyun Chin, Soo Youn Bae, Jin Ah Lee, Doo Reh Kim, Young Joo Lee, Chang Ik Yoon, Woo Chan Park

The Catholic Univ. of Korea, Seoul St. Mary's Hospital, Department of Surgery, Korea

Background: Ductal carcinoma in situ (DCIS) presents a complex spectrum of clinicopathological features influenced by molecular subtypes, posing challenges in prognostication and clinical management. This retrospective study aims to elucidate the association between subtype-specific characteristics and prognosis in DCIS.

Methods: We conducted a retrospective analysis of patients diagnosed with DCIS between 1997 and 2020, focusing on subtype classification based on hormone receptor (HR) and human epidermal growth factor receptor 2 (HER2) status among patients who underwent surgery at St. Mary's Hospital.

Result: Among 323 patients, the molecular subtype distribution was: ER+/HER2-: 192 (59.4%), ER+/HER2+: 53 (16.4%), triple-negative breast cancer (TNBC): 19 (5.9%), and ER-/HER2+: 59 (18.3%). Median age at diagnosis varied: ER+ BC: 50 years (range: 29-88), ER- BC: 55 years (range: 33-74), HER2- BC: 50 years (range: 29-88), HER2+ BC: 54 years (range: 29-88) Mastectomy rates differed: ER+/HER2+ BC: 13.2%, ER-/HER2+ BC: 40.7%. Mean tumor size varied: ER-/HER2- BC: 2.98 cm, median tumor sizes: ER+/HER2- BC: 1.9 cm, ER+/HER2+ BC: 2.1 cm, TNBC: 1.8 cm, ER-/HER2+ BC: 2.2 cm. Nuclear grade (NG) differed: ER+/HER2- BC: 22.6% high NG, ER-/HER2+ BC: 86.0%. Local recurrence rates were: ER+/HER2-: 1 patient (1.6%), ER+/HER2+: 2 patients (3.8%), ER-/HER2+: 3 patients (5.1%). Recurrence involving invasive BC occurred in ER+/HER2- and ER-/HER2+ BC (total: 2 cases). 10-year disease-free survival (DFS) rates were: ER+/HER2-: 96.5%, ER+/HER2+: 94%, TNBC: 100%, ER-/HER2+: 96.1%. Statistical analysis found no significant differences in DFS rates.

Conclusions: Our study reveals diverse clinicopathological profiles across molecular subtypes of DCIS. While significant variations exist in patient demographics, tumor characteristics, and recurrence rates, the 10-year DFS rates demonstrate no statistically significant differences. These findings emphasize the importance of personalized treatment strategies based on molecular profiling. Further research is warranted to validate these results and refine management approaches for DCIS patients.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

Poster Presentation

"Go Beyond Cure of Breast Cancer"

INVASIVE CARCINOMA IN RECURRENT FIBROADENOMA: A CASE REPORT AND LITERATURE REVIEW

Min Yun Ho[1], Lai Mun Wang[2], Hema Parag Salkade[2], Michael Chien Sheng Tan[2], Jeffrey Hing[1]

[1]Changi General Hospital Singapore, Department of Surgery, Singapore, [2]Changi General Hospital Singapore, Department of Pathology, Singapore

Background: Fibroadenomas (FA) belong to a common benign entity known as fibroepithelial lesions (FEL). However invasive breast carcinoma arising from an FA is rare. In this paper, we report a 58 year old lady who presented with a recurrent lump ten years after an excision of a 5.5 cm fibroadenoma with pseudoangiomatous stromal hyperplasia (PASH). The patient was followed up for at least 2 years post index excision with no evidence of recurrent lesions prior to discharge from follow-up. The lump measured up to 3 cm in size, and was found at the location of the previous excision site. It had a lobulated solid cystic appearance which an ultrasound guided vacuum assisted biopsy yielded invasive lobular carcinoma. The patient underwent a left simple mastectomy with sentinel lymph node biopsy. Final histology showed an 8 mm focus of invasive lobular carcinoma arising within a fibroadenoma. There was no axillary nodal metastasis. The patient was recommended for adjuvant endocrine therapy at the multidisciplinary tumour board.

Methods: A literature review from 2013-2023 revealed 21 other cases of breast cancer arising from FA.

Result: Upon analysis, we report the first case of a recurrent fibroadenoma with ILC, despite previous excision biopsy of FEL/PASH in the same location. Additionally, we noted that triple negative invasive carcinomas within or adjacent to the FA are more likely to have nodal metastasis. However, the location of the carcinoma in relation to the FA, either adjacent or within the FA does not seem to correlate with the risk of nodal metastasis.

Conclusions: In most cases, the eventual treatment of carcinomas arising from FA were almost no different to that of treating invasive breast cancer. Finally, our case emphasizes the importance of encouraging patients to perform breast self-examination and to stay vigilant to recurrent lumps as they have the potential to harbor malignancy.

INCIDENCE AND RISK FACTORS OF BREAST CANCER-RELATED LYMPHEDEMA IN KOREA: A NATIONWIDE RETROSPECTIVE COHORT STUDY

Harim Ahn[1], Hyeong Eun Jeong[1], Choyun Jeong[3], Sang Yull Kang[1], Sung Hoo Jung[1], Hyun Jo Youn[1], Jong Seung Kim[2,3]

[1]Jeonbuk National Univ. Hospital, Department of Surgery, Korea, [2]Jeonbuk National Univ. Hospital, Department of Otorhinolaryngology, Korea, [3]Jeonbuk National Univ. Medical School, Department of Medical Informatics, Korea

Background: Breast cancer-related lymphedema (BCRL) is a secondary lymphedema that occurs after breast cancer related treatments. BCRL develops from damage or dysfunction of the normally functioning lymphatic system due to surgery, radiation therapy and rarely due to cancer recurrence. This nationwide, retrospective study was aimed at investigating the incidence and risk factors of BCRL using the database of the Korean National Health Insurance Service (NHIS).

Methods: Patients with newly diagnosed breast cancer who underwent breast surgery from January 1, 2017 to December 31, 2020, were recruited. The incidence was compared by four groups according to the operation type of breast cancer (breast conserving surgery (BCS) with sentinel lymph node biopsy (S), BCS with axillary lymph node dissection, total mastectomy (TM) with S, modified radical mastectomy (MRM)). The incidence rates of lymphedema were calculated by the number of incident events by the total follow-up period. Cox proportional hazard regression was used to calculate the risk of incidence of lymphedema based on a patients' characteristics, breast cancer treatment and comorbidities.

Result: The final cohort of operation subjects that satisfied the inclusion criteria was 34,676. BCRL occurred in 4,242 patients (12.2%), and the median follow-up period was 695.4 days. The BCRL was diagnosed in the BCS with S (1,623/20,255), BCS with A (790/3,359), TM with S (798/7443), MRM (1,031/3,619) with an incidence of 40.8, 132.2, 55.8 and 171.8 per 1,000 person-years, respectively. Young age, obesity, chemotherapy, radiotherapy, residence in metropolitan areas and hyperlipidemia were identified as risk factors.

Conclusions: In Korea, the incidence of BCRL was found to be 12.2%, with the highest risk observed among patients who underwent MRM. Therefore, surgical oncologists should meticulously assess the appropriate surgical approach and consider providing education to patients with risk factors for BCRL, aiming to ensure effective prevention strategies.

HONG KONG BREAST CANCER REGISTRY: BUILDING UP BIG DATA FOR THE LOCAL POPULATION

Yolanda Ho Yan Chan[1,2], Lok Wa Yuen[2], Chun Chung Yau[2], Lawrence Pui Ki Li[2], Polly Suk Yee Cheung[2]

[1]CUHK Medical Centre, Department of Surgery, Hong Kong, [2]Hong Kong Breast Cancer Foundation, Department of Hong Kong Breast Cancer Registry, Hong Kong

Background: Hong Kong Breast Cancer Registry (HKBCR) is a non-government initiative established by the Hong Kong Breast Cancer Foundation (HKBCF) in 2007. Being the first of its kind in the territory, HKBCR has grown to become the most comprehensive and representative local data collection and monitoring system for breast cancer in Hong Kong.

Methods: The territory-wide HKBCR aims to collect and conduct analysis on data from local breast cancer cases, allowing patients, medical professionals and public health policymakers to better understand and stay informed with the up-to-date facts of the disease. Study findings are published in the periodically issued bulletins and annual reports, which offer evidence to support HKBCF's advocacy for more effective prevention, detection and treatment of breast cancer.

Result: HKBCR is steered by a committee comprised of doctors, professionals from legal, business management and public health fields, as well as representatives of breast cancer patients. As of early 2024, HKBCR has 65 participating sites across the territory, including hospitals and clinics from both public and medical sectors. More than 27,000 patients have registered since its establishment. About 300 variables under demographics, health backgrounds, risk exposures, breast screening habits, etc. are captured in HKBCR database, continuously providing insights on disease pattern, treatment trend, clinical outcome, and their consequent physical and psychological impact.

Conclusions: One of the ultimate missions of HKBCR is to help bring changes in public policies and medical practice for improving breast health care in Hong Kong. It has also set a model for other cancer-specific registries to guide local cancer control plans.

LIFESTYLE BEHAVIORS AND MENTAL HEALTH CHANGES OVER TIME AFTER THE DIAGNOSIS OF BREAST CANCER: KOREA NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY 2014-2021

Jiah Yang, Yewon Jeon

The Catholic Univ. of Korea, St. Vincent's Hospital, Department of Surgery, Korea

Background: The healthy lifestyle and mental status has been correlated with an improved quality of life and positive prognosis in breast cancer survivors. The aim of this study was to compare lifestyle behaviors and mental health between breast cancer survivors and those without breast cancer, and to analyze the association between the duration of breast cancer and these factors.

Methods: A total 61,758 respondents (including 333 patients diagnosed with breast cancer) who participated in the 2014~2021 Korea National Health and Nutrition Examination Survey were analyzed. The important outcome variables were lifestyle behaviors and mental health problem, including physical activity (PA), self-reported stress, smoking status and drinking status.

Result: Breast cancer survivors within 5 years of diagnosis had significantly high PA compared to those without breast cancer (OR: 1.734, [95% CI: 1.039-2.893]). Although there is a decrease in PA in breast cancer survivors with diagnosis for ≥5 years (OR: 1.351, [95% CI: 0.966-1.889]) compared to within 5 years of diagnosis, it still remains higher than that of those without breast cancer (*P*-value: 0.0241). In term of mental health, within 5 years of breast cancer diagnosis, breast cancer survivors experienced lower stress levels compared to those without breast cancer (OR: 0.526, [95% CI: 0.285-0.972]). However, 5 years after breast cancer diagnosed, the stress of breast cancer survivors increased and became high compared to those without breast cancer (OR: 1.337, [95% CI: 0.908-1.968]) (*P*-value: 0.0455). Comparing individuals without breast cancer to breast cancer survivors, it seems that breast cancer survivors engage in less smoking and alcohol consumption (*P*-value: 0.091).

Conclusions: Changes in lifestyle behaviors and mental health were observed depending on the duration of breast cancer diagnosis. Therefore, this study provides baseline findings to motivate further research and strategies to encourage maintenance recommended lifestyle behaviors and mental cares in breast cancer survivors.

THE CORRELATION BETWEEN LATERALITY OF MRNA-BASED COVID-19 VACCINATION AND BREAST CANCER IN A MALAYSIAN HOSPITAL

Qun-Ya Lim[1], Nur Diana Suhairi[1], Nurul Aini Mohd zin[1], Rabiatul Adawiyah Rashdi[1], Li-Ying Teoh[2]

[1]Univ. of Malaya, Department of Faculty of Medicine, Malaysia, [2]Univ. Malaya Medical Centre, Department of Surgery, Malaysia

Background: Vaccine-induced axillary lymphadenopathy has been shown to be more prevalent with the use of mRNA vaccination which includes Pfizer-BioNTech Covid-19 Vaccination. Following the National Covid-19 Immunisation Program, there has been a notable increase in reports of breast lumps and axillary lymphadenopathy among the public. This study aims to investigate the potential correlation between the laterality of Pfizer-BioNTech vaccination and the laterality of the breast cancer.

Methods: A retrospective review of breast cancer patients who had received Pfizer-BioNTech Covid-19 vaccines from April 2021 to July 2022 was conducted in Universiti Malaya Medical Centre. Covid-19 vaccination information including types of vaccines, dates of vaccination and injection site were retrieved. The duration of breast cancer symptoms occurrence post vaccine administration was recorded. Demographic data, risk factors, tumour status, TNM staging of the patients were collected.

Result: 92 patients were included in this study. There is no correlation between the laterality of the vaccination and the laterality of the breast lump. ($\chi^2 = 0.552$, $p = 0.458$). 59.8% of the breast cancer patients presented at early stage, 34.8% of the patients presented at advanced stage, while 5.4% of the patients presented as carcinoma in situ. The median duration of breast cancer symptoms occurrence post vaccine administration is two months (SD = 3.384).

Conclusions: This study depicts that Pfizer-BioNTech Covid-19 Vaccination is not correlated with the occurrence of the lump over the ipsilateral breast. The health awareness that the vaccination programme brings to the community may contributes to the early diagnosis of breast cancer.

THE MOST FREQUENT SITE OF BREAST CANCER IN INDIVIDUALS DIAGNOSED AT THE BREAST CLINIC OF ULAANBAATAR, MONGOLIA

Azzaya Terbish[1], Tunsag Purevdorj[1], Ganchimeg Gombo[1], Shirnen Odnasan[2], Buyannemekh Enkhtaivan[2], Odbayar Barkhas[3]

[1]Breast clinic of Ulaanbaatar, Mongolia, Department of Radiology, Mongolia, [2]Breast Clinic of Ulaanbaatar, Mongolia, Department of Surgery, Mongolia, [3]National Cancer Center of Mongolia, Department of Surgery, Mongolia

Background: Breast lumps can be found anywhere in the breast or armpit. While, most breast cancers originate in the milk ducts but can spread to the surrounding connective tissue within breast or lymph nodes in the armpit where, breast lumps are may sometimes be detected.

Methods: Total of 137 breast cancers data has been used in this study and the location of breast cancer at the time of diagnosis for these individuals were as follows: 71 cases /51.8%/ in the upper outer quadrant (UOQ), 16 cases /11.7%/ in the lower outer quadrant (LOQ), 32 cases /23.3%/ in the upper inner quadrant (UIQ), 7 cases /5.1%/ in the lower inner quadrant (LIQ), and 7 cases /5.1% with a central diagnoses.

Result: Breast cancer can originate in any part of the breast and may affect either the ductal or lobular cells, as well as connective tissue between them. Several studies have noted that breast cancer is more common in the left breast than in the right. This study suggests that the UOQ of either breast is the most frequent site for the occurrence of breast cancer.

Conclusions: Clinically, the breast can be divided into five quadrants (upper outer, lower outer, upper inner, lower inner, and central). There is more mammary gland tissue in the UOQ, and it can be caused by a plug of milk during breastfeeding. Having more glandular tissue on the side does slightly increase the risk of developing breast cancer there, simply because the area in which it could develop is greater. Incomplete breastfeeding is an another possible risk factor. And external injuries may be more common in the outer quadrants of breast as well. But these are all hypothetical. We can't prove any of this. There's simply not enough to support any of there theories with this study.

BACTERIOLOGICAL PROFILE AND ANTIBIOGRAM OF ISOLATES FROM WOUND EXUDATES OF BREAST CANCER AND PHYLLODES TUMOR PATIENTS IN A TERTIARY HOSPITAL IN THE PHILIPPINES

Krisniel Florence Solis, Shiela Macalindong

Univ. of the Philippines - Philippine General Hospital, Department of Surgery, Philippines

Background: Fungating or ulcerating breast tumors can affect the clinical course and quality of life of phyllodes tumor or breast cancer patients. In the Philippines, more than half of our breast cancer cases are diagnosed when already locoregionally advanced or metastatic. This cross-sectional study aimed to determine bacterial and antibiotic susceptibility profile of wound exudates from breast tumor patients seen at the Department of Surgery, UP-PGH.

Methods: A total of 106 wound exudates were collected from patients with fungating/ulcerating breast cancer and phyllodes tumor from January 1,2022-September 31,2023. Wound exudates were aseptically collected and tested for aerobic and anaerobic culture. Antibiotic susceptibility testing was performed by disc diffusion technique. Association of clinical variables with bacterial species and antibiotic susceptibility was tested using Fisher's exact test.

Result: There were 106 patients with fungating or ulcerating tumors, 88 (83%) breast cancer and 18 (17%) phyllodes tumor. All 106 wound exudates showed growth of at least one bacteria, 59 (56%) were polymicrobial and 47 (44%) were monomicrobial. The Gram-positive bacteria Staphylococcus aureus was the most common bacteria isolated (34.9%) followed by Gram-negative bacteria Pseudomonas aeruginosa (34%). On contrary, only 6 samples (5.6%) were tested for anaerobic culture and showed no isolates. Pseudomonas isolates were susceptible to Piperacillin/Tazobactam, Meropenem, Levofloxacin and Ciprofloxacin. On contrary, Staphylococcus spp. showed 98.8% susceptibility to Clindamycin and Erythromycin but highly resistant to Penicillin G (77.5%). Out of 40 Staphylococcus isolates, 5 (12.5%) were identified as methicillin-resistant (MRSA) but were susceptible to Vancomycin, Tetracycline and Linezolid. Bacterial isolates and their antibiotic sensitivity did not differ according to prior hospitalization, antibiotic usage, immunosuppressive therapy and type of tumor.

Conclusions: All fungating/ulcerating breast lesions had growth of at least one bacteria, majority with polymicrobial growth. Gram-negative bacteria were the most predominant, Pseudomonas isolate being the most common organism. The top isolates showed good susceptibility to first-line antibiotics.

EMPOWERING TOMORROW'S WOMEN: A SCHOOL-BASED INITIATIVE FOR BREAST CANCER AWARENESS AND EDUCATION IN SINGAPORE

Shi Hui Yang[1,2,6], Julie Liana Binte Hamzah[1,2,6], Ramalakshimi Gayathri Vinjamuri[7], Krismaine Ng[2,6], Sork Hoon Khoo[8], Si Ying Tan[1,2,6], Ying Ching Tan[1,2,6], Su Ming Tan[3,6], Benita Tan[1,2,5,6], Geok Hoon Lim[4,6], Sabrina Ngaserin[5,6], Yirong Sim[1,2,6], Kiak Mien Veronique Tan[1,2,6]

[1]Division of Surgery and Surgical Oncology, National Cancer Centre Singapore, Department of Breast Surgery, Singapore, [2]Division of Surgery and Surgical Oncology, Singapore General Hospital, Department of Breast Surgery, Singapore, [3]Changi General Hospital, Department of Breast Surgery, Singapore, [4]KK Women's and Children's Hospital, Department of Breast Surgery, Singapore, [5]Sengkang General Hospital, Department of Surgery, Singapore, [6]SingHealth Duke-NUS Breast Centre, Department of Surgery, Singapore, [7]SingHealth Duke-NUS Medical School, Department of Surgery, Singapore, [8]SingHealth Patient Advocacy Network, Department of Family Medicine, Singapore

Background: In Singapore, the incidence of breast cancer has almost quadrupled to 74.6 per 100,000 since 1968. Despite efforts in public education on breast cancer and screening, an alarming 11% of those with invasive cancer were diagnosed with stage IV disease, with less than 50% participation in national screening program. Recognizing the impact of education, we launched a school-based program to improve knowledge on breast health, enhance breast cancer awareness and health-seeking behavior among teenage students.

Methods: In collaboration with the Health Promotion Board and Ministry of Education, Singapore, we created a meticulously designed e-learning module. This module includes an animated skit covering risks factors, signs and symptoms of breast cancer, as well as breast self-examination and screening mammogram guidelines. The targeted audience were teenage girls 14 to 15 years old. Assessment was made using a pre and post module quiz to assess knowledge and health-seeking attitudes. Each session was one with one or more breast surgeons, followed by Q&A; feedback on the module was collected.

Result: Since October 2022, we engaged four secondary schools in Singapore, with a total attendance of 1025 students. After the real-time clinician session and e-learning module, there was an improvement of breast cancer knowledge from 74.9% to 89.5%. There was also an improvement in health-seeking attitudes from 92.7% to 97.4%. Student feedback indicated a 96% agreement on the program's positive educational and health benefits.

Conclusions: Introducing breast cancer education in schools is feasible, well-received by students, and holds the potential for positive health impacts on their lives. Additionally, there is a prospect of spreading awareness through students to their female relatives.

MEDIATION ANALYSIS OF BREAST DENSITY, AGE AT MENARCHE, AND BREAST CANCER RISK IN KOREAN WOMEN

Thi Xuan Mai Tran, Boyoung Park

Hanyang Univ. College of Medicine, Department of Preventive Medicine, Vietnam

Background: This study aimed to investigate the potential mediating effect of breast density on the association of age at menarche and subsequent breast cancer risk in Korean women.

Methods: Data of this retrospective cohort was obtained from the Korean National Health Insurance database, including all women aged ≥ 40 years who underwent breast cancer screening from 2009 to 2010 in Korea. Mediator factor was breast density, measured by the Breast Imaging Reporting and Data System (BI-RADS). Reproductive factors were collected using self-reported questionnaire during breast cancer screening. We first assessed the association between age at menarche and breast density using logistic regression. The Cox proportional model was used to assessed the association between age at menarche and breast cancer risk, and then mediation analysis to assess how this association was mediated by breast density. Analysis was stratified by menopausal status.

Result: Of 1,505,094 premenopausal and 2,399,345 postmenopausal women, the mean ages were 45.0 and 61.5, respectively. Women with later age at menarche were less likely to have dense breasts, with OR of 0.978 (95% CI 0.976, 0.980) in premenopausal and 0.953 (95% CI 0.952, 0.955) in postmenopausal. Later age at menarche was further associated with decreased breast cancer risk, with HR per one year increase in age at menarche was 0.939 (95% CI 0.933, 0.945) in premenopausal and 0.947 (95% CI 0.941, 0.954) in postmenopausal women. The association between age at menarche and breast cancer was mediated by breast density, with percentage mediated was 3.7% (95% CI 3.1, 4.3) in premenopausal and 12.0 (95% CI 10.6, 13.4) in postmenopausal women.

Conclusions: Our findings suggest that the association between age at menarche and future breast cancer risk is mediated by breast density, with different magnitudes in pre- and postmenopausal women.

MUTATIONAL PROFILE OF HOMOLOGOUS RECOMBINATION REPAIR (HRR) GENE IN TRIPLE NEGATIVE BREAST CANCER IN INDIAN PATIENTS

Pranay Tanwar, Rahul Kumar, Harsh Goel

All India Institute of Medical Sciences, New Delhi, Department of Laboratory Oncology Unit, India

Background: Most of the cancer are associated with defective DNA repair mechanism. Homologous recombination repair (HRR) provides the integrity of the genome and its maintenance. The genetic variation in HRR genes can lead to homologous recombination deficiency (HRD). The presence of HRD in tumors make them more sensitive towards platinum-based chemotherapy and PARP inhibitors. Given, the key role of these genes in tumorigenic activity, the primary objective of this work is to identify the somatic mutation frequency of HRR genes in triple-negative breast cancer (TNBC) cases in Indian patients.

Methods: After taking informed consent, we enrolled 29 primary breast cancer (BC) cases from the BC clinic at the host institute. Genomic DNA was then extracted from the patient's tumour and periphery blood samples. The library was prepared according to manufacturer instructions, and sequencing was performed on the Illumina platform with mean depth coverage of 200X and 100X for tumor and blood samples respectively. An in-house developed pipeline was used to analyze the mutational frequency of HRR genes (BRAF, DDR2, IDH1, IDH2, ERBB2, PIK3CA, PTEN, PDGFRA, KRAS, AKT1, ALK, EGFR, KIT and HRAS) by using MAF tools.

Result: The most frequently mutated HRR-associated gene is PIK3CA with a somatic mutation rate of 20.69% followed by ALK and EGFR (17.24% each). Other HRR genes such as DDR2 found altered in 13.79% of cases while AKT1 and BRAF were discovered in10.34% of cases. Rest other genes IDH, PDGFRA and HRAS were found in 6.9% of cases whereas KRAS, PTEN, IDH2 and ERBB2 were observed in 3.45% of cases respectively.

Conclusions: PIK3CA mutation was highest among all HRR. The high frequency HRR genes helps us to stratify high risk cases for future personalised management. Early identification of Homologues recombinant gene deficient and Proficient group would enable better management strategy.

MUTATIONAL SIGNATURES OF PIK3CA IN INDIAN BREAST CANCER PATIENTS: A PROFOUND ANALYSIS

Harsh Goel, Rahul Kumar, Pranay Tanwar

All India institute of Medical Sciences, New Delhi, Department of Medical Oncology, India

Background: Breast cancer (BC) is the most commonly diagnosed cancer and the second leading cause of cancer-related death among women worldwide. BC necessitating a deeper understanding of molecular alterations for effective treatment strategies. The phosphatidylinositol 3-kinase (PI3K) is a complex signaling pathway that plays an essential role in cell growth, proliferation, epithelial to mesenchymal transition, migration, and apoptosis. It is often altered in BC caused by mutations or amplification of the genes encoding the PI3K catalytic subunits p110α (PIK3CA). However, there is a relative paucity of data on prevalence and hotspot profile of PIK3CA mutation in Indian breast cancer patients. Therefore, we investigated the distribution of somatic PIK3CA mutations in Indian BC patients and their associations with clinical features and prognosis.

Methods: A cohort of 22 treatment-nave Indian BC patients was recruited from AIIMS, New Delhi. Tumor and blood samples were collected post-surgery, and genomic DNA was extracted for targeted sequencing of the entire exon of PIK3CA using the Illumina platform. Bioinformatics analysis was conducted through an in-house script, and Droplet Digital PCR (DDPCR) was employed for hotspot mutation validation using the QX200 system.

Result: This study revealed a substantial somatic mutation rate of 40% in PIK3CA genes among BC patients. Seven distinct mutations were identified in the catalytic subunit, including two novel point mutations (L387M and Q58E542K) and the previously reported H1047R mutation. Notably, the H1047R mutation exhibited the highest frequency, occurring in 20% of cases. DDPCR validation confirmed the presence of H1047R mutations, with varying mutant fractions (0-33.36%) in tumor and matched blood samples.

Conclusions: The identification of H1047R mutation as a prevalent subtype suggests its potential utility as a predictive marker for pathological complete response. This research contributes valuable insights into the genetic landscape of PIK3CA mutations in Indian BC patients, paving the way for personalized treatment approaches and improved patient outcomes.

EPIGENOME-WIDE ASSOCIATION STUDY OF FAMILIAL BREAST CANCER IN THE KOHBRA STUDY

Sangjun Lee[1,2,3], Sue K. Park[1,2,4]

[1]Seoul National Univ. College of Medicine, Department of Preventive Medicine, Korea, [2]Seoul National Univ., Department of Cancer Research Institute, Korea, [3]Seoul National Univ. College of Medicine, Department of Biomedical Sciences, Korea, [4]Seoul National Univ. College of Medicine, Department of Integrated Major In Innovative Medical Science, Korea

Background: This study aims to elucidate the role of epigenetic modifications in the pathogenesis of breast cancer by identifying significant methylation differences between familial breast cancer (BC) and the healthy control.

Methods: An epigenome-wide association study (EWAS) was performed using tissue samples from eight familial BC and eight controls from the Korean Hereditary Breast Cancer (KOHBRA) study. Initial analyses utilized a 27k methylation panel, which was subsequently expanded to 450k based on the Korean Genome Epidemiology Study (KoGES), and finally to 850k through imputation using penalized functional regression. After adjusting for age, the limma algorithm was performed for an EWAS. Significant CpG sites were selected with an FDR < 0.05 threshold.

Result: Five CpG sites (cg07236594, cg27424326, cg09427429, cg21512773, and cg01761729) were found to be statistically significant. We exclusively chose CpG sites located in the promoter regions, which are defined as locations ranging from 0 to 1500 base pairs upstream of the transcription start sites (TSS), including the 5' untranslated regions (5'UTR), and the first exon. Additionally, CpG sites located in the shelf and shore regions of the CpG Island (CGI) were selected. Consequently, the LIMS2 gene was finally selected as associated with familial BC. LIMS2 is an intracellular adapter protein crucial for linking the extracellular matrix to intracellular signaling pathways. It regulates cell adhesion, migration, survival, and growth.

Conclusions: The presence of specific methylation patterns in familial BC suggests an added layer of complexity in the BC's etiology, where environmental factors or lifestyle may interact with an individual's genetic background to influence the epigenome.

STUDY TO EVALUATE THE PREVALENCE OF *BRCA1/2* MUTATION WITH CLINICO-PATHOLOGICAL PARAMETERS IN UNSELECTED BREAST CANCER PATIENTS WITH LOW ER POSITIVE & HER2 NEGATIVE

Ji Won Yoo[1], Jinyoung Byeon[2], Jeong Eon Lee[1], Se Kyung Lee[1], Byung Joo Chae[1], Jonghan Yu[1], Seok Won Kim[1], Seok Jin Nam[1], Han-Byoel Lee[1,2], Jai Min Ryu[1]

[1]*Samsung Medical Center, Department of Surgery, Korea,* [2]*Seoul National Univ. Hospital, Department of Surgery, Korea*

Background: Following the 2010 ASCO guidelines' establishment of a 1% ER positivity threshold, numerous studies have identified the clinical parallels between ER low positive & HER2 negative breast cancer (Low-ER) and triple-negative breast cancer (TNBC), noting an elevated *BRCA1/2* mutation incidence in Low-ER cases. Despite NCCN guidelines advocating for genetic testing in all TNBC patients, Low-ER cancers have yet to receive similar consideration. This investigation aims to assess the prevalence of *BRCA1/2* mutations and related clinicopathological characteristics in unselected Low-ER cases.

Methods: Conducted as a multicenter, retrospective, non-randomized single-arm study from 2014 to 2022 at Samsung Medical Center and Seoul National University Hospital, this investigation targeted adult females with primary Low-ER & HER2 negative breast cancer. Exclusions were made for patients lacking biobank samples, mixed IHC subtypes, and presenting synchronous breast cancers without identical IHC types. Buffy coat samples from biobanks supplemented the absence of *BRCA1/2* mutation tests.

Result: Out of 172 Low-ER patients, 64 had prior genetic testing, and 108 were assessed via buffy coat analysis. With a median follow-up of 50.8 months (range 3-123 months), *BRCA1/2* mutations were found in 13.4% of patients, which varied significantly across different age groups: 26.2% in patients aged ≤ 40, 10.2% in those aged 41-60, and 6.3% in patients over 60 years of age ($p = 0.017$), demonstrating a trend towards decreased mutation prevalence with advancing age ($p = 0.005$). Patients with a family history of breast or ovarian cancer showed a notably higher mutation rate (32.3%) compared to those without (9.2%), yielding an odds ratio of 4.689 (95% CI 1.823-12.060, $p = 0.002$). No significant survival outcome differences were observed based on mutation status.

Conclusions: The study indicates that *BRCA1/2* testing in Low-ER patients may facilitate enhanced treatment strategizing, underscoring the need for genetic testing in this subgroup.

EVALUATION OF SUBTYPES OF METACHRONOUS CONTRALATERAL BREAST CANCER IN PATIENTS WITH *BRCA* MUTATION

Jisoo Shin, Jai Min Ryu, Seok Jin Nam, Seok Won Kim, Jeong Eon Lee, Jonghan Yu, Byung Joo Chae, Se Kyung Lee

Samsung Medical Center, Department of Surgery, Korea

Background: While the elevated risk of contralateral breast cancer (CBC) in *BRCA* mutation carriers is well-documented, comprehensive studies investigating the subtypes of recurrent breast cancer in this population remain scarce. Understanding these subtypes will play an important role in guiding treatment decisions. Our study aims to analyze CBC subtypes in *BRCA1* or *2* mutation carriers and compare distributions based on mutation status.

Methods: A retrospective chart review of breast cancer patients with metachronous CBC from 2004 to 2020 was conducted at a single academic center. Exclusion criteria included distant metastasis at diagnosis, bilateral breast cancer, and CBC within 2 years of initial diagnosis.

Result: Triple-negative breast cancer (TNBC) was 61.9% in patients with *BRCA1* mutations, while Luminal A was more common in those with *BRCA2* mutations (64.2%). Among patients with *BRCA1* mutations, 57.5% experienced recurrence as TNBC in the contralateral breast, while 26.9% developed Luminal A of CBC. Similarly, 61.5% of patients with *BRCA1* mutations who initially had Luminal A breast cancer developed TNBC as CBC. For patients with *BRCA 2* mutation, subtypes of primary breast cancer were Luminal A type in 64.2% and TNBC in 24.5%. 70.6% of patients with Luminal A type as primary cancer and 53.9% of patients with TNBC as primary cancer were reported to have Luminal A type of CBC.

Conclusions: While the overall distribution of subtypes remained relatively consistent from primary to CBC, individual-level variations were observed. Understanding these variations is crucial for personalized treatment strategies, especially considering the increased risk of CBC in patients with *BRCA* mutations. Moreover, patients with TNBC as their primary cancer and CBC may confront the prospect of undergoing chemotherapy again, imposing a significant burden. This consideration should weigh heavily in treatment decisions. Further research is needed to elucidate the underlying factors contributing to subtype alterations in CBC.

ASSOCIATION STUDY OF SINGLE NUCLEOTIDE POLYMORPHISMS IN *CCL2* AND *CXCL12* GENE AND BREAST CANCER SUSCEPTIBILITY

Duanchong Zhao

Fujian Medical Univ., Department of Cancer Epidemiology, China

Background: Breast cancer is the most common female malignancy.This study is aimed to investigate the association between single nucleotide polymorphisms (SNPs) of *CCL2* and *CXCL12* genes and breast cancer susceptibility, as well as the interactions between genes and environmental factors.

Methods: We conducted a casecontrol study with 1855 breast cancer cases and 1838 frequency age-matched controls. Use the logistic regression model to analyze the association between eight SNPs and breast cancer, as well as the relationship between SNPs and estrogen receptor (ER), progesterone receptor (PR), human epidermal growth factor receptor 2 (HER-2) in breast cancer patients. Generalized multifactor dimensionality reduction (GMDR) is used to detect the interaction between genes and reproductive factors.

Result: Without adjusting other factors, women with GG genotype and CG+GG genotype of SNP rs3740085 on *CXCL12* gene have a higher risk of breast cancer compared to wild-type CC genotypes (OR = 1.15, 95% CI = 1.01-1.32; OR = 1.18, 95% CI = 1.01-1.37). In women with BMI ≥ 24, SNP rs1024611 on *CCL2* was associated with an increased risk of breast cancer compared with the wild homozygous GG genotype (OR = 1.44, 95% CI = 1.09-1.91; OR = 1.22, 95% CI = 1.01-1.47). The TT genotype (OR = 1.30, 95% CI = 1.01-1.69) and TA+TT genotype in SNP rs1024610 (OR = 1.31, 95% CI = 1.00-1.72), AA genotype in SNP rs1024611 (OR = 1.18, 95% CI = 1.02-1.35), CC genotype in SNP rs2530797 (OR = 1.17, 95% CI = 1.00-1.37), which were located on *CCL2* gene, were associated with PR-positive breast cancer. GMDR analysis indicated that a significant association between rs1801157-rs3740085 and breast cancer risk.

Conclusions: SNP rs1024611 on *CCL2* gene is associated with an increased risk of breast cancer in overweight women. SNP rs1144471 and rs3740085 on *CXCL12* gene have a significant association with the genetic susceptibility of breast cancer. Rs1144471 on *CXCL12* gene was significantly associated with breast cancer subtype (ER, PR, HER-2). Besides, gene-gene interaction models showed a significant association between the rs1801157-rs3740085 on the *CXCL12* locus and breast cancer susceptibility.

THE NATURAL HISTORY OF PRIMARY ANGIOSARCOMA OF THE BREAST: A CASE REPORT AND LITERATURE REVIEW

Hannah Angela Acosta, Joan Tagorda

Philippine Society of Breast Surgeons, Department of Surgery, Philippines

Background: Primary angiosarcoma is one of the extremely rare malignancies of the breast. The de novo incidence of breast angiosarcoma is less frequent than secondary to an irradiated breast tissue. Primary angiosarcoma typically arises in the parenchyma of the breast occurring in women between the 3rd and 4th decades in life. Although secondary angiosarcoma of the breast is found to be more common, it is also more aggressive and with poorer prognosis.

Methods: We report a case of a 38 year-old female of Asian descent diagnosed with angiosarcoma of the breast. Patient underwent total mastectomy and was prepared for adjuvant treatment chemotherapy and radiotherapy. However, patient became pregnant in the interim with no plans of termination.

Result: Due to its rarity, there is no existing treatment protocol on the ideal management of angiosarcoma of the breast. There are no evidence-based guidelines to achieve quality prognostication despite negative margins.

Conclusions: Management of primary angiosarcoma consists of primary surgery and not often followed by chemotherapy and radiotherapy.

BREAST CANCER MOLECULAR SUBTYPES AND ITS CLINICOPATHOLOGICAL CORRELATION IN A NON-SUBSPECIALIZED HOSPITAL: A 7-YEAR RETROSPECTIVE CROSS-SECTIONAL STUDY

Yi Ping Lim[1,2], Yee Torng Neoh[2]

[1]Univ. Malaya Medical Centre, Department of Surgery, Malaysia, [2]Bintulu Hospital, Sarawak, Malaysia, Department of Surgery, Malaysia

Background: Breast cancer (BC) is the most common cancer in Malaysia. The immunohistochemical (IHC) determination of BC subtypes with regards to estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor (HER2) status contributes to an improved selection of treatment choices and patient care. In the past decade, the incidence of diagnosed BC have increased in Sarawak, the largest state in Malaysia. Bintulu, located in the central region of Sarawak, is the fourth largest division and covers four districts. As we move forwards to an era of global surgery, we would like to look into the prevalence of BC subtypes and assess their associations with clinicopathological parameters for better treatment decisions in a non-subspecialized environment in Bintulu.

Methods: Retrospective cross-sectional study, including all BC patients who were operated on from January 2016 to December 2022. Two-way ANOVA test was used to evaluate the difference between BC subtypes and age. Fisher's Exact test was used to compare the clinicopathologic parameters with BC subtypes.

Result: Among 109 patients that were operated on, the mean age was 51.6 years. The indigenous population comprised of 71.6% and invasive ductal carcinoma (92.7%) was the most frequent histological type with grade 2 (44%) and grade 3 (44%) tumours encountered equally. The proportion of positivity of ER, PR and HER2 was 69.7%, 58.7% and 22.9% respectively. More than half the patients had luminal A (61.5%) subtype followed by Triple negative subtypes (15.6%), Non-luminal HER2 (13.8%) and Luminal B (9.2%). BC subtypes were closely correlated with age ($p = 0.018$) and tumour grade ($p = 0.031$).

Conclusions: The age of patients and tumour grade is significantly associated with BC subtypes. The findings of the present study are in line with the literature and should assist in treatment choices in a non-subspecialised clinical setting such as ours.

PATIENT-DERIVED SMALL CIRCULATING EXTRACELLULAR VESICLE AS PUTATIVE MODULATOR OF BREAST CANCER METASTASIS

Sze Keong Tey, Tao Zou, Ava Kwong

The Univ. of Hong Kong, Department of Surgery, Hong Kong

Background: Tumor microenvironment is a heterogenous and complex milieu which fuels tumor cells to grow and disseminate. Emerging evidences have unraveled the unequivocal role of small extracellular vesicles (sEVs) in cell-to-cell communication within tumor microenvironment, both locally and distantly.

Methods: Representative circulating sEVs from plasma samples of healthy individuals (Norm-sEV), BC patient at an early stage (EBC-sEV) and late stage with distant metastasis to lung (MBC-sEV) were isolated using serial ultracentrifugation. sEV population was validated by immunoblotting, transmission electron microscopy (TEM) and nanoparticle tracking analyzer (NTA). In vitro functional comparison of isolated sEVs were determined by Transwell migration and invasion and colony formation assay. In vivo functional examination was performed via tail-vein co-injection of sEVs and mouse 4T1 cells, a syngeneic BC model to determine lung metastasis. Mass spectrometry of EBC- and MBC-sEV were performed to discover the proteins that enhanced BC development.

Result: Norm-sEV, EBC-sEV and MBC-sEV were successfully isolated. Immunoblotting analysis revealed the sEVs were depleted of GM130, a negative sEVs marker, while highly enriched in ALIX and TSG101 positive sEVs markers. The integrity of sEVs was examined by TEM and size distribution of sEVs were measured by NTA, showing size at about 130-150nm. A higher amount of sEVs isolated from the same volume of plasma collected from MBC patient compared to healthy control and EBC patient was observed. In migration and invasion and colony formation assay, MBC-sEV exhibited the highest potency in promoting the mobility, invasion and number of colonies formed of non-aggressiveness BC cell lines, MCF7 and T47D. In syngeneic BC model, MBC-sEV enhanced colonization of 4T1 cells in the lung. S100A11 was identified as the most significantly upregulated proteins in MBC-sEVs.

Conclusions: The presence of S100A11 in sEVs is rarely documented and the detailed molecular mechanism and interplays between sEV-S100A11 and cells is lacking, which warrants further investigation.

SPP1+ MACROPHAGES IN HR+ BREAST CANCER ARE ASSOCIATED WITH TUMOUR-INFILTRATING LYMPHOCYTES

Byung-Kwan Jeong[1], Su Min Cha[1,2], Jung-Wook Park[3], Yoon Jae Lee[2], Hee Jae Lee[3], Hyeonjin Lee[3], In Won Lee[3], Gyungyub Gong[1], Sung Hee Park[4], Hee Jin Lee[1,2,3]

[1]ASAN Medical Center, Department of Pathology, Korea, [2]Univ. of Ulsan College of Medicine, Department of Biomedical Sciences, Korea, [3]NeogenTC Corp., Department of Research, Korea, [4]Soongsil Univ., Department of School of Systems Biomedical Science, Korea

Background: Breast cancer, categorised into hormone receptor-positive (HR+), HER2-positive (HER2+), and triple-negative (TNBC) subtypes, exhibits varied outcomes based on the number of tumour-infiltrating lymphocytes (TILs). Increased TIL levels are associated with better outcomes in HER2+ and TNBC, while HR+ individuals with high TIL levels show shorter survival but greater neoadjuvant chemotherapy response.

Methods: To explore the divergent roles of TIL levels across various breast cancer subtypes and their effect on immune cell composition, we employed single-cell RNA sequencing on 31 patients with breast cancer.

Result: HR+ breast cancer with high TIL levels (TIL-high) revealed increased SPP1+ macrophages, increased SPP1 expression in other monocytes/macrophages (mono/macro) subgroups, and enriched pathways associated with extracellular matrix (ECM) remodelling in mono/macro. On the other hand, HER2+ breast cancer and TNBCs did not show change of SPP1+ macrophages according to TIL levels. Moreover, cell-cell interaction analyses revealed enhanced SPP1, MIF, and FN1 signalling in the interaction between SPP1+ macrophages and T-cells in TIL-high HR+ breast cancer. Spatial transcriptomics data highlighted the close proximity of SPP1+ macrophages, CD8+ T-cells, and CD4+ T-cells in TIL-high HR+ breast cancer.

Conclusions: Our findings unveil the novel influence of SPP1+ macrophages on T-cells in TIL-high HR+ breast cancer, potentially explaining the poor prognosis and offering insights for targeted interventions.

COMBINATION OF ERIBULIN AND CISPLATIN SYNERGICALLY INDUCE CYTOTOXIC AUTOPHAGY ACTIVATION BY ERK SIGNALING PATHWAY IN MDA-MB-231 CELLS

Hye Mi Ko, Eunyoung Cha, Myungsun Lee, Jinsun Lee

Chungnam National Univ. Hospital, Department of Surgery, Korea

Background: Among breast cancers, triple negative breast cancer (TNBC) in particular is an aggressive nature, with a fast progression and a high risk of metastasis and recurrence. The progression of breast cancer is quite complex and is controlled by a variety of factors, among which autophagy is one of the important regulatory factors affecting breast cancer. Therefore, we would like to discuss the action of autophagy on breast cancer and evaluate the potential use of autophagy as one of the alternatives to treating triple negative breast cancer, especially with limited therapeutic options. In addition, we would like to study the mechanism of autophagy activation with a combination of cisplatin and eribulin, which has the potential for therapeutic options for triple negative breast cancer.

Methods: We used CCK-8 assay, colony formation assay, autophagy detection assay, Annexin V/Propidium Iodide (PI) Staining, to detect cell viability, autophagy and apoptosis. Western blot analysis was used to determine the expression of LC3-I/II, p62, ERK1/2, phospho-ERK1/2.

Result: Growth inhibition of MDA-MB-231 cells increased as ERK activation increased when the two anticancer drugs were combined compared to when elibrin and cisplatin were treated respectively. Eribulin induces cytotoxic autophagosis by cisplatin in MDA-MB-231 cells, and the combination of eribulin and cisplatin further increased this autophagosis. In addition, in PD98059, cell viability and colony formation increased during ERK inhibition, reducing apoptosis and autophagy effects, and when EKR is inhibited, it was found to affect the expression of autophagy-related proteins such as LC3II/I and p62.

Conclusions: Continuous treatment of MDA-MB-231 cell with cisplatin and eribulin combination for 72 hours increases the activity of ERK-mediated autophagy and suppresses cancer cells. Therefore, ERK and autophagy can be expected as a triple-negative breast cancer treatment option.

IMPACT OF TUMOR VOLUME ON ONCOLOGIC OUTCOMES IN PATIENTS WITH T1-2 BREAST CANCER: A MULTI-CENTERED RETROSPECTIVE STUDY

Hyoung Won Koh[1], Ji-Jung Jung[2], Han-Byoel Lee[2,3], Eun-Kyu Kim[1], Hee-Chul Shin[1]

[1]Seoul National Univ. Bundang Hospital, Department of Surgery, Korea, [2]Seoul National Univ. Hospital, Department of Surgery, Korea, [3]Seoul National Univ. College of Medicine, Department of Surgery, Korea

Background: Tumor volume, determined by three-dimensional measurements, can vary even among tumors with the identical longest diameters. This study aims to investigate the effect of tumor volume on oncologic outcomes in patients with T1-2 breast cancer.

Methods: This retrospective study included 4,207 patients who underwent breast-conserving surgery for T1a-T2 breast cancer between 2010 and 2018. Tumor volume was calculated using three-dimensional diameters. Recurrence-free survival (RFS) was calculated from the date of surgery to the date of local, axillary or distant recurrence. RFS and overall survival (OS) were analyzed using Kaplan-Meier and Cox regression analyses.

Result: Among all patients, 2,979 had T1 breast cancer and 1,228 patients had T2 breast cancer. Patients were divided into two groups based on the median tumor volume of 1.20166 cm^3. Those with larger tumor volumes experienced higher recurrence rates ($P<0.001$), shorter RFS ($P<0.001$), and shorter OS ($P=0.002$). Multivariable analysis revealed tumor volume to be an independent risk factor for shorter RFS (HR 1.705, 95% CI 1.158-2.150, $P=0.007$), while T stage failed to reach statistical significance (HR 1.332, 95% CI 0.952-1.865, $P=0.094$). Tumor volume was more strongly associated with RFS (HR 2.019, 95% CI 1.457-2.799, $P<0.001$) than T stage (HR 1.762, 95% CI 1.497-2.714, $P<0.001$) in Wald test, which included N stage, histologic grade, Ki-67 and pathologic subtype.

Conclusions: Tumor volume is a more significant independent risk factor for shorter RFS compared to T stage in patients with T1-2 breast cancer, highlighting its importance in prognostic assessments.

IMMUNE CELLS TRANSCRIPTIONAL LANDSCAPE ASSOCIATED WITH TRIPLE-NEGATIVE BREAST CANCER RESISTANCE TO NEOADJUVANT CHEMOTHERAPY REVEALED BY SINGLE-CELL RNA-SEQ

Marina Patysheva, Tatiana Gerashenko, Anastasia Frolova, Pavel Iamshchikov, Olga Bragina, Maria Vostrikova, Evgenyi Garbukov, Nadezhda Cherdyntseva

Cancer Research Institute, Tomsk National Research Medical Center, Russian Academy of Sciences, Department of Laboratory of Cancer Progression Biology, Russian Federation

Background: Neoadjuvant chemotherapy (NAC) is a commonly used treatment of triple negative breast cancer (TNBC) patients. The adaptive and innate immune systems can both cooperate with NAC and interfere with its effects. However, the role of major immune cells in circulation, in the programming of immune system cooperation with NAC is not investigated. Our aim was to identify immune cells transcriptomic signatures that are indicative of TNBC patient response to NAC.

Methods: Whole blood samples were obtained from TNBC patients before NAC, after 3rd and 21st days of NAC. A peripheral blood mononuclear cells were purified using a ficoll density gradient. Single cells were sequenced using targeted panel Immune Response from Rhapsody Express (Becton Dickinson)on a NextSeq 2000 (Illumina). Data were analyzed using Seurat and SingleR. The immune cell transcriptomic landscape was compared by differential gene expression assessment by Limma method in patients with and without complete pathological response.

Result: Using single-cell transcriptomic we revealed CD4 and CD8 lymphocytes, Tregs, myeloid and monocytes population displayed different dynamics during NAC in responders and non-responders (log2FC > 1.5 and adjusted p-value < 0.0001). The non-responder patient showed activation and mobilization of adaptive immune response cells and natural killers via increased production of proliferation and differentiation factors EGR1, RGS1, PCNA, and ARL4C in CD4 T-helper and CD8 T-killer. Moreover, in these populations an increase in CXCR4 during NAC that orchestrate cell migration, hematopoiesis and cell homing, and retention in the bone marrow was observed. During NAC the responders demonstrated another dynamic of immune patterns such as decrease in monocytes endocytosis ability via CD163 and complement initiation via C1QA and C1QB.

Conclusions: Immune landscape of peripheral blood cells differs between TNBC patients who responded and those who did not respond to NAC warranting further investigation. Supported by Russian Science Foundation 22-75-10128.

PROGNOSTIC ROLE OF CIRCULATING TUMOR DNA AFTER NEOADJUVANT CHEMOTHERAPY IN BREAST CANCER PATIENTS

Eun Young Kim[1], In-Gu Do[2], Min-Jung Kwon[3]

[1]Kangbuk Samsung Hospital, Department of Surgery, Korea, [2]Kangbuk Samsung Hospital, Department of Pathology, Korea, [3]Kangbuk Samsung Hospital, Department of Laboratory Medicine and Genetics, Korea

Background: Next-generation sequencing (NGS) to detect circulating tumor DNA (ctDNA) is non-invasive method for tumor genotyping and monitoring therapeutic response. Aim of this study is to evaluate impact of ctDNA on outcomes with breast cancer patients who underwent neoadjuvant chemotherapy (NAC).

Methods: A total of 173 patients with invasive breast carcinoma treated with neoadjuvant chemotherapy at Kangbuk Samsung Hospital from December 2019 to November 2023 were included. ctDNA was analyzed using NGS targeting 47 breast cancer-related genes. Tumor tissue or lymph node samples were obtained through a core biopsy at initial diagnosis. Plasma samples were obtained at five distinct time points: pre-NAC, post-NAC, 6, 12, 24 months follow-up after surgery.

Result: 66 patients achieved pCR, 107 patients achieved non-CR. Breast Cancer subtypes were as follows; (N = 51 for HR+HER2-, n = 35 for HR+HER2+, n = 34 for HR-HER2+, n = 52 for TNBC. Prior to the initiation of NAC, ctDNA was detectable in 17 patients who achieved pCR and 33 patients among non-pCR group. After NAC, ctDNA was detectable in 20 patients who achieved pCR and 37 patients among non-pCR group. ctDNA detection at post-NAC (HR = 3.67, 95% CI: 1.1212.02, $p = 0.022$) and 6-month follow up (HR = 5.65, 95% CI: 1.1727.26, $p = 0.015$) was associated with poor PFS compared to non-detection group.

Conclusions: Our study indicates that ctDNA is a prognostic marker for in breast cancer patients who underwent neoadjuvant chemotherapy.

AMPHIREGULIN IS A THERAPEUTIC OR A PROGNOSTIC BIOMARKER OF ESTROGEN POSITIVE BREAST CANCER

Sun Young Yoon[1], Sangmin Kim[2,3], Daeun You[2,3], Yisun Jeong[1], Jeong Eon Lee[1,2,3]

[1]Sungkyunkwan Univ., SAIHST, Department of Health Sciences and Technology, Korea, [2]Sungkyunkwan Univ. School of Medicine, Samsung Medical Center, Department of Surgery, Korea, [3]Samsung Medical Center, Department of Breast Cancer Center, Korea

Background: Previously, we reported that epidermal growth factor receptor (EGFR) was associated with the survival rate of estrogen receptor positive breast cancer (ER+ BC) patients. However, it is not fully understood the exactly mechanism between EGFR and ER. So, we focused on the EGFR ligands which were mediated the interaction of EGFR and ER.

Methods: Cell proliferation and cell cycle was analyzed by flowcytometry. Level of protein and mRNA expression were analyzed by ELISA, western blotting and real-time PCR, respectively. Secretory proteins were analyzed by using the human angiogenesis array kit. Tumorigenicity by AREG was evaluated using orthotopic xenograft mouse models.

Result: As expected, our results showed that estradiol (E2) promotes cell growth and proliferation in ER+ BC cells. To verify the mediator of E2-induced cell growth, we analyzed the secretory protein in response to E2 and then AREG expression was dramatically elevated. We found that ESR1 were positively correlated with AREG in BC cells through Cancer Cell Line Encyclopedia (CCLE) database. Also, abnormal AREG expression was decreased the survival rate of ER+ BC patients. Furthermore, we generated the AREG knockdown cells. Tumorigenicity of AREG knockdown cells were significantly decreased when compared to empty vector cells. Finally, we observed that the levels of AREG were positively correlated with estrogen in ER+ BC patient. Based on these results, we demonstrated that E2/ER/AREG axis plat an important role on the growth of ER+ BC. The levels of AREG were directly associated with the survival of ER+ BC.

Conclusions: AREG acts as a mediator the interaction between EGFR and ER. Because the survival rate of ER+ BC partly depends on AREG expression, we carefully suggest the possibility of AREG as a therapeutic or a prognostic biomarker of ER+ BC.

THE CLINICAL SIGNIFICANCE OF FGFR2 AS A THERAPEUTIC TARGET FOR ESCAPING TRASTUZUMAB RESISTANCE

Yisun Jeong[1,2], Daeun You[1,2], Sun Young Yoon[1,2], Sangmin Kim[2,3], Jeong Eon Lee[1,2,3]

[1]Sungkyunkwan Univ. School of Medicine, Department of Health Sciences and Technology, Saihst, Korea, [2]Samsung Medical Center, Department of Breast Cancer Center, Korea, [3]Samsung Medical Center, Department of Surgery, Korea

Background: Fibroblast growth factor receptor 2(FGFR2) plays a crucial role on cell invasion, proliferation and differentiation. Here, we investigated the functional role of FGFR2 as a cause of trastuzumab-resistance (TR) in HER2-positive (HER2+) breast cancer.

Methods: We established acquired TR cells derived from parental BT474 breast cancer cells. Parental BT474 and TR cells were analyzed transcriptomic profiles through RNA sequencing. The prognostic value of FGFR2 expression in HER2+ breast cancer patients was analyzed using the Kaplan-Meier plotter database. Protein and mRNA expression were evaluated by western blotting and real-time PCR, respectively. The pharmacological effect was analyzed using tumor spheroids and orthotopic xenograft mouse models.

Result: Using transcriptomic profiling, we found that FGFR1, FGFR2, and their ligand, FGF2, were significantly upregulated in TR cells. Aberrant FGFR2 expression was associated with poor survival in HER2+ breast cancer patients. The FGF2/FGFR2 signaling pathway affected cell proliferation in TR cells and then, parental BT474 cells with FGF2 treatment reduced sensitivity against trastuzumab. To prevent FGF2/FGFR2 signaling pathway, we treated with specific FGFR inhibitors, BGJ398 and AZD4547, in TR cells. These inhibitors decreased tumor spheroid size and tumor growth in vitro and in vivo models. These inhibitors also induced cell cycle arrest (G0/G1), and enhanced cellular senescence through regulation of cyclin D1 and the CDK inhibitor p27 expression. In addition, the FGF2/FGFR2 signaling pathway activated the downstream signaling pathway such as MEK/ERK. Accordingly, a specific MEK1/2 inhibitor, binimetinib, enhanced cellular senescence, suggesting that FGFR2 inhibitors induce cellular senescence through regulation of the ERK/p27/cyclinD1 axis.

Conclusions: Taken together, these findings reveal that trastuzumab resistance is mediated through the activation of novel signaling pathways including the FGF2/FGFR2 signaling pathway. Therefore, we cautiously suggest that combination therapy with FGFR2 targeting drugs and trastuzumab will be more effective in overcoming trastuzumab resistance.

DIFFERENCES IN BREAST CANCER SURVIVAL AND METASTASIS BASED ON THE LEVEL OF PHGDH EXPRESSION

Jihong Baik[1,2,3,4], Juhee Kim[3], Sangeun Lee[1,2,3,4], Seonmin Lee[1,2,3,4], Kyoungseob Shin[6], Sunghoon Kwon[6], Hanbyoel Lee[2,3,5], Wonshik Han[1,2,3,4,5]

[1]Seoul National Univ. College of Medicine, Department of Interdisciplinary Program In Cancer Biology, Korea, [2]Seoul National Univ., Department of Cancer Research Institute, Korea, [3]Seoul National Univ. Hospital, Department of Biomedical Research Institute, Korea, [4]Seoul National Univ. College of Medicine, Department of Integrated Major In Innovative Medical Science, Korea, [5]Seoul National Univ. College of Medicine, Department of Surgery, Korea, [6]Seoul National Univ., Department of Electrical and Computer Engineering, Korea

Background: Phosphoglycerate dehydrogenase (PHGDH) is a metabolic enzyme, which is associated with the serine synthesis. The gene encoding this enzyme is frequently elevated in some types of human cancer, including breast cancer. Generally, high-PHGDH expression promotes tumor aggressiveness in many cancer types. Nevertheless, it was recently observed that breast tumors with high expression levels of PHGDH were less likely to metastasize than tumors with low expression of PHGDH by using mouse cell derived mouse models and PDX models. But still the applicability of these results to human breast cancer cell lines remains unclear.

Methods: The survival analyses according to PHGDH mRNA expression were analyzed in METABRIC datasets of breast cancer and the whole-transcriptome sequencing data of 120 breast cancer patients. To investigate the impact of PHGDH in human triple negative breast cancer (TNBC) cell lines, PHGDH overexpressing MDA-MB-231 cell lines and PHGDH knockdown MDA-MB-468 cell lines were established. Functional experiments were then performed to determine the impact on breast cancer tumorigenesis and metastasis.

Result: In the analyses using METABRIC datasets, overall survival and disease-free survival were decreased in patients with high PHGDH expression. Also, basal type breast cancer indicated higher mRNA level of PHGDH than other types of breast cancers. Using whole-transcriptome sequencing data from breast cancer patients, we found that PHGDH expression level was higher in cancer tissue(n = 120) than normal tissue(n = 90). Specifically, TNBC showed higher PHGDH levels compare to the luminal type of breast cancer. Additionally, the rates of overall survival, disease-free survival, metastasis-free survival of TNBC patients were reduced when patients showed low-PHGDH expression. In vitro experiments also showed breast cancer cells with increased PHGDH levels had significantly reduced migration and invasion.

Conclusions: Our data suggest a potential role for PHGDH in breast cancer as a regulator of cancer cell metastasis, highlighting the complexity of its effects on tumor.

THE EFFICACY OF COMBINATION THERAPY OF SIMVASTATIN AND IMMUNOTHERAPY AND ITS IMPACT ON TUMOR MICROENVIRONMENTS IN TNBC

Sangeun Lee[1,2,3], Ju Hee Kim[3], Han-Byoel Lee[3,4], Wonshik Han[1,2,3,4]

[1]Seoul National Univ., Department of Interdisciplinary Programs In Cancer Biology Major, Korea, [2]Seoul National Univ., Department of Integrated Major In Innovative Medical Science, Korea, [3]Seoul National Univ. Hospital, Department of Biomedical Research Institute, Korea, [4]Seoul National Univ. College of Medicine, Department of Surgery, Korea

Background: Statins not only reduce cholesterol but also exhibit pleiotropic effects which include anti-tumor activities by targeting tumor microenvironments (TME). Although PD-1/PD-L1 inhibitors has been approved for treatment for TNBC patients with PD-L1 positive, the response remains unsatisfactory. Also, it is not clear how statins modulate TME in TNBC. Therefore, we aimed to verify the efficacy of combination therapy with statins and immune checkpoint inhibitor and its effect on immune cells.

Methods: Human and mouse TNBC cell lines and clinically approved simvastatin were used. Flow cytometry, western blot, qRT-PCR, immune phenotyping and immunohistochemistry were conducted. An orthotopic syngeneic mouse model by injection of EMT6 cells into mammary gland fat pad were treated with simvastatin by oral gavage daily and anti-PD-1 by intraperitoneal injection two times per week.

Result: Among thirteen human TNBC cell lines, we confirmed that MDA-MB-231 and HCC38 especially have high expression of endogenous/constitutive PD-L1. Statins reduced PD-L1 expression and exerted anti-proliferative effects in MDA-MB-231, HCC38, and EMT6 in a dose- and time-dependent manner. Combination therapy of anti-PD-1 and simvastatin had remarkably reduced tumor size and weight. Immune phenotyping with tumor tissues showed increased infiltration of CD3+ T cells, including CD4+ T cells and CD8+ T cells. We also found that the population of tumor associated macrophages (TAM) was similar in all groups, but the polarization to M1-like phenotypes was induced and the polarization to M2-like phenotypes was prevented when treated with combination therapy.

Conclusions: Our findings show that simvastatin has an anti-tumor effect, which reduces PD-L1 expression and kills breast cancer cells. In addition, when combined with PD-1 checkpoint inhibitor, it enhances the anti-tumor effect of immunotherapy and promoting infiltration of T cells and polarization to M1 phenotypes in tumor. Further study is needed to confirm modulation of TME in samples of TNBC patients who had been taking simvastatin.

UNVEILING THE MOLECULAR MECHANISM OF ENDOCRINE RESISTANCE: INSIGHTS FROM EPIGENETIC REPROGRAMMING AND COUPLED TRANSCRIPTION FACTORS IN ESTROGEN RECEPTOR POSITIVE BREAST CANCER

An-Chieh Feng[1], En-Ting Liu[2], Jyh-Cherng Yu[1], Zhi-Jie Hong[1], Ming-Shen Dai[3], Guo-Shiou Liao[1]

[1]Tri-Service General Hospital, Department of General Surgery, Taiwan, [2]Tri-Service General Hospital, Department of Graduate Institute of Life Science, Taiwan, [3]Tri-Service General Hospital, Department of Medical Oncology, Taiwan

Background: Endocrine therapy stands as a highly effective treatment for ER-positive breast cancer. Yet, the majority of tumors inevitably acquire resistance to this therapy during cancer progression. With the advancement of high throughput sequencing methods, mounting evidence highlights the critical involvement of epigenetic changes, not only in the initiation and progression of breast cancer but also in conferring resistance to endocrine therapy. Our objective was to gain a comprehensive understanding of the molecular mechanisms underlying endocrine resistance, focusing on chromatin remodeling and associated alterations in transcription factors.

Methods: In this study, we conducted experiments using ER-positive breast cancer cell lines, MCF7 and T47D, treated with estrogen. We performed an assay for transposase-accessible chromatin with sequencing (ATAC-seq) to investigate changes in the chromatin landscape. By employing quantitative systematic analysis of the genome-wide chromatin landscape, we aimed to elucidate the impact of estrogen and anti-estrogen treatments on the epigenome.

Result: Following estrogen stimulation, we observed a small subset of inducible genomic sites, with over 5-fold induction, while the majority of accessible sites remained unchanged, and only a limited number of genomic sites displayed reduced accessibility. After meticulous examination of these inducible genomic sites (total n = 351), we found that only 13 of them were situated in the promoter regions, while the remaining 296 were distributed among intergenic and intronic regions, indicative of enhancer elements. To gain further insights into the regulatory elements, we conducted motif analysis on these inducible sites, revealing significant enrichment of the bZIP, AP1, IRF, and Rel motif families.

Conclusions: Through quantitative profiling of the genome-wide chromatin landscape in breast cancer cells using ATAC-seq, we successfully identified a select group of inducible chromatin sites. These sites signify active epigenetic regulation and are associated with transcription factors that come into play during estrogen stimulation.

INVESTIGATING THE ROLE OF PSMD2 IN ABERRANT EXPRESSION AND MALIGNANT PROGRESSION IN BREAST CANCER AND ITS ASSOCIATION WITH CANCER STEM CELL LIKE CELLS

Yejoo Lee, Juhee Kim, Han-Byoel Lee, Wonshik Han

Seoul National Univ. Hospital, Department of Medical Oncology, Korea

Background: The cancer stem cell (CSC) theory suggests that a self-renewing CSC population contributes to forming bulk tumor masses. These cells exhibit stem cell-like properties and are implicated in cancer growth, metastasis, and resistance to treatment. We explored the role of PSMD2, a component of the 19S regulatory proteasome complex, in breast cancer. Our findings indicate that PSMD2 is fundamental for the proliferation of ER+ breast cancer cells both in vitro and in vivo. When PSMD2 was suppressed in the ER+ breast cancer cell line, a significant reduction in proliferation was observed with suppressed mammosphere formation. In addition, overexpression of PSMD2 enhanced the formation of a spheroid with high ALDH activity, displaying the characteristics of breast CSCs. When mice were injected with PSMD2-knockdown spheroids, tumor initiation, and growth were significantly suppressed. PSMD2 inhibition altered the epithelial-mesenchymal transition characteristics. Moreover, clinically significant high levels of PSMD2 were observed in ER+ cases. Our research points to PSMD2 as a potential molecular target for therapy, suggesting that PSMD2 inhibitor might effectively target breast CSCs.

Methods: - Fourteen human Breast Cancer Cell lines were used to estimate protein and mRNA level of PSMD2 through western blot and qRT-PCR. After silencing the endogenous PSMD2 gene expression, clonogenic assay, migration assay, western blot, and flow cytometry were carried out.

Result: - Among Breast Cancer Cell lines, ER+ Cell lines (MCF-7 and ZR-75-1) highly expressed endogenous PSMD2. - Among highly expressed PSMD2 ER+ cell lines, knockdown of PSMD2 decreased the number, total area, and surface area of the colony.

Conclusions: Our results indicate that PSMD2 is fundamental for cancer aggressiveness and its overexpression enhanced the formation of mammospheres in the ER+ breast cancer cell line. Further study is needed to investigate by which PSMD2 promotes breast cancer stemness, and whether PSMD2 acts as a potential molecular target for therapy.

CASE STUDY : UNEXPECTED PECULIARITY : COLLISION TUMOR OF THE BREAST (SOLID PAPILLARY CARCINOMA AND BENIGN PHYLLODES TUMOR)

Mark Francis Claparols

Philippine Society of Breast Surgeons, Department of Surgery, Philippines

Background: The most common histology of breast cancer is ductal carcinoma, and almost all reported cases point to a single histopathologic entity. Only a few reported cases recorded involved collision tumors. In this case report, a collision tumor of the breast made up of solid papillary carcinoma and benign phyllodes tumor will be discussed.

Methods: Collision tumors, as termed, are neoplastic lesions of two or more distinct cell populations that maintain distinct borders. We herein report an unusual case of a collision tumor of the right breast, composed of a solid papillary carcinoma and a benign phyllodes tumor separated by a distinct border.

Result: This case involves a 64 year old lady who presented with a large mass rapidly growing on her right breast, treated as a case of ductal carcinoma. Simple mastectomy with sentinel lymph node dissection was performed. Histopathology revealed two distinct tumor histologies: a solid papillary carcinoma and a benign phyllodes tumor. Sentinel lymph nodes examined during intra-operative frozen section were negative for nodal metastasis. Immunohistochemistry studies showed ER/PR positive, HER2-NEU negative subtype.

Conclusions: Collision tumors of the breast are rare with less than 15 recorded cases. This is the first solid papillary carcinoma and benign phyllodes tumor of the breast reported in our region, Negros Occidental, Philippines. Preoperative imaging and tissue or cell cytology cannot clearly distinguish the setting of two collision tumors. Definitive diagnosis is made when the specimen is carefully examined, showing two different histopathologic entities with distinct borders. Individualized management is being provided for this case, tailored to the specific pathology.

TUMOR-INFILTRATING LYMPHOCYTE LEVEL CONSISTENTLY CORRELATES WITH LOWER ELASTICITY MEASURED BY SHEAR-WAVE ELASTOGRAPHY: SUBTYPE-SPECIFIC ANALYSIS FOR IMPLICATION OF ELASTICITY IN BREAST CANCER

Yoon Jin Cha[1], Na Lae Eun[2], Soong June Bae[3], Ji Hyun Youk[2], Eun Ju Son[2], Sung Gwe Ahn[3], Joon Jeong[3], Jee Hung Kim[4], Yangkyu Lee[1]

[1]Gangnam Severance Hospital, Department of Pathology, Korea, [2]Gangnam Severance Hospital, Department of Radiology, Korea, [3]Gangnam Severance Hospital, Department of Surgery, Korea, [4]Gangnam Severance Hospital, Department of Medical Oncology, Korea

Background: Our study aims to elucidate the differential clinical significance of tumor elasticity across breast cancer subtypes and establish its correlation with tumor-infiltrating lymphocytes (TIL) levels using shear-wave elastography (SWE).

Methods: In this retrospective study, a total of 803 female patients with breast cancer (mean age: 53.2 years ± 10.8 [standard deviation]) was evaluated. Patients underwent SWE examinations before curative resection between January 2016 and August 2020. Patients were segmented into three subgroups: hormone receptor-positive and HER2-negative breast cancer (HR+HER2-BC) (n = 628), HER2+BC (n = 103), and triple-negative breast cancer (TNBC, n = 72). We analyzed the association of mean, maximum, and minimum elasticity (Emean, Emax, Emin) values, as well as elasticity ratios, concerning clinicopathologic parameters, using both predefined cutoffs and continuous values.

Result: Across all subtypes and overall, elasticity consistently showed a positive association with invasive size and pT stage, while it had a negative association with TIL level. When analyzing case-specifically, results appeared to be dominated by the patterns observed in HR+HER2-BC. Logistic regression analysis showed that possessed distinct clinicopathologic parameters were significantly associated with Emax in each subtype. Importantly, TIL level emerged as the sole parameter that consistently and significantly correlated with low Emax across all subtypes, and this uniquely significant association was further remained in linear regression.

Conclusions: Breast cancer elasticity presents varying clinical implications dependent on tumor subtype. Elevated elasticity indicated a more aggressive tumor biology in HR+HER2-BC but was less significant in other subtypes. High TIL levels consistently correlated with diminished elasticity values across all subtypes.

A SCOPING REVIEW OF THE LANDSCAPE OF ARTIFICIAL INTELLIGENCE IN BREAST CANCER MANAGEMENT: APPLICATIONS, OUTCOMES, AND CHALLENGES

Jolene Chia[1], George He[1], Kee Yuan Ngiam[2,3,4,5], Mikael Hartman[2,4], Serene Goh[2,4]

[1]National Univ. of Singapore, Department of Surgery, Singapore, [2]National Univ. Hospital, Department of Surgery, Singapore, [3]National Univ. Hospital, Department of Group Technology, Singapore, [4]National Univ. of Singapore, Department of Saw Swee Hock School of Public Health, Singapore, [5]National Univ. Hospital, Department of Medical Informatics, Singapore

Background: Artificial Intelligence (AI) has emerged as a transformative force in the field of breast cancer care. This scoping review provides an overview of AI applications in breast cancer care, evaluates their outcomes and challenges in their adoption.

Methods: Thematic analysis was used for coding extraction and data interpretation. Electronic databases PubMed, Web of Science, Cochrane Library and Embase were searched from inception to January 2024. Keywords included "Artificial Intelligence" and "Breast Cancer".

Result: 141 articles were included. Majority were conducted in developed countries (n = 105). Majority of publications were in the last 10 years (n = 135). Six main themes for AI applications were: AI for breast cancer screening (n = 44), AI for image-detection of nodal status (n = 32), AI-assisted histopathology (n = 29), AI in assessing post-neoadjuvant chemotherapy (NACT) response (n = 27), AI in breast cancer margin assessment (n = 4), AI as a clinical decision support tool (n = 5). For breast cancer screening, AI applications are utilized on mammography and digital tomosynthesis. Ultrasound-image segmentation techniques are employed to evaluate axillary lymph node metastases. AI-supported histopathology encompasses functions such as diagnosis, categorization, and grading. AI based predictions of post-NACT responses were done using MRI images and AI-based vacuum assisted biopsy. Margin assessment can be enhanced with AI-assisted optical coherence tomography. AI has been used as clinical decision support tools to augment treatment decisions for complex breast cancer and in multidisciplinary tumour board settings. Overall, AI applications demonstrated improved accuracy and efficiency. However, most articles focused on diagnostic metrics with lack of focus on patient-centric clinical outcomes.

Conclusions: Although promising, the innovative AI applications in breast cancer care require the development of clinical evidence and outcomes centered around patients. Challenges in adoption of AI were discussed in a global setting.

DIAGNOSTIC ACCURACY OF ULTRASONOGRAPHY-GUIDED CORE NEEDLE BIOPSY IN BREAST LESIONS: A SINGLE-CENTER EXPERIENCE AT THE MONGOLIAN NATIONAL CANCER CENTER

Saranzaya Damdin

National Cancer Center Mongolia, Department of Breast Center, Mongolia

Background: If breast ultrasound or mammography detects a lesion, the gold standard for breast lesion diagnosis is a breast biopsy under ultrasound guidance. Based on the result from the test, it would be possible to differentiate between a benign breast tumor and malignant breast tumor, and also treatment plan, and prevention of future complications can be achieved by providing appropriate treatment without delay. In Mongolia, there is a lack of research on the diagnostic. In this study, to determine the accuracy of core needle tissue analysis based on BI-RADS assessment and tissue analysis results. Comparison of diagnostic accuracy in 2022.

Methods: From January 2023 to December 2023, a retrospective and non-interventional observational study was conducted at a single center. US-CNB were performed on a total of 723 patients in the analysis. The study encompassed the assessment of BI-RADS categories (ranging from 1 to 6) and the of pathologic result findings.

Result: The average age was 47.8 years with 1.3% male patients and 98.6% female patients. In this group, US-CNB found malignancies in 33.33% of patients, with invasive ductal carcinoma accounting for 53.52%. Benign masses constituted 66.66% of cases. The diagnostic metrics: sensitivity 98.96%, specificity 100.00%, overall accuracy 99.73%. BI-RADS classified 52.83% of cases. The malignancy rates for each BI-RADS category were as follows: - BI-RADS 2: 4.7% - BI-RADS 3: 4.4% - BI-RADS 4a: 22.5% - BI-RADS 4b: 57.8% - BI-RADS 4c: 77.2% - BI-RADS 5: 95.7%.

Conclusions: In our study, CNB demonstrated a diagnostic accuracy of 99.3%, surpassing the reported range of 83.3% to 97.7% in other studies. In our study, we assessed the accuracy of BI-RADS classification in imaging techniques for breast lesions. We found that BI-RADS 3 had the highest sensitivity, while BI-RADS 5 demonstrated the highest accuracy. Additionally, the BI-RADS classification for imaging methods showed an acceptable positive predictive value.

ARTIFICIAL INTELLIGENCE IN BREAST SCREENING MAMMOGRAPHY: PERSPECTIVES FROM RADIOLOGISTS

Rachel Goh[1], Hao Du[2], Loon Ying Tan[3], Edward Zhenyu Seah[3], Wai Keat Lau[3], Alvin Ng[3], Desmond Shi Wei Lim[3], Han Yang Ong[3], Samuel Lau[3], Yi Liang Tan[3], Mun Sze Khaw[3], Chee Woei Yap[3], Douglas Hui[3], Wei Chuan Tan[3], Siti Rozana Binti Abdul Haziz[3], Vanessa Meihui Khoo[3], Shuliang Ge[3], Felicity Jane Pool[3], Yun Song Choo[3], Wang Yi[2], Jagmohan Pooja[1,3], Premilla Gopinathan Pillay[1], Mikael Hartman[1,2,4], Mengling Feng[1,2,5], Serene Si Ning Goh[1,2,4]

[1]National Univ. of Singapore, Department of Yong Loo Lin School of Medicine, Singapore, [2]National Univ. of Singapore, Department of Saw Swee Hock School of Public Health, Singapore, [3]National Univ. Hospital, Department of Diagnostic Radiology, Singapore, [4]National Univ. Hospital, Department of Surgery, Singapore, [5]National Univ. of Singapore, Institute of Data Science, Singapore

Background: Little is known about the perspectives of radiologists on the potential use of artificial intelligence (AI) in breast imaging workflows.

Methods: Our study included 17 radiologists (4 consultants, 8 senior and 5 junior residents). Participants completed a self-administered questionnaire at the start and end of the study. They read 560 mammograms without the assistance of AI and repeated the same process with the assistance of an AI software, after a one-month washout period.

Result: After the study, 31.1% of the radiologists felt that AI was able to aid but not replace radiologists, with 94.1% considering AI a good reading companion and 41.2% believing it could aid in triage. Senior residents and consultants were more likely to raise the findings of AI for discussion (66.7%) when there were discrepancies, while junior residents were more likely to ignore them (80.0%). Heat map on region of suspicion (58.8%) was unanimously ranked the top feature regardless of the level of experience, followed by triaging of mammograms, then provision of discrete opinion (i.e. cancer or not cancer). In terms of factors that radiologists consider prior to adopting AI, radiologists prioritized local validation of the AI tool (93%), national guidelines supporting the use of AI (88%), then studies using a nationally representative dataset (86%). Interestingly, majority (70.6%) felt that AI performed worse than radiologists, though the study showed that AI standalone had an AUROC of 0.93(95% CI 0.90-0.95) as compared to resident radiologists of 0.84(95% CI 0.84-0.85) and consultants of 0.90(95% CI 0.89, 0.92).

Conclusions: The findings shed light on factors influencing radiologists' potential use of AI in our institution. Future work will involve exploring factors associated with underestimation of AI's performance in this study including explainability or accountability issues. This study is supported by Temasek Foundation and Ministry of Health through the CHI START UP ENTERPRISE LINK(CHISEL) programme.

FEASIBILITY OF NEWLY DEVELOPED 3D ULTRASOUND EQUIPMENT IN THE DIAGNOSIS OF BREAST LESION; PRELIMINARY RESULTS

Miribi Rho, Min Jung Kim

Severance Hospital, Department of Radiology, Korea

Background: The MammouS-N was developed as 3D automated breast ultrasound (ABUS) conceived in congruence with mammography principles. We evaluated the detection rate and image quality of ABUS in a single institution prospectively.

Methods: In this study, the MammouS-N was performed in patients referred for breast lesions requiring tissue confirmation. The ABUS images were obtained with mediolateral oblique (MLO), craniocaudal (CC) and anterioposterior (AP) views and were interpreted independently by a breast radiologist. Any detected lesion was classified using BI-RADS scores, and results of pathology (gold standard) were compared. The image quality was subjectively assessed considering resolution, anatomic differentiation, tissue contrast, lesion conspicuity and artifacts on a scale 1-5; 1-non-acceptable, 2-inadequate, 3-poor, 4-comparable, 5equal to hand-held ultrasound (HHUS). Additionally, the extent of breast coverage was quantified in comparison to mammography.

Result: A total 49 breast lesions from 39 patients aged 28-76 years were enrolled. Among them 29 patients were diagnosed as breast cancer. Twenty seven of 29 malignant breast lesions (93.1%) were identified using the MammouS-N. Image quality was considered comparable or equal to HHUS in resolution (35/39, 89.7%), anatomic differentiation (34/39, 87.2%), tissue contrast (36/39, 92.3%), lesion conspicuity (36/39, 92.3%) and artifact assessment (36/39, 76.9%). Breast coverage was comparable to that of mammogram.

Conclusions: Considering detection rate and image quality, the MammouS-N shows the potential to enhance breast cancer screening in the future.

THE COMPARATIVE ADVANTAGE OF CONTRAST-ENHANCED MAMMOGRAPHY OVER ROUTINE MAMMOGRAPHY AND ULTRASOUND FOR THE DETECTION OF BREAST CANCER

Wei Wen Ang, Ern Yu Tan

Tan Tock Seng Hospital (Singapore), Department of Surgery, Singapore

Background: In light of escalating healthcare expenditures, the pursuit of cost-effective modalities to enhance the precision of breast cancer detection has assumed paramount importance. Our study endeavours to evaluate the efficacy of Contrast-Enhanced Mammography vis-a-vis standard Mammography techniques and combined Mammography with Ultrasound assessment in discerning breast cancer.

Methods: A retrospective study was conducted at Tan Tock Seng Hospital, Singapore from March 2021 to December 2021, involving a cohort of more than 463 patients. Each patient underwent a comprehensive diagnostic regimen comprising Mammogram(MMG), Ultrasound (US), and Contrast Enhanced Spectral Mammogram (CESM), resulting in the detection of suspicious lesions. Subsequently, these lesions underwent evaluation via image-guided biopsy, with core biopsy procedures to confirm histological characteristics. Patients diagnosed with high-risk lesions or malignancies underwent further management, culminating in surgical resection as deemed necessary.

Result: In this study, a cohort of 463 patients underwent assessment, with 95 individuals (20.5%) exhibiting confirmed cancer upon final histology. Among the lesions identified through MMG, 122 were observed, with 58 cases (47.2%) subsequently confirmed as cancerous. In the US subgroup, 431 lesions were detected, of which 87 (20.2%) were histologically verified as cancerous. Within the CESM subgroup, 180 lesions were identified, with 94 (52.2%) ultimately confirmed as malignant. Notably, only one lesion was missed in the CESM subgroup, which had been visualized via US but not MMG. Upon rigorous analysis, CESM exhibited a sensitivity and specificity of 52.22% and 99.65%, respectively, in contrast to MMG (47.54% sensitivity and 89.15% specificity) and US (20.19% sensitivity and 75.00% specificity).

Conclusions: Based on our comprehensive analysis, it is evident that CESM demonstrates considerable promise as a modality for the detection of breast cancers. With notably enhanced specificity and sensitivity metrics, CESM emerges as a compelling candidate poised to supplant traditional modalities such as MMG and US in the realm of breast patient screening and surveillance.

STRATEGIES FOR MITIGATING INTERVAL BREAST CANCERS: A COMPREHENSIVE SYSTEMATIC REVIEW

Rachel Sze Jen Goh[1], Selvie Yeo[1], Bryan Chong[1], Serene Si Ning Goh[2]

[1]National Univ. of Singapore, Department of Yong Loo Lin School of Medicine, Singapore, [2]National Univ. Hospital, Department of Surgery, Singapore

Background: Interval breast cancer (IBC) are breast cancers diagnosed following a negative mammographic screen and prior to the next screen. IBCs are associated with unfavourable tumor biology and prognosis compared to screen-detected cancers. This systematic review consolidates the current strategies available to reduce IBC rates.

Methods: PubMed, EMBASE, and the Cochrane Library were searched from inception till 29th October 2023. Keywords include interval breast cancer AND mass screening. Inclusion criteria were articles discussing solutions to reduce IBC rates.

Result: Of 5,284 studies screened, 32 studies were included. 15 studies discussed use of digital breast tomosynthesis (DBT) as an alternative screening modality to mammograms (MMG). Six studies discussed use of artificial intelligence (AI) on MMG, four studies discussed use of supplemental modalities such as ultrasonography (US) in addition to MMG, five studies discussed screening-intervals and two studies discussed medication use. Hofyind et al reported a reduction of IBC rates with biennial screening (0.86/1000) compared to opportunistic screening (1.24/1000). Moorman et al described a reduction in IBC rates with annual versus biennial and triennial screening [12/32 (37.5%) versus 3/13 (23.1%) versus 21/200 (10.5%) respectively]. McDonald et al found reduction in IBC rates from 0.7/1000 to 0.5/1000 per women screened using DBT. An AI system (Transpara version 1.7.0) showed reduction in IBC rates from 1.7/1000 to 0.4/1000 when used to replace second reader in a research scenario. The addition of US to MMG reduced IBC rates to 1.5 vs 1.9 per 1000 screens as compared to MMG alone in women with dense breasts. Eriksson et al reported reduction in IBC rates by 192 per 100,000 screens when low-dose tamoxifen was given to reduce breast density as compared to placebo.

Conclusions: This systematic review presents a multi-faceted approach to breast cancer screening and prevention, leveraging advancements in technology, screening protocols, and pharmacological interventions to optimize early detection.

UTILITY OF UPRIGHT AUTOMATED BREAST ULTRASOUND FOR BREAST CANCER SCREENING

Sun Mi Kim, Mijung Jang, Bo La Yun, Sungui Shin

Seoul National Univ. Bundang Hospital, Department of Radiology, Korea

Background: Breast tomosynthesis has demonstrated superior performance in breast cancer diagnosis compared to conventional mammography, yet its use is limited by radiation exposure. Conversely, ultrasound imaging lacks radiation constraints but may not offer comprehensive breast imaging like mammography. The emergence of Upright Automated Breast Ultrasound (MammouS-N) presents a promising solution, utilizing ultrasound technology to mimic breast tomosynthesis without radiation exposure.

Methods: Through an exploration of the underlying principles of upright automated breast ultrasound (ABUS), this research contrasts its features with those of conventional breast imaging techniques. Additionally, it investigates the efficacy of upright ABUS in distinguishing between benign and malignant lesions, contributing to its role in breast cancer screening.

Result: The clinical application of upright ABUS is examined, highlighting its strengths and limitations in comparison to breast tomosynthesis. These findings aim to elucidate the utility and feasibility of incorporating upright ABUS into existing breast cancer screening protocols.

Conclusions: This research advocates for radiation-free breast cancer screening through the adoption of upright ABUS, marking a significant advancement in breast imaging technology.

PRIMARY INVASIVE CARCINOMA OF THE MALE NIPPLE: A CASE REPORT

Ji Shin Lee[1], Nah Ihm Kim[1], Min Ho Park[2]

[1]Chonnam National Univ. Hwasun Hospital, Department of Pathology, Korea, [2]Chonnam National Univ. Hwasun Hospital, Department of Surgery, Korea

Background: The nipple-areolar complex comprises the outlets of lactiferous ducts that drain milk from mammary lobules. Tumors involving the nipple-areolar complex are rare and can include syringomatous tumors, nipple adenomas, and Paget's disease. Primary invasive carcinoma of the nipple without an underlying breast mass is exceptionally rare, and reports on the male nipple are exceedingly scarce.

Methods: This study presents a unique case of primary invasive carcinoma of the male nipple.

Result: A 56-year-old man presented with a soft and enlarged right nipple measuring 1.0 × 0.6 cm. No palpable breast mass or axillary lymphadenopathy was detected. The clinician suspected an epidermal cyst and performed excision. Histopathological examination of the nipple resection revealed grade 2 invasive carcinoma of no special type with a free resection margin. The biomarker status was estrogen receptor-positive, progesterone receptor-positive, and human epidermal growth factor receptor 2-negative. The tumor cells tested positive for mammoglobin, gross cystic disease fluid protein-15, and androgen receptor. Following the diagnosis, ultrasound scanning of the breast was conducted, revealing no abnormalities. Subsequently, the patient was transferred to another hospital for further treatment.

Conclusions: Pathologists should be aware that invasive carcinoma confined to the nipple can occur in male patients without underlying breast carcinoma.

A RARE PRESENTATION OF METASTATIC BREAST CARCINOMA TO THE THYROID THREE YEARS AFTER MASTECTOMY: A CASE REPORT

Mohammed Al Duhileb

King Fahad Specialist Hospital Dammam, Department of Breast and Thyroid Surgery, Saudi Arabia

Background: Breast cancer is the most common cancer in women. Yet, metastasis to the thyroid is a rare occurrence. Here we present the case of a patient with breast cancer metastasis to the thyroid gland to discuss the management of such presentations compared to the current literature. We also present this case to add to the existing literature and aid in the expansion and better understanding of rare incidences as such.

Methods: We are presenting a case report that we have treated after complete work up.

Result: A 38-year-old female with no chronic medical illnesses diagnosed with invasive ductal carcinoma of the right breast T3N0M0 in 2017. She received eight cycles of neoadjuvant chemotherapy followed by right simple mastectomy, sentinel lymph node biopsy and adjuvant radiation to the chest wall. The patient has been on hormonal therapy since diagnosis. In 2020, the patient represented with a left neck mass and underwent total thyroidectomy. Pathological analysis of the specimen confirmed the presence of poorly differentiated tumor cells consistent with mammary ductal cell origin while the right thyroid lobe demonstrated features of papillary thyroid carcinoma.

Conclusions: Intrathyroidal metastasis of extra-thyroidal cancers are rare but should be considered when patients present with a history of cancer. Thyroidectomies in isolated secondary thyroid cancers have shown to prolong the disease-free period, but is not a definitive cure.

MASS SPECTROMETRIC ANALYSIS OF SERUM DISEASE-SPECIFIC HAPTOGLOBIN N-GLYCOSYLATION ASSISTS DIFFERENTIAL DIAGNOSIS OF BREAST CANCER

Linrong Li[1], Yali Xu[1], Zhizhen Lai[2], Dan Li[2], Qiang Sun[1], Zhili Li[2], Yidong Zhou[1]

[1]Department of Breast Surgery, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Department of Surgery, China, [2]Institute of Basic Medical Sciences, Chinese Academy of Medical Sciences & School of Basic Medicine, Peking Union Medical College, China, Department of Biophysics and Structural Biology, China

Background: To distinguish breast cancer from suspected breast lesions is crucial to reduce cancer mortality and economic burden. However, serum markers of better diagnostic performance are needed. Evidence shows that haptoglobin glycosylation could assist cancer diagnosis.

Methods: Mass spectrometric analysis was conducted in 235 patients with benign breast diseases and 262 with breast cancer to quantify disease-specific haptoglobin (DSHp)-β glycosylation. To separate DSHp-β chains from patients' preoperative serum, native-polyacrylamide gel electrophoresis (PAGE) and sodium dodecylsulfonate PAGE were used. Missing data imputation, propensity score matching, and randomization were employed. As a result, 269 and 113 patients were assigned to the training and validation sets, respectively, with age, BMI, blood lipids, liver and kidney functions balanced between groups. Logistic regression was used for model and nomogram construction. The diagnostic performance was analyzed with receiver operating characteristic and calibration curves.

Result: 55 N-glycopeptides at N207/N211, 19 at N241, and 21 at N184 of DSHp-β were identified. DSHp-β N-glycosylation was largely dysregulated in patients with breast cancer. The new model and nomogram included GN2F2, G6N3F6, GN2FS at N184, G- N&G2S2, G2&G3NFS, G2N3F, GN3 at N207/N211, CEA, CA153. For the training set, validation set, training and validation sets, area under the curves (AUCs) were 0.80 (95% CI: 0.75-0.86, specificity: 87%, sensitivity: 62%), 0.77 (95% CI: 0.69-0.86, specificity: 75%, sensitivity: 69%), and 0.80 (95% CI: 0.76-0.84, specificity: 77%, sensitivity: 68%), respectively. By comparison, The AUCs were 0.62 (95% CI: 0.56-0.67, specificity: 29%, sensitivity: 90%) for CEA, 0.65 (95% CI: 0.60-0.71, specificity: 74%, sensitivity: 51%) for CA153, and 0.67 (95% CI: 0.62-0.73, specificity: 60%, sensitivity: 68%) for CEA and CA153 combination.

Conclusions: The combined detection of 7 DSHp-β N-glycopeptides, CEA, and CA153 might be a better marker for differential diagnosis of breast cancer. The dysregulated N-glycosylation of DSHp-β can provide insights into breast tumorigenesis.

CLINICAL SIGNIFICANCE OF RADIOLOGICALLY DETECTED SMALL INDETERMINATE EXTRA-MAMMARY LESIONS IN BREAST CANCER PATIENTS

Marc Ong, Xue En Chuang, Rachel Chen

National Univ. of Singapore, Department of Surgery, Singapore

Background: Patients with breast cancer who have indeterminate extra-mammary lesions (e.g. lung, liver and bone) without other metastatic lesions pose a clinical dilemma regarding subsequent management. This study aims to investigate the prevalence, characteristics and outcomes of such lesions detected on initial staging imaging, and address the clinical significance of these incidental findings.

Methods: Medical records of patients with newly diagnosed breast cancer who underwent CT scans and bone scintigraphy between 1 January 2015 and 30 June 2021 were reviewed. Patients with indeterminate extra-mammary lesions on radiological imaging were included. Patients with obvious metastatic disease were excluded. Lesion characteristics, breast cancer staging, duration of follow-up and natural progression of disease were analysed.

Result: The study included 52 patients with indeterminate lesions on pre-operative imaging. The mean follow-up duration was 14.9 months (range 6-41 months). The most common site of occurrence of indeterminate lesions was the lung (60.9%) followed by the liver (26.1%). 46 patients had lesions which remained stable (88.5%), while six patients had progression to metastatic disease. Out of these six patients, only two patients (3.8%) developed metastasis in the same site as the original indeterminate lesion, whereas the remaining four developed metastases in other sites.

Conclusions: Patients with breast malignancy found to have indeterminate extra-mammary lesions without obvious distant metastasis on initial staging scans are associated with a small risk of subsequently developing metastatic disease. Although most of these lesions remain quiescent, surveillance imaging is recommended because a small but significant proportion of patients with such lesions eventually harbour actual metastatic disease.

BREAST CANCER PRESENTING WITH NUMB CHEEK

Si Ying Tan[1,2], Zhibin Tan[3]

[1]Singapore General Hospital, Department of Surgery, Singapore, [2]National Cancer Centre Singapore, Department of Surgery, Singapore, [3]National Neuroscience Institute, Singapore, Department of Neurology, Singapore

Background: Numb cheek syndrome, a rare corollary of numb chin syndrome, is due to infra-orbital neuropathy. It can occur in association with an underlying malignancy, which can cause neuropathy by direct malignant nerve infiltration or via a paraneoplastic mechanism. Although numb cheek syndrome has been reported in association with a variety of cancers, it has previously not been reported in association with breast cancer. We report a case of left breast cancer presenting with left numb cheek syndrome.

Methods: A 65-year-old woman presented to the Neurology clinic with a 7-month history of left cheek numbness and occasional cheek tenderness. Examination revealed slightly diminished pin-prick sensation in the left cheek and a vaguely palpable left breast lump. A magnetic resonance imaging scan of the brain showed abnormal enhancement of the left maxillary nerve at the foramen rotundum, but cerebrospinal fluid analysis was normal. Mammography, ultrasound scans, and core biopsy of the left breast confirmed the diagnosis of invasive left breast carcinoma. There was no evidence of distant metastases on computed tomography and bone scintigraphy scans.

Result: The patient underwent neoadjuvant chemotherapy followed by left breast wide excision and sentinel lymph node biopsy, and a repeat magnetic resonance imaging scan performed 2 months after surgical resection showed resolution of the left maxillary nerve enhancement. The patient's left numb cheek symptoms improved over a course of 5 months after cancer resection but did not completely resolve.

Conclusions: Our case represents the first reported left numb cheek syndrome in association with Breast cancer, due to maxillary neuropathy without any discrete mass or compressive cause. To avoid delays in diagnosing malignancy, physicians and surgeons should be aware that numb cheek syndrome can occur in association with an underlying malignancy, and that breast cancer should be counted amongst the possibilities.

UNIQUE OLIGOMETASTATIC SITES OF BREAST CANCER: THYMUS AND THYROID GLAND

Grace Kusumawidjaja[1], Preetha Madhukumar[2], Syed Salahuddin Ahmed[3], Angela Takano[3], Fan Foon Cheo[3], Christina Shi-Hui Yang[2], Dominique Yuan Bin Seow[3], Boon Hean Ong[4], Gerald Ci An Tay[5], Angela Renayanti Dharmawan[5], Wu Meng Tan[6]

[1]National Cancer Centre Singapore, Department of Radiation Oncology, Singapore, [2]Singapore General Hospital, Department of Breast Surgery, Singapore, [3]National Cancer Centre Singapore, Department of Pathology, Singapore, [4]National Cancer Centre Singapore, Department of Cardiothoracic Surgery, Singapore, [5]National Cancer Centre Singapore, Division of Surgery and Surgical Oncology, Singapore, [6]National Cancer Centre Singapore, Department of Medical Oncology, Singapore

Background: Breast cancer management still poses challenges despite recent technological advances. Thymus and thyroid gland are unconventional distant metastasis sites for breast cancer. Here we present two cases, one metastasized to thymus, the other to thyroid gland.

Methods: Two newly-diagnosed breast cancer patients underwent staging work-up [CT-scan thorax/abdomen/pelvis (CTTAP) and bone scan]. They underwent neoadjuvant chemotherapy (NAC), followed by operation.

Result: Mrs A (71 year old) presented with cT4bN1 right triple negative breast cancer. Her CTTAP showed 5.8 × 2.1 cm anterior mediastinal mass, reported as possibly representing a thymic lesion e.g thymoma. After NAC completion (paclitaxel/carboplatin followed by adriamycin/cyclophosphamide), CTTAP showed shrinkage of anterior mediastinal lesion. Patient underwent simple mastectomy and axillary clearance (SMAC), which showed 6.5 cm breast mass extending to skin (grade 3) with 5 out of 24 involved lymph nodes (ypT4bN2). Total thymectomy was performed and demonstrated thymoma Masaoka B1 with cords of metastatic breast carcinoma cells infiltrating the fibrous stroma and the thymoma components. Postoperative PETCT showed no hypermetabolic sites. Multidisciplinary tumorboard (MDT) regarded this as stage 4 and recommended systemic therapy. Mrs B (68yo) presented with cT4bN1 right breast cancer ER+95% PR+80% HER2 3+90%. Her pre-NAC (docetaxel/trastuzumab/pertuzumab) CTTAP showed multinodular goitre, and fine needle aspiration showed metastatic breast cancer. PETCT confirmed no other metastatic site. After NAC, she was planned to undergo SMAC and thyroidectomy. Her case would also be discussed at MDT to decide on further management.

Conclusions: Breast cancer metastasis to thymus or thyroid gland are rare. Initially locally-advanced disease should raise the index of suspicion for metastasis. Multidisciplinary tumorboard is crucial in determining further management.

CLINICAL UTILITY OF FDG PET/MRI IN PREDICTING PATHOLOGICAL COMPLETE RESPONSE IN PATIENTS WITH BREAST CANCER TREATED WITH NEOADJUVANT CHEMOTHERAPY

Chikashi Watase[1], Nachiko Uchiyama[2], Hiromi Hashiguchi[1], Fumi Endo[1], Ai Mitsuhashi[1], Ayumi Ogawa[1], Sho Shiino[1], Takeshi Murata[1], Masayuki Yoshida[3], Eriko Iwamoto[1], Shin Takayama[1], Akihiko Suto[1]

[1]National Cancer Center Hospital, Department of Breast Surgery, Japan, [2]National Cancer Center Hospital, Department of Radiology, Japan, [3]National Cancer Center Hospital, Department of Pathology, Japan

Background: Some ongoing clinical trials are investigating minimally invasive treatments for breast cancer and even the possibility of omitting surgery. To ensure patient safety, appropriate preoperative assessments are required. We focused on the clinical utility of PET/MRI in predicting pathological complete response (pCR).

Methods: We retrospectively collected 110 patients with clinical stage I-III breast cancer who received neoadjuvant chemotherapy and surgery between 1 April 2021 and 31 May 2022. Cases with multiple lesions in the same breast and bilateral breast cancer were excluded. We evaluated contrast-enhanced breast MRI and FDG-PET/MRI and whole-body FDG-PET/MRI. pCR was defined as no residual invasive disease in breast. Chi-squared test, t-test, and logistic regression analysis were performed using SPSS ver. 27, and $p < 0.05$ was considered statistically significant.

Result: The mean age was 49 years (range: 27-78). 3 cases (3%) were clinical stage I, stage II 66 (60%), stage III 41 (37%), respectively. In 109 cases, AC followed by taxane therapy was used for the treatment. All 42 HER2-positive cases were treated with anti-HER2 therapy, including 23 cases with pertuzumab. Only one case was treated with TcbHP therapy. Mastectomy was performed in 70 cases and axillary dissection in 84 cases. Postoperative specimens showed pCR in 30 cases (27%). Multivariate analysis showed 4 significant independent factors associated with pCR: (1)pre-treatment FDG uptake in the main tumour is more than twice as high as in the liver ($p = 0.14$), (2)contrast-enhanced breast mass is detected after neoadjuvant chemotherapy ($p < 0.01$), (3)HR positive ($p < 0.01$), (4)HER2 negative ($p = 0.02$).

Conclusions: FDG PET/MRI of the breast and the whole body has been shown to be useful in the prediction of pCR in breast cancer after neoadjuvant chemotherapy.

EVALUATION OF THE RESULTS OF ULTRASOUND-BASED MOBILE EARLY DETECTION

Tsengel Naranbat

National Cancer Center Mongolia, Department of Surgery, Mongolia

Background: In Mongolia, the 5-year survival rate for breast cancer is significantly lower than the world average, and we believe that this is due to early detection. in 2023, we started the work of preparing a mobile clinic for the detection of breast cancer based on echo monitoring by a team of breast cancer specialists to conduct examinations in remote rural areas. Further studies include examining the outcomes of early detection in mobile clinics.

Methods: In 2023, a team of oncologists from the Breast Center of the National Cancer Research Center conducted breast-based examinations for a total of 7,939 women over the age of 35 in 62 districts in 4 provinces of Mongolia in 2023. Cases of suspected malignant tumors, confirmed cases of cancer, and cases of benign tumors were calculated from the examined women. Because we did not have the tools and materials for examination in that environment, we sent suspected cases of cancer to the National Cancer Institute for tissue analysis.

Result: 7939 women were examined in 62 districts in 4 provinces of Mongolia. During this examination, we detected a total of 11 breast cancers and 316 benign tumors, and provided medical assistance for other diseases such as breast inflammation and abscesses with surgery and other treatments in remote rural areas. Benign breast cancer was found in 3.98% of all the people examined. Out of 68 cases of suspected malignant tumors, 11 of them were found to be malignant tumors. In 2021, 332,051 women were screened for early detection of breast cancer and 3 malignant tumors were detected.

Conclusions: This study shows that breast cancer specialist visits to remote areas for early screening can be effective, and empowering local doctors and providing them with the necessary equipment is of great importance for early detection of breast cancer and increased survival rates.

A PROSPECTIVE COHORT STUDY ON CHALLENGES TO EARLY CONSULTATION AND DIAGNOSIS OF BREAST TUMORS AMONG FILIPINO PATIENTS AT A PHILIPPINE TERTIARY GOVERNMENT HOSPITAL

Jason Edison Ramos, Felicidad Claudia Ordonez, Eric Talens, Jonathan Salvador

Philippine Society of Breast Surgeons, Department of Surgery, Philippines

Background: Breast cancer is the leading type of cancer among Filipino women and one of the most common causes of mortality in the Philippines. This study aims to identify patient ang non-patient factors contributing to delays in (1) early consultation, (2) diagnosis and (3) treatment of breast complaints among Filipino patients consulting at a tertiary Philippine government hospital.

Methods: The study is a non-interventional prospective cohort study done at the out-patient department of a tertiary government hospital in the Philippines from February 2021 to November 2022. Patient information was collected using a modified validated questionnaire from Mexico, and patient-participant's medical records. These were analyzed using Mann-Whitney U, Chi-square test and logistic regression.

Result: A total of one hundred four (104) study participants were analyzed in this study. The most common factor for delayed consultation was due to lack of funds and other reasons including lock-down due to the pandemic. Likewise, those who sought prior medical consultation in a private hospital are 10 times more likely to have delayed diagnosis; distance from residence increased odds by 37 times; and work obligation by 20 times. These incurring additional expenses while affecting daily income. In contrast, patients with higher educational attainment (college level or college graduate), are less likely to have delayed consultation by 76%.

Conclusions: The factors identified have shown varying effects on patient's timing to diagnosis. Higher educational attainment has shown to reduce the interval from symptom identification to first consult. On the other hand, distance from residence and work obligations are identified to have significant negative effects resulting in further delay in diagnosis and treatment of patients. The results of this study can be further expanded and investigated on which can be used to create new, or strengthen current government health programs aimed to increase health-seeking behavior and improve health outcomes.

ADDRESSING BARRIERS TO HOLISTIC CANCER CARE ACCESS IN LOW AND MIDDLE INCOME COUNTRIES

Abena Addai[1,2,3], Beatrice Wife-Addai[1,2]

[1]Breast Care International, Department of Surgery, Ghana, [2]Peace and Love Hospitals, Department of Surgery, Ghana, [3]First Moscow State Medical Univ. im Sechenova, Department of Medical Oncology, Ghana

Background: Cancer survival is disproportionately reduced in Low and Middle Income Countries(LMICs) and this is in part due to lack of cancer education and access to holistic cancer care among the general population. Globocan 2020 estimates that breast and cervical cancers account for close to half of all newly diagnosed cases among females with 186,598 (29.5%) and 117,316 (18.5%) respectively. Traditionally cancer control in LMICs have been addressed mainly with just education and screening outreach programs and this doesn't tackle a core pillar of late stage presentation: lack of access to diagnosis and continuous cancer care.

Methods: An innovative and active program was designed to educate and educate the next generation of women in Africa. This 10-week co-curricula was piloted in 5 high schools in Ghana, Malawi, Namibia and Zambia where selected high school girls met with a health professional weekly via zoom. The program starts with a pre-program questionnaire, girls are then educated on breast, cervical and menstrual health, study the story and cause of delay of Joyce-a Ghanaian breast cancer survivor who presented to the hospital with locally advanced breast cancer. The students then investigate the current breast and cervical cancer care pathways in their countries.

Result: Outside of the capital cities of these countries, there is a severe lack of access to any type of specialized cancer care in the different regions. After a successful pilot, the next phase targets high schools in each region in Ghana and includes nurses and breast cancer survivors in each region.

Conclusions: Cancer incidence is expected to double by 2035 with over 70% occurring in LMICs. This program not only educates the next generation but defines the current state of access to holistic cancer care and builds a community led initiative to address the lack of access today whilst advocating for a better tomorrow.

COMPARISON OF CHARACTERISTICS BETWEEN ASYMPTOMATIC/ SCREEN-DETECTED BREAST CANCER VERSUS SYMPTOMATIC BREAST CANCER

Young-Jin Lee, Tae-Kyung Yoo, Sae Byul Lee, Il Yong Chung, Beom Seok Ko, Hee Jeong Kim, Jong Won Lee, Byung Ho Son, Jisun Kim

ASAN Medical Center, Department of Surgery, Korea

Background: Breast cancer (BC) screening for women in Korea has increased leading to increased rate of early stage BC diagnosis. While little is known about the differences between screen-detected and symptomatic tumors, we aimed to investigate the clinic-pathological, biological differences.

Methods: We retrospectively reviewed data of patients diagnosed between January 1, 1990 and December 31, 2021 from a single institute. We compared the clinic-pathological features of tumors and assessed yearly trends regarding the proportion of screen-detected cases during the study period. Also assessed the whether screen-detected versus symptomatic breast cancers differed in outcome.

Result: We found that 37.1% (14744/39747) of cancers were detected by screening. Asymptomatic tumors detected by screening were more likely to have favorable prognostic features than symptomatic tumors (Tis: 24.0% vs 11.2%; $p < 0.001$, node negative: 83.0% vs 63.5%; $p < 0.001$, estrogen receptor-positive 80.8% vs 66.7%; $p < 0.001$, HER2 negative 79.2% vs 74.6%; $p < 0.001$ respectively). Patients initially presented with symptom were more likely to undergo neoadjuvant chemotherapy (19.2% vs 5.7%; $p < 0.001$). The proportion of symptomatic breast cancer diagnoses varies across different age groups. While youngest (<40yr) age group patients had greater proportion of symptomatic BC diagnosis (20.2% and 7.8%; $p < 0.001$). The proportion of BC detected by screening significantly increased throughout the time-period (1990~2021 with 2.9% to 44.6%). The most common symptom that led to the diagnosis of BC was palpable breast lump, accounting for 87.8%. The presence of symptoms at the time of diagnosis acts as an independent risk factor for recurrence-free survival (HR 1.16, 95% CI 1.08-1.24).

Conclusions: This study demonstrated the rate of screen-detected BC in Korea increased substantially since 1990s. Screen-detected tumors displayed low-risk phenotypes compared to symptomatic BC. The differences in biological characteristics between screen-detected and symptomatic BC may account in part for the limited efficacy of BC screening programs aimed at improving breast cancer mortality.

UNDERUTILISATION OF GENETIC COUNSELLING AND TESTING IN PATIENTS WITH HIGH RISK NEWLY DIAGNOSED BREAST CANCER IN A REGIONAL HOSPITAL IN HONG KONG

Brian Chan, Winnie Wing Yan Tin, Wai Adrian Chan, Ngan Sum, Jean Cheng, Ting Ying Ng, Chi Sing Frank Wong

Tuen Mun Hospital, Hong Kong, Department of Clinical Oncology, Hong Kong

Background: Breast Cancer gene (BRCA) mutation testing in patients with breast cancer aids to make informed decisions regarding prophylactic surgery, subsequent imaging surveillance and family planning. Genetic pathways in Hong Kong are well established, however underutilisation of such services has not been investigated. We aim to review the genetic testing referral rates in our regional center.

Methods: A retrospective review of all newly diagnosed patients with breast cancer seen in a regional oncology center from 1st January 2021 to 30th Jun 2021 was performed, to evaluate i) expected referral rate for BRCA testing based on the BRCA referral criteria in Hong Kong and by the Chinese Society of Breast Surgery (CSBrS), ii) actual referred rate, and iii) BRCA testing rate.

Result: A total of 306 breast cancer patients were included. 125 (40.8%) and 91 (29.7%) patients fitted the referral criteria of Hong Kong and CSBrS guideline respectively. Among patients fitting the referring criteria, 29 (23.2%) and 26 (28.6%) patients were referred for genetic testing and only 18 (62.1%) and 17 (65.4%) patients proceeded with BRCA testing according to their respective guidelines. Focusing on most representable groups, only 36.3% of patients who were less than or equal to 45 years old, were referred. Patients aged 40 to 45 were often missed with only 12% patients referred compared to those aged less than 40, with 68% of patients referred. 18.3% of patients with one relative with breast cancer were referred, and 29.1% of patients with triple negative breast cancer patients were referred.

Conclusions: This retrospective review showed underutilization of well-established genetic counselling and testing services for patients with high risk of familial breast cancer in Hong Kong. Reasons could be multifactorial and further remedial actions would be required.

INVESTIGATION OF GERMLINE MUTATIONS IN 29 CANCER PREDISPOSING GENES BY NEXT-GENERATION SEQUENCING AMONG KOREAN BREAST CANCER PATIENTS

Heeyoung Cho, Jong Won Kang, Jeong Hun Oh, Hyoungwon Koh, Kyung Hwak Yoon, Eun-Kyu Kim, Hee Chul Shin

Seoul National Univ. Bundang Hospital, Department of Surgery, Korea

Background: Next-generation sequencing (NGS)-based genetic panel tests have notably increased detection rates of germline mutations in cancer-predisposing genes among breast cancer patients. The aim of this study is to assess the distribution and frequency of pathogenic/likely pathogenic mutations and variants of uncertain significance (VUS) in Korean breast cancer patients.

Methods: A total of 719 breast cancer patients with clinical features suggestive of germline mutations underwent NGS-based multigene panel tests from March 2020 to September 2023 at Seoul National University Bundang Hospital. The NGS test was performed on blood samples to identify germline mutations in 29 cancer-predisposing genes. Clinicopathologic characteristics and the distribution of germline mutations were collected and analyzed retrospectively.

Result: A total of 405 germline variants were detected in 310 out of 719 (43.1%) patients, comprising 65 (16%) pathogenic/likely pathogenic (P/LP) variants in 61 (19.7%) patients and 340 (84%) VUS in 249 (80.3%) patients. The distribution of P/LP variants was 44 (67.7%) in BRCA1/2 and 21 (32.3%) in non-BRCA1/2. The most frequently detected mutation, other than BRCA1/2, was PALB2 (7.7%), followed by RAD51D (4.6%). The most commonly identified VUS were ATM (13.8%), APC (9.1%), and BRCA2 (8.8%). Among the 310 patients with mutated genes, the mean age at the time of cancer diagnosis was 45.1 years. 18.4% had bilateral breast cancer, and 34.8% had a family history of breast cancer.

Conclusions: The use of NGS-based multigene panel tests significantly improved the detection rates of P/LP variants compared to BRCA1/2 mutation tests alone. The multigene panel test is recommended for breast cancer patients with high-risk features of germline mutations. Regarding the high detection rates of VUS, further studies are needed to determine the potential clinical effects of VUS in the management of breast cancer. Patients with VUS might require a comprehensive pedigree analysis, while individuals with predisposing family factors may be recommended for genetic tests.

SPECTRUM OF BRCA1/2 VARIANTS IN SRI LANKAN FAMILIES WITH HEREDITARY BREAST CANCER: INSIGHTS FROM A DECADE-LONG, SINGLE-CENTER STUDY

Nirmala Sirisena, C. D. Nelanka Priyadarshani, D. P. Bhagya Hendalage, Vajira H. W. Dissanayake

Univ. of Colombo, Department of Anatomy, Genetics & Biomedical Informatics, Sri Lanka

Background: The South Asian population exhibits a wide range of BRCA1 and BRCA2 alterations, with variations observed across different countries and ethnicities. An improved knowledge of the BRCA1/2 variant spectrum can help better understand its impact on breast cancer risk and optimize preventive strategies. This study aimed to characterize the spectrum of germline BRCA1 and BRCA2 variants in Sri Lankan families with hereditary breast cancer.

Methods: 129 individuals (86 cancer affected and 43 pre-symptomatic individuals) from families with hereditary breast cancer who underwent exome sequencing between January 2014 and December 2023 were maintained prospectively in a database and analyzed retrospectively. The exome data was subjected to bioinformatics analysis and variants were classified according to international guidelines.

Result: A total of 37(28.7%) individuals harbored BRCA1/2 gene variants, with 18(48.7%) BRCA1 and 19(51.3%) BRCA2 variants. Notably, 15(83.3%) BRCA1 and 15(78.9%) BRCA2 variants were pathogenic/likely pathogenic, rest were variants of uncertain significance (VUS). Exons 10(38.9%), 21(16.7%), and 5(16.7%) in BRCA1 and Exons 11(31.6%), and 10(21.1%) in BRCA2 had the highest mutation frequencies. The most frequent recurrent BRCA1 variants were c.5352delG(p.Leu1785Terfs) in BRCT domain (Exon 21) and c.237delT(p.Phe79fs) in RING domain (Exon 5), representing 6(33.3%) of BRCA1 variants. The most frequent recurrent BRCA2 variants were c.1296_1297delGA(p.Asn433Glnfs*18) in DNA-binding domain (Exon 10) and c.5576_5579delTTAA(p.Ile1859Lysfs) in BRC repeats domain (Exon 11), representing 5(26.3%) of BRCA2 variants. We identified four novel BRCA1 variants(c.5225A > C,p.Gln1742Pro; c.3392A > G,p.Asp1131Gly; c.4021G > A,p.Val1341Ile; c.2501G > A,p.Gly834Glu).

Conclusions: This study showed a substantial frequency of BRCA1/2 variations in Sri Lankan hereditary breast cancer families, with distinct hotspot mutations and several novel variants. These findings underscore the importance of exome sequencing for early detection and risk management in hereditary breast cancer predisposition. Our data also has potential implications for the future development of affordable and reliable targeted genetic testing, for improved identification and management of hereditary breast cancer patients.

TUMOR CHARACTERISTICS, AND ONCOLOGICAL OUTCOMES OF BREAST CANCER PATIENTS WITH ONLY PRIMARY BREAST CANCER AND MULTIPLE PRIMARY SEQUENTIAL CANCERS

Fatih Aydogan[1], Ahmet Necati Sanli[2], Yasemin Esin Tekcan Sanli[3], Kadri Altundag[4]

[1]Memorial Bahcelievler Breast Health Center and Kirklareli Univ. Medical School, Department of Breast Health Center, Republic of Turkiye, [2]Abdulkadir Yuksel State Hospital, Gaziantep, Turkey, Department of Surgery, Republic of Turkiye, [3]Faculty of Medicine, Gaziantep Univ., Gaziantep, Turkey, Department of Radiology, Republic of Turkiye, [4]MKA Breast Cancer Clinic, Ankara, Turkey, Department of Medical Oncology, Republic of Turkiye

Background: It was aimed to investigate the demographic and molecular characteristics, overall survival (OS), cancer-specific survival (CSS) and prognostic factors affecting the survival of patients with single primary breast cancer (SPBC) and patients with multiple primary sequent cancers one of them ist breast cancer (MPC).

Methods: Using data from SEER 17 Research Plus, patients with breast cancer diagnosed between 2010 and 2019 were included in this study. In the evaluation of analytical cohort race, marital status, laterality, tumor size, molecular subtype, grade, stage, radiotherapy-chemotherapy treatment, surgery data were analysed. Kaplan Meier survival analysis was used for survival analysis and Cox regression analysis was used to evaluate the prognostic factors.

Result: 573175 patients were included in the study. The mean age of MPC patients was significantly higher than SPBC patients (65.99 ± 12.68, 60.33 ± 13.47, $p < 0.001$, respectively). Patients with SPBC had significantly more hormone receptor (HR) positive/Her2 positive, HR negative/Her2 negative, and HR negative/Her2 positive molecular subtypes; patients with MPC had more HR-positive/Her2 negative subtypes ($p < 0.001$). Grade 3 tumor status locoregional spread and distant metastasis was significantly higher in SPBC ($p < 0.001$). OS and CSS rates were significantly higher in SPBC($p < 0.001$). In MPC, overall hazard ratio was 1.631 times higher than SPBC, and the cancer specific hazard ratio was 1.096 times higher (95% CI [1.606-1.656], 95% CI [1.071-1.121], respectively).

Conclusions: Although patients with SPBC have worse prognostic tumor characteristics, OS and CSS rates are better than patients with MPC.

THE MICROBIOME OF PATIENTS WITH BREAST CANCER AT RISK OF METASTASIS

Jeongshin An[1,2], Hyungju Kwon[1], Woosung Lim[1], Byung-In Moon[1]

[1]Ewha Womans Univ. Mokdong Hospital, Department of Surgery, Korea, [2]Ewha Womans Univ. Mokdong Hospital, Institute of Convergence Medicine Research, Korea

Background: Breast cancer, a leading cause of cancer-related mortality among women worldwide, involves complex interactions between the host and various factors, including the microbiome. Recent studies have highlighted the significant role of the microbiome in cancer progression and metastasis, suggesting that microbial populations may influence the tumor microenvironment, immune response, and therapeutic outcomes. This study aims to explore the changes in the microbiome of patients with metastatic breast cancer, providing insights into its potential impact on disease progression and treatment efficacy.

Methods: This study performed a detailed analysis of the microbiome in patients with breast cancer, investigating whether they experienced metastasis or remained healthy after treatment. Using high-throughput sequencing technologies, Sequencing data compared the microbial diversity and composition in blood samples. Our findings reveal distinct microbial signatures associated with metastatic breast cancer, characterized by a decrease in microbial diversity and the predominance of specific bacterial taxa.

Result: These alterations in the microbiome may contribute to the metastatic process through various mechanisms, including modulation of the immune system, alteration of the tumor microenvironment, and impact on metabolic pathways. Furthermore, our study suggests that the microbiome could serve as a potential biomarker for predicting breast cancer metastasis and may offer new avenues for targeted therapies.

Conclusions: Understanding the microbiome's role in breast cancer metastasis opens up novel perspectives for improving diagnostic, prognostic, and therapeutic strategies. By elucidating the complex interactions between the microbiome and cancer cells, we can pave the way for microbiome-based interventions that enhance the efficacy of existing treatments and contribute to the development of personalized medicine in oncology.

COMPARISON OF LYMPH NODE ACCURACY BY MOLECULAR SUBTYPE BETWEEN PRIMARY SURGERY AND NEOADJUVANT SYSTEMIC THERAPY IN BREAST CANCER PATIENTS

Jin Young Byeon, Eunhye Kang, Ji-Jung Jung, Ik Beom Shin, Haw Jeong Lee, Hong-Kyu Kim, Han-Byoel Lee, Hyeong-Gon Moon, Wonshik Han

Seoul National Univ. Hospital, Department of Surgery, Korea

Background: It is important to assess the status of axilla lymph nodes through preoperative ultrasonography (US) in BC patients. Furthermore, patients who received neoadjuvant systemic therapy (NST) could have differences in accuracy when compared to patients who received primary surgery. We aimed to evaluate the accuracy of preoperative US for lymph nodes and to compare the results in different subtypes of breast cancer between patients with NST and with primary surgery.

Methods: A retrospective study analyzed the data of patients undergoing BC surgery in Seoul National University Hospital between 2015 and 2022. The study classified subtypes based on HR+/HER2-, HR+/HER2+, HR-/HER2+, and HR-/HER2-. The cortex level was measured on the preoperative US and divided into node-negative (cortex ≤ 2.5 mm) and-positive groups (cortex > 2.5 mm). We compared final histological results (pN0 or pN+) with preoperative lymph node status.

Result: A total of 7183 patients with breast cancer treated with axilla surgery (median [IQR] age 50 [44-59] years) were identified. Of the 4254 patients who received primary surgery, 3088 (72.5%) were node-negative, and of those, 2614 (NPV: 84.6%, 95% CI: 81.8-87.4) were pN0. HR+/HER2- had the worst NPV (2079 of 2504 [83.0%]) among all subtypes (150 of 171 [87.7%] for HR+/HER+; 107 of 113 [94.7%] for HR-/HER+; 278 of 300 [92.7%] for HR-/HER2-;). Among 2929 patients with NAC, the NPV was 68.4% (1506 of 2201; 95% CI: 63.3-73.5). NPV was lower in all subtypes with NST patients (376 of 822 [45.7%] for HR+/HER2-; 328 of 426 [76.9%] for HR+/HER+; 308 of 361 [85.3%] for HR-/HER+; 494 of 592 [83.4%] for HR-/HER2-)

Conclusions: In this study, lymph node assessment was less accurate after NST for all subtypes of breast cancer. For HR+/HER2- patients with NST, the NPV was less than 50%; therefore, it should be considered when interpreting the preoperative US.

BASIC HOUSEHOLD ACTIVITIES HAS HUGE ROLE OF REDUCE THE OCCURRENCE OF LYMPHEDEMA IN POST MRM CASES

Aditya Manna

MAS Clinic & Hospital, Department of Medical Oncology, India

Background: This is a condition, where swelling in an arm found, and caused by lymphatic system blockage in post MRM cases. It is mainly found in breast cancer patients due to the removal or damage of lymph node. But, the cases are lessen particularly in rural Indian population particular these study group. During studies we found that, rural women are less likely to get affected with lymphedema. So, the focus of the study is to find out the reason behind this and to improve the quality care to reduce the occurrence of lymphedema.

Methods: This study was conducted for a period of 4 years in MAS Clinic and Hospital. This was a qualitative exploratory study design via randomized way of selected post MRM patients. Data were collected through focus group discussion and data were analyzed by content analysis.

Result: The study shows that only 2% of rural women are affected with lymphedema. Daily household activities, agricultural activities, animal husbandry etc helps to reduce the chances of occurrence of lymphedema among rural women.

Conclusions: This research helps to find us that a basic household activities has huge role of reduce the occurrence of lymphedema rather than doing any kind of exercise with instruments. A rural women who is doing her daily household activities (like: collecting water, washing clothes, mopping house, etc.), agricultural activities, animal husbandry etc. are less likely get affected with lymphedema. They didn't maintain exercises and also they didn't have to give a special time for their health purposes.

HYBRID REAL-TIME APPROACH IN ROBOTIC BREAST SURGERY COMBINED WITH INTRAOPERATIVE ULTRASOUND (ROBUS PROCEDURE)

Jun-Hee Lee[1], Jihyoun Lee[1], Cheol Wan Lim[2], Sung Yong Kim[3], Min Hyuk Lee[1]

[1]Soonchunhyang Univ. Hospital Seoul, Department of Surgery, Korea, [2]Soonchunhyang Univ. Hospital Bucheon, Department of Surgery, Korea, [3]Soonchunhyang Univ. Hospital Cheonan, Department of Surgery, Korea

Background: Robotic surgery has recently been rapidly increasing in breast cancer surgery. However, a notable disadvantage is the difficulty in achieving sufficient margin clearance, largely attributed to the absence of tactile sense in robotic procedures. Specifically, ensuring the anterior margin proves challenging due to the difference between the incision site and the location of the mass. Real-time dissection using intraoperative ultrasound (intraop US) has the potential to be a tool that can overcome the limitations. The aim of this study is to validate the assurance of secured margins through the application of intraop US in robotic breast surgery.

Methods: Following dye injection below the superficial fascia with intraop US guidance, dissection is performed utilizing the "Tile-pro" function of da Vinci XiTM system. Indigo carmine dye, combined with sterile lidocaine gel at a ratio of 1:4 to enhance viscosity, is specifically administered through focal injection into the anterior margin of the tumor. The robotic dissection was performed while continuously monitoring real-time intraop US images during the docking process.

Result: During robotic surgery, real-time intraop US enables the live assessment of skin flap thickness and the mastectomy was successfully completed without complications. After resection, verification of adequate margins was confirmed by assessing the dye below the superficial fascia and examining the specimen using intraop US. In the final pathological result, the margin demonstrated absence of tumor infiltration, ensuring oncologic safety. There were also no occurrences of significant complications such as skin necrosis.

Conclusions: A hybrid approach incorporating intraop US during robotic surgery proves valuable in securing a safety margin, and prevents skin necrosis, and serving as a potential alternative to compensate for the lack of tactile sensation, a known limitation in robotic breast cancer surgery.

SINGLE-PORT THREE-DIMENSIONAL ENDOSCOPIC-ASSISTED BREAST CONSERVING SURGERY (S-P 3D E-BCS): SURGICAL TECHNIQUES AND PRELIMINARY RESULTS

Chayanee Sae-Lim[1], Hung-Wen Lai[2]

[1]*Chulalongkorn Univ., Department of Surgery, Thailand,* [2]*Changhua Christian Hospital, Department of Surgery, Taiwan*

Background: Breast conserving surgery (BCS) and subsequent irradiation are primary treatments for early-stage breast cancer. Endoscopic-assisted breast surgery (EABS) aims to enhance cosmetic outcomes without compromising oncological safety. Therefore, we developed a novel approach, single-port three-dimensional endoscopic-assisted breast conserving surgery (S-P 3D E-BCS), and reported its surgical technique and preliminary results herein.

Methods: Surgical techniques of S-P 3D E-BCS were described. A total of 31 breast cancer patients who received S-P 3D E-BCS in a single institution from July 2022 to May 2023 were enrolled. The preliminary results of S-P 3D E-BCS, including perioperative parameters, complication, short-term oncological outcomes, and patient-evaluated cosmetic satisfaction were retrospectively analyzed and reported.

Result: S-P 3D E-BCS was conducted via the same axillary incision as sentinel node biopsy. All of the participants had clinical T1-2, and 93.6% (29/31) of them were clinically node negative. Our success rate of S-P 3D E-BCS was 100% without conversion to open surgery. The mean E-BCS time was 205 ± 48 minutes, and an average blood loss was 23.4 ± 10 ml. One patient experienced a seroma, successfully managed with outpatient needle aspiration (C-D I). No severe complication (C-D ≥ III) was observed. During the mean follow-up time of 10.4 ± 3.3 months, none of the patients reported locoregional/distant recurrence or mortality. All respondents reported overall satisfaction with the cosmetic outcomes, with 25% (4/16) rating the results as "excellent" and 75% (12/16) as "good".

Conclusions: S-P 3D E-BCS is a safe and feasible approach for breast cancer treatment, offering promising cosmetic outcomes and expanding the application of endoscopic-assisted breast cancer surgery.

IS MINIMAL-ACCESSED (ENDOSCOPIC- OR ROBOTIC-ASSISTED) NIPPLE-SPARING MASTECTOMY CONTRAINDICATED FOR LARGE BREASTS?

Chayanee Sae-Lim[1], Hung-Wen Lai[2]

[1]*Chulalongkorn Univ., Department of Surgery, Thailand,* [2]*Changhua Christian Hospital, Department of Surgery, Taiwan*

Background: In the developmental stage of minimal-accessed nipple-sparing mastectomy (MA-NSM), selecting patients with small to medium-sized breasts was common for better cosmetic outcomes and oncological safety. However, the suitability of MA-NSM for large, ptotic breasts remained uncertain. This retrospective study aim to assess MA-NSM outcomes in patients with large breasts.

Methods: Patients who underwent conventional NSM (C-NSM) and MA-NSM from January 2011 to September 2022, at a single institution was included. We analyzed perioperative parameters and clinical outcomes based on breast specimen size, classified as small (≤ 300g), medium (> 300-450g), large (> 450-600g), and very large (> 600g).

Result: A total of 728 patients was enrolled. C-NSM was performed in 51% (371/728) of cases, while MA-NSM was done in 49% (357/728). The overall complication rate of MA-NSM was comparable to C-NSM ($p = 0.573$), regardless of breast size. However, severe complications (Clavien-Dindo, CD III) was significantly reported more following C-NSM in the very large size group ($p = 0.025$). During a mean follow-up of 57 months, no significant difference in oncological outcomes was observed. Comparing MA-NSM and C-NSM outcomes in large-very large breasts (> 450g), MA-NSM showed a trend toward less blood loss ($p = 0.073$) and significantly lower incidence of severe complications (CD ≥ III) compared to C-NSM ($p = 0.002$).

Conclusions: MA-NSM is feasible for large breasts and offers benefits by reducing blood loss and decreasing the incidence of severe complications (CD ≥ III) in this patient group.

A PROSPECTIVE CASE SERIES: ENDOSCOPIC-ASSISTED BREAST-CONSERVING SURGERY WITH SINGLE AXILLARY INCISION FOR EARLY-STAGE BREAST CANCER

Huynh Yen Phi[1,2]

[1]*Univ. Medical Center in Ho Chi Minh City, Department of Breast Department, Vietnam,*
[2]*Taipei Medical Univ., Department of International Phd Program In Medicine, Taiwan*

Background: Breast-conserving surgery (BCS) has been widely accepted as one of the standard treatment options for early-stage breast cancer. While conventional BCS ensures aesthetic preservation for patients, the resulting scar can be quite long and noticeable. Endoscopic-assisted BCS, with a small incision, achieves similar aesthetic outcomes with an inconspicuous scar. It also serves as a surgical approach for sentinel lymph node biopsy or axillary lymph node dissection procedures.

Methods: Between December 2022 and August 2023, 11 early-stage breast cancer patients, whose tumors were smaller than 2 cm and were clinically node negative without invasion into the skin and pectoralis major muscle, underwent endoscopic BCS. Initially, the tumor was located using ultrasound guidance, and indocyanine green (ICG) was injected around the tumor to mark the surgical area. Following this, a 3 cm transverse axillary incision was made to perform sentinel lymph node biopsy guided by ICG. Through this incision, a sub-pectoral pocket was gently created around the marked area adjacent to the tumor, guided by an endoscopic camera. Subsequently, endoscopic instruments were used to conduct a wide excision around the tumor, freezing sections were taken. Various factors including patient characteristics, tumor specifics, operation duration, and bleeding volume were assessed. Additionally, early complications within 30 days post-operation were also evaluated.

Result: The mean age of patients was 39 (range: 25-52). The mean tumor size was 12.6 ± 2.9 mm. The average operation time was 148 ± 21.55 minutes, which was significantly longer than that for open BCS in our center, which was 111.55 ± 17.76 minutes ($p = 0.0003$). The mean amount of operative bleeding was 29.1 ml. All patients were discharged on the first post-operative day. There were no major complications within 30 days post-operation.

Conclusions: Our findings, within appropriately chosen cases, demonstrated enhanced cosmetic satisfaction among breast cancer patients, suggesting its potential as an alternative to the conventional BCS.

RISK FACTORS OF LOCAL AND REGIONAL RECURRENCE IN PATIENTS WHO UNDERWENT NIPPLE-SPARING OR SKIN-SPARING MASTECTOMY WITH IMMEDIATE RECONSTRUCTION

Hyoung Won Koh, Hee-Chul Shin, Eun-Kyu Kim

Seoul National Univ. Bundang Hospital, Department of Surgery, Korea

Background: This study investigated the risk factors of local recurrence (LR) and regional recurrence (RR) in patients who underwent nipple- or skin-sparing mastectomy (NSM or SSM) with immediate reconstruction for breast cancer.

Methods: A total of 622 patients who underwent NSM/SSM with immediate reconstruction for primary breast malignancies between 2004 and 2019 in Seoul National University Bundang Hospital were analyzed retrospectively. We assessed the association of superficial margin status and other factors, including radiotherapy (RT), tumor subtype, and clinicopathologic factors with LR and RR.

Result: Of 622 patients, 22(3.5%) experienced LR, and 11(1.8%) experienced RR. Superficial margin status was not associated with LR: one out of 20 superficial margin (+) and 20 out of 602 superficial margin (-) patients occurred LR. The tumor subtype was associated with LR; the HER2(+) subtype was an independent risk factor for LR (OR 8.324, 95% CI 2.338-29.636, $P = 0.001$). In addition, RT was an independent protective factor for LR (OR 0.127, 95% CI 0.016-0.980, $P = 0.048$). Regarding RR, the involved superficial margin was the only independent risk factor (OR 8.550, 95% CI 1.507-48.499, $P = 0.015$), and other factors, such as RT and tumor subtype, were unrelated. In the multivariable model for survival, the HER2(+) subtype remained a significant risk factor for worse LR-free survival (OR 7.696, 95% CI 2.344-25.269, $P = 0.001$), while the presence of RT was related to a better LR-free survival although statistically not significant ($P = 0.066$). An involved superficial margin was a significant risk factor for worse RR-free survival (OR 7.633, 95% CI 1.204-48.384, $P = 0.031$).

Conclusions: LR was related to tumor subtype rather than superficial margin status, and superficial margin status was related to RR. The addition of RT had a protective effect against LR.

INVESTIGATING THE EFFECTS OF RESIDUAL DISEASE PATTERNS ON LONG-TERM ONCOLOGICAL RESULTS IN BREAST CANCER PATIENTS FOLLOWING NEO-ADJUVANT CHEMOTHERAPY

Damiano Gentile[1], Bethania Fernandes[2], Alberto Zambelli[3], Andrea Sagona[1], Erika Barbieri[1], Simone Di Maria Grimaldi[1], Flavia Jacobs[3], Camilla De Carlo[2], Martina Iuzzolino[2], Corrado Tinterri[1]

[1]IRCCS Humanitas Research Hospital, Department of Surgery, Italy, [2]IRCCS Humanitas Research Hospital, Department of Pathology, Italy, [3]IRCCS Humanitas Research Hospital, Department of Medical Oncology, Italy

Background: In breast cancer (BC) treatment using neo-adjuvant chemotherapy (NAC), most patients experience a partial pathologic response (pPR) with varying residual disease patterns. The relationship between these patterns and cancer outcomes remains unclear. This study aimed to identify predictors of residual disease patterns and compare outcomes in patients with scattered versus circumscribed residual disease patterns.

Methods: This study analyzed 219 BC patients who achieved pPR after NAC at the Breast Unit of IRCCS Humanitas Research Hospital, Milan, Italy, from October 2006 to April 2020. The patients were categorized into two groups based on their residual disease pattern: scattered or circumscribed. Parameters such as disease-free survival (DFS), distant DFS (DDFS), and overall survival (OS) were examined.

Result: Of the patients, 111 (50.7%) presented with scattered and 108 (49.3%) with circumscribed residual disease. Two major independent predictors for circumscribed pattern were found: interruption of NAC cycles [scattered 4.5% vs. circumscribed 17.6%, odds ratio (OR) = 0.255, 95% confidence intervals (95%CI) = 0.089-0.729, $p = 0.011$], and tumor size larger than 18 mm (scattered 37.8% vs. circumscribed 62.0%, OR = 2.013, 95%CI = 1.108-3.655, $p = 0.022$). There was no significant difference in DFS and DDFS ($p = 0.117$ and $p = 0.155$, respectively), but a notably better OS was observed in patients with scattered patterns ($p = 0.022$). Factors like interruption of NAC cycles, tumor size larger than 18 mm, triple-negative BC, and positive nodal status post-treatment (ypN+) were linked to higher recurrence and lower survival rates.

Conclusions: This study emphasizes the significance of post-NAC tumor size and NAC discontinuation as key factors linked to patterns of residual disease in BC. A scattered residual disease pattern is associated with improved OS. Understanding the interplay between pre-operative chemotherapy, residual disease patterns in the breast, and survival outcome differences can be crucial for optimizing post-operative systemic management in BC patients.

10-YEAR SURVIVAL ANALYSIS OF ULTRASOUND-GUIDED TARGETED AXILLARY SURGERY IN NODE-POSITIVE BREAST CANCER PATIENTS WHO RECEIVED NEOADJUVANT CHEMOTHERAPY

Jeeyeon Lee[1], Byeongju Kang[1], Jin Hyang Jung[1], Heejung Keum[1], Junhyun Park[1], Hye Jung Kim[2], Won Hwa Kim[2], Yee Soo Chae[3], Soo Jung Lee[3], In-Hee Lee[3], Ji-Young Park[4], Nora Jee-Young Park[4], Ho Yong Park[1]

[1]School of medicine, Kyungpook National Univ., Kyungpook National Univ. Chilgok Hospita, Daegu, Korea, Department of Surgery, Korea, [2]School of Medicine, Kyungpook National Univ., Kyungpook National Univ. Chilgok Hospital, Department of Radiology, Korea, [3]School of Medicine, Kyungpook National Univ., Kyungpook National Univ. Chilgok Hospital, Department of Medical Oncology, Korea, [4]School of Medicine, Kyungpook National Univ., Kyungpook National Univ. Chilgok Hospital, Department of Pathology, Korea

Background: The aims of this study were to implement ultrasound-guided targeted axillary surgery (TAS) in node-positive breast cancer patients after neoadjuvant chemotherapy (NAC), aiming to enhance precision and minimize invasiveness. We compared the survival outcomes of TAS with conventional axillary lymph node dissection (ALND), including cases with a pathological complete response (pCR), in order to evaluate the efficacy of TAS.

Methods: A retrospective analysis of 235 patients with cT1-4N1-2 breast cancer who received NAC followed by surgery from 2012 to 2017 (TAS, n = 78 vs ALND, n = 157) was performed. 31 patients were initially received TAS followed by additional ALND. 10-year oncologic results, including locoregional recurrence free survival (LRFS), distant metastasis free survival (DMFS), and overall survival (OS), were assessed and compared between TAS and ALND groups.

Result: The TAS group had significantly more postmenopausal patients ($p = 0.022$), and there was no statistical difference in the T stage and the number of lymph nodes suspected of metastasis at diagnosis ($p = 0.062$, 0.985). Mastectomy was performed in 60.3% of patients in the TAS group and 93.0% in the ALND group ($p < 0.001$), and 68 (87.2%) of the TAS group and 41 (26.1%) of the ALND group received additional axillary radiotherapy ($p = 0.019$). There was no significant difference in oncologic outcomes between the two groups (LRFS, $p = 0.673$; DMFS, $p = 0.729$; OS, $p = 0.396$). In hormone-positive breast cancer group, two groups showed very similar trends (LRFS, $p = 0.954$; DMFS, $p = 0.993$; OS, $p = 0.617$). In HER2-positive breast cancer, the survival outcomes were better in the TAS group than ALND group, but without significance (LRFS, $p = 0.375$; DMFS, $p = 0.359$; OS, $p = 0.380$). However, OS in TAS group for triple-negative breast cancer was lower than ALND group, though not significantly (LRFS, $p = 0.411$; DMFS, $p = 0.697$; OS, $p = 0.210$).

Conclusions: This study demonstrates that TAS is comparable to ALND in terms of 10-year oncological outcomes across different types of node-positive breast cancer, suggesting its potential as a viable alternative.

FERROMAGNETIC SEED WIRE-FREE LOCALISATION & 'NIPPLE BASE-SPLITTING EXCISION (NIBSE)' BIOPSY

Sabrina Ngaserin[1,2], Benita Tan[1,2]

[1]Sengkang General Hospital, Department of Surgery, Singapore, [2]SingHealth Duke-NUS Breast Centre, Department of Surgery, Singapore

Background: The volume of patients who require evaluation and management of non-palpable breast lesions is on the rise, largely due to general increase of screening mammography uptake worldwide. Imaging-guided wire placement remains the current predominant method of choice for the preoperative localisation of impalpable breast lesions, inclusive of the diagnostic and therapeutic surgical treatment of benign breast disease, some axillary lesions, for breast conserving surgery, and sporadic use for targeted axillary dissection. Various methods of wire-free localisation evolved to address deficiencies of the wire, all of which boast pros and cons. It has been challenging to establish consensus on which modality and technique constitutes the optimal modern standard of care.

Methods: We describe our experience with ferromagnetic seed localisation (MOLLI) alongside our 'Nipple Base-Splitting Excision (NiBSE)' Biopsy technique with both pictorial and video demonstration.

Result: Wire-Free Localisation allows for decoupling of localisation procedure from operation schedule, avoids extended fasting time, increasing operating room efficiency. It also overcomes multiple technical limitations of wire-localisation e.g. wire impacting surgical planning, influence incision placement and extent of dissection, lack of a point source for reorientation during surgery, wire migration, kinking, fraying, transection and potential retained foreign body, and improves patient experience. Additional favourable features of ferromagnetic seed localisation includes the fact that it is radiation free, any seed migration may be overcome by a repositioning tool, minimal interference with metal instruments, visual and auditory precision guidance, and there are no known cases of "signal loss". The MOLLI probe is slim enough to compliment small incisions.

Conclusions: Ferromagnetic localisation can be an effective wire-free technique. The probe of the ferromagnetic localiser is slim enough to compliment small incisions. In addition, the NiBSE Biopsy approach is a simple reproducible scar minimising technique that is ideal for nipple, retro, and peri-areolar lesions, that can result in 'aesthetically scarless' surgery.

OUTCOMES OF AMBULATORY MASTECTOMY AMONG FILIPINO PATIENTS WITH STAGE I-III INVASIVE BREAST CANCER: A SINGLE INSTITUTION EXPERIENCE IN CEBU, PHILIPPINES

Aireen Grace Castillon[1,2], Frances De La Serna[1,2]

[1]Philippine Breast Cancer Society, Department of Surgery, Philippines, [2]Cebu Doctors' Univ. Hospital, Department of Surgery, Philippines

Background: Breast cancer is the most common cancer among females in the Philippines. The changing surgical landscape and COVID-19 pandemic have led to a greater push toward outpatient surgery. This study aims to evaluate the feasibility and safety of ambulatory mastectomy in the local context minimizing the strain on resource allocation within healthcare systems and reducing COVID-19 exposure while providing prompt oncologic care.

Methods: This is a prospective descriptive study of 102 women with stage I-III invasive breast cancer who had ambulatory mastectomy between March 2021 to August 2023 in Cebu Doctors' University Hospital. Their clinical and treatment profiles were determined and outcomes such as postoperative complications, readmission rates, and levels of satisfaction were assessed on postoperative days 7 and 30.

Result: The study shows that the most common complication is seroma occurring in 57 of the patients. Only two individuals had hematoma and one had wound infection that did not warrant reoperation. The vast majority of the patients reported no significant pain. There were no readmissions within the 30-day period and all were generally satisfied with their overall health care experience.

Conclusions: Our study demonstrated that ambulatory mastectomy is feasible, safe, and can be successfully implemented with high patient acceptance and low rate of postoperative complications, as breast surgery has been transitioned to a predominantly outpatient procedure. These findings hope to establish ambulatory mastectomy as the standard of care and to pave the way for other procedures to be performed in an ambulatory setting.

CONSIDERATION OF "PREOPERATIVE MAMMOGRAPHY MARKING METHODS" FOR CATEGORY 3 OR 4 CALCIFICATIONS WITHOUT FINDINGS OF BREAST ULTRASOUND

Hitomi Mori[1], Masami Hattori[1], Sayuri Kuwano[2], Ayaka Kawakita[2], Asami Minato[2], Rei Hanaki[1], Koji Ota[1], Takaharu Yasui[1], Chizu Kameda[1], Kentaro Motoyama[1], Eishi Nagai[1], Yuji Nakafusa[1]

[1]Japanese Red Cross Fukuoka Hospital, Department of Surgery, Japan, [2]Japanese Red Cross Fukuoka Hospital, Department of Radiology, Japan

Background: The final diagnosis of category 3 and 4 calcifications in mammography (MMG) screening ranges from mastopathy to cancer. However, if there are no findings on breast ultrasound and malignancy is suspected by MRI, Stereotactic Vacuum-Assisted Breast Biopsy (VABB) is performed, and a coil is placed in the biopsy site. The problem with subsequent surgery is the extent of resection. We investigated "the preoperative MMG marking" of 7 cases of calcification without ultrasound findings performed at our hospital.

Methods: MMG images are taken in two directions with lead markings placed at 1 cm intervals horizontally (X-axis) and craniocaudally (Y-axis) centering on the nipple before surgery. MMG images are taken with weaker compression than normal imaging, and when taking images in the Y-axis direction, only the breast (without pectoralis major) is pinched vertically. Margins were taken from the calcified area identified in this way, a partial mastectomy was performed, and calcification was reconfirmed by MMG imaging of the resected specimen.

Result: Stereotactic VABB was performed on a case of category 3 and 4 calcifications in MMG, with no breast ultrasound findings, and contrast-enhanced MRI showing an area of enhancement consistent with calcification. In cases in which a definitive diagnosis could not be reached and cases in which a diagnosis of DCIS was made, surgery was performed. After preoperative marking under MMG, a surgical biopsy or partial mastectomy was performed. Final pathology results included mastopathy, DCIS, and invasive carcinoma. A positive resection margin was found in 1 out of 7 cases. The positive margin was intraductal spread without calcification.

Conclusions: In this study, by performing the "MMG marking method" on calcification without breast ultrasound findings, we were able to precisely identify the range of calcification that would be removed during surgery. We hope that engineers and doctors will continue to work together to establish better methods.

OUR EARLY EXPERIENCE WITH MINIMALLY INVASIVE MASTECTOMY IN A TERTIARY MEDICAL CENTRE

Sue Zann Lim[1,2], Shi-Hui Yang[1,2], Julie Liana Hamzah[1,2], Si Ying Tan[1,2]

[1]SingHealth Duke-NUS Breast Centre, Department of Breast Surgery, Singapore, [2]Department of Breast Surgery, Division of Surgery and Surgical Oncology, National Cancer Centre Singapore and Singapore General Hospital, Department of Breast Surgery, Singapore

Background: Minimally invasive mastectomy (MIM) is an exciting field that is evolving rapidly. It leverages on the endoscopic-laparoscopic and robotic surgical platforms. The main benefit of MIM is that it allows surgeons to perform a mastectomy via a small incision which can be placed at a distant position. This allows optimal preservation of aesthetic outcome. With high-definition camera systems and flexible instruments, surgeons can obtain good visualisation of the surgical field, which then allows more precise dissection. We would like to share our experience on this surgical technique in a tertiary medical centre.

Methods: Patients with T1-2 breast cancer or bilateral gynecomastia who had undergone endoscopic mastectomy (EM) from April 2023 to January 2024 were identified from the Singapore General Hospital Operative Records. The clinicopathological features, surgical details and operative outcomes were collected and analysed.

Result: 17 cases of EM were identified. 2 patients had EM for bilateral gynecomastia, 2 patients had bilateral EM for breast cancer while 9 patients had unilateral EM. Median age of patient is 40 years old. Majority of the patients had T1-2 breast cancer with a median tumour size of 1.4 cm (range 0-2.5 cm). 2 patients had positive nodal metastasis requiring axillary clearance. 2 patients had neoadjuvant chemotherapy. The median breast specimen weight was 227 g (range 78-594 g). The median operative time (including axillary surgery) was 180 minutes (range 90-370 minutes). Blood loss was minimal in all cases. 5 cases had implant reconstruction, 4 cases had pedicled flap reconstruction and another 4 cases had free flap reconstruction. Post operatively, 2 patients had epidermolysis of the skin flap/nipple areolar complex which recovered with regular dressing. There were no cases of nipple necrosis.

Conclusions: MIM is a modern surgical technique which is safe and provides good aesthetic outcomes in breast cancer patients undergoing mastectomy followed by breast reconstruction and patients with gynecomastia.

THE ROLE OF LYMPH NODE DISSECTION IN BREAST CANCER PATIENTS WITH SYNCHRONOUS IPSILATERAL SUPRACLAVICULAR LYMPH NODE METASTASES: A SYSTEMATIC REVIEW AND NETWORK META-ANALYSIS

George He[1], Jolene Chia[1], Hung Chew Wong[2], Mikael Hartman[3,4], Wee Yao Koh[5], Samuel Ow[6], Serene Goh[3,4]

[1]National Univ. of Singapore, Department of Surgery, Singapore, [2]National Univ. of Singapore, Department of Research Support Unit, Singapore, [3]National Univ. Hospital, Department of Surgery, Singapore, [4]National Univ. of Singapore, Department of Saw Swee Hock School of Public Health, Singapore, [5]National Univ. Hospital, Department of Radiation Oncology, Singapore, [6]National Univ. Hospital, Department of Medical Oncology, Singapore

Background: Whilst most breast cancer patients with synchronous ipsilateral supraclavicular lymph node metastasis (sISLM) are managed with radiotherapy (RT) and systemic therapy (ST), the role of supraclavicular neck dissection (SLND) is uncertain. A network meta-analysis (NMA) evaluating oncological outcomes following SLND+RT+ST versus SLND+ST versus ST alone with RT+ST as the reference group was conducted.

Methods: PROSPERO registration was obtained (CRD42022334088). Studies from inception to December 2023 comparing multimodal therapies for breast cancer with sISLM were included. Metachronous ISLM or metastatic breast cancers were excluded. Primary outcomes were overall survival (OS) and disease-free survival (DFS). The evidence of OS was synthesised simultaneously using a random effect frequentist NMA while DFS was analysed using meta-analysis.

Result: Ten studies, involving 3346 patients were included in OS analysis. Six studies were included in DFS analysis. All papers described level V neck dissection, six included additional level IV and 2 papers included additional levels I-III. Pooled Hazard Ratio (HR) for DFS comparing SLND+RT+ST versus reference was 0.95 (95% CI 0.66, 1.35). For OS, pooled HR for SLND+ST+RT versus reference was 0.97 (95% CI 0.63, 1.48). Pooled HR for SLND+ST versus RT+ST was 0.91 (95% CI 0.24, 3.41). For ST alone versus RT+ST, the pooled HR for OS was 1.74 (95% CI 0.88, 3.44). A sensitivity analysis compared level V dissection to level V+ dissection. The pooled HR for OS for SLND+RT+ST in the level V category compared to reference was 0.47 (95% CI 0.47 to 0.77). For the level V+ subgroup, pooled HR was 1.41 (95% CI 1.1-1.8).

Conclusions: For breast cancer patients with sISLM, the addition of SLND to RT+ST demonstrated comparable DFS and OS to treatment without SLND. In contrast to more radical neck dissection (level V+), patients undergoing level V SLND only together with RT+ST were associated with higher survival rate than reference group.

DOING AWAY WITH DRAINS AFTER A MASTECTOMY A PLAUSIBLE FUTURE FOR BREAST CANCER PATIENTS?

Juliana Chen

Tan Tock Seng Hospital, Department of Surgery, Singapore

Background: We know that post mastectomy seroma is a common and expected effect. Surgical drains are left to prevent accumulation of seroma to prevent infection and also stretching out of the mastectomy flaps. However with advances of wound dressing and sclerosants, it is possible to envision a future without drains for our patients so that their post operative course will be more comfortable.

Methods: Case series on our initial experience in using Avance Solo single use negative pressure system in mastectomy patients.

Result: In our paper, we will present the initial experience with use of Avance Solo single use negative pressure system in mastectomy patients with an aim to reduce seroma drainage and moving in the direction of removing surgical drains. We will document the volume of drainage and also post operative complications of wound break down and infection.

Conclusions: Reducing the number of drains we use after mastectomy is feasible with adjuncts such as Arista AH and Avance Solo and envisions a more comfortable post operative course for our patients.

POSTOPERATIVE SCAR MANAGEMENT USING LASER THERAPY FOR BREAST RECONSTRUCTION WITH LATISSIMUS DORSI FLAP

Woosung Jang[1], Joon Seok Lee[1], Hyun Su Kang[1], Jongmoo Park[2], Jeong Yeop Ryu[1], Kang Young Choi[1], Ho Yun Chung[1], Byeongju Kang[3], Jeeyeon Lee[3], Ho Yong Park[3], Jung Dug Yang[1]

[1]Kyungpook National Univ. School of Medicine, Department of Plastic Surgery, Korea, [2]Kyungpook National Univ. School of Medicine, Department of Radiation Oncology, Korea, [3]Kyungpook National Univ. School of Medicine, Department of Surgery, Korea

Background: Postoperative scar formation is unavoidable, and a gold standard management has not been established to date. However, long and large scar formation occurs in reconstructive surgery inevitabley. This study analyzes the various factors in patients who received breast reconstruction using latissimus dorsi (LD) flap and reports effective and appropriate approaches after operation.

Methods: This study included twentyseven patients who underwent breast reconstruction between June 2014 and January 2015 received laser therapy on their LD donor site at the Kyungpook National University Chilgok Hospital. The surgical scar and intact skin on the contralateral side were used to evaluate scar management. Scar evaluation was conducted at five specific points, 2 cm from the midpoint of the scar on each side. Laser treatment was performed at 4-week intervals, and patients were then followed-up for 6 months. To assess scars, this study took the gross images using the same settings. In addition, spectrophotometry was used for color assessment, durometer for texture and pressure evaluation, and Vernier calipers and height gauges for a more precise and objective approach.

Result: The mean age of the participants was 45.7 years, and the mean body mass index was 22.1 kg/m2. The operator-evaluated scar scale scores were 107.2 and 97.3 in the experimental and control groups, respectively. In the patient-rated questionnaire, the scores were 62.3 and 59.4 in the experimental and control groups, respectively.

Conclusions: When analyzing early-stage postoperative scars based on various factors, laser therapy reports in a very effective scar management approach. Additionally, while performing reconstructive surgery, tension force is considered a factor to consider as it affects scar widening.

EFFECTIVENESS OF A PROTOCOL FOR PERIOPERATIVE PATHOLOGY IN BREAST-CONSERVING SURGERY FOR BREAST CANCER

Marta Jimenez-Gomez[1,2], Sofia Jaume-Bottcher[2], Marcel Segura-Badia[2], Ana Martinez-Sola[2], Paula Maso-Marrodan[2], Pau Nicolau-Batalla[2], Mar Vernet-Tomas[2], Nuria Argudo-Aguirre[2]

[1]European Institute of Oncology, Department of Surgery, Spain, [2]Hospital del Mar-Barcelona. Breast Cancer Unit, Barcelona., Department of Surgery, Spain

Background: The perioperative study of the surgical specimen in breast-conserving surgery for breast cancer is the Gold Standard. However, there are controversies about the definition of a negative margin in the anatomopathological study. The objective of the study was to evaluate the effectiveness of a preoperative pathology protocol to minimize the involvement of positive oncological margins and the need for reintervention after breast-conserving surgery.

Methods: Prospective observational study that includes breast-conserving surgeries. Demographic and oncological data, peroperative and definitive pathology study of the piece, and number of reoperations were recorded. After surgical resections, a perioperative pathology study was performed, which classified the margins as free, affected and close. The affected and close margins were widened. A reintervention was decided in those cases in which the definitive margin was affected.

Result: Of the 138 registered interventions, 95.7% corresponded to infiltrating carcinoma and 4.3% to DCIS. In 84.8%, lumpectomy with SLNB was performed. The perioperative study reported 27.5% free margins, 55.1% close margins and 17.4% affected margins. Of the margins widened by close ones, 42.1% were affected and 2.6% close. Of the margins widened by affections, 54.2% were affected. The overall results of the first intervention was: confirmation of free margin in 25.4%, 59.4% enlargement without neoplasm, 4.3% enlargement with neoplasm in contact with the piece, 8% enlargement with satellite neoplasia and 2.9% free perioperative margins. Of the 138 initial interventions, 7.2% required reintervention, 1 patient required mastectomy for diffuse DCIS; and 9 margin enlargement, results of which were: 6 negative enlargements, 2 enlargements with neoplasia with free margins, 1 enlargement with satellite neoplasm in contact with a new margin that required a third intervention (whose results were negative).

Conclusions: The perioperative pathology protocol applied in our center is reliable and ensures tumor-free margins. It could prevent second reinterventions in the majority of patients ater breast-conserving surgery.

EFFECT OF TOPICAL TRANEXAMIC ACID ON SEROMA FORMATION IN A RAT MASTECTOMY MODEL

Hyun Su Kang[1], Jung Ho Lee[1], Jeong Yeop Ryu[1], Joon Seok Lee[1], Kang Young Choi[1], Ho Yun Chung[1], Jeeyeon Lee[2], Ho Yong Park[2], Jung Dug Yang[1]

[1]Kyungpook National Univ. School of Medicine, Department of Plastic Surgery, Korea, [2]Kyungpook National Univ. School of Medicine, Department of Surgery, Korea

Background: Seroma is the most common complication after mastectomy and reconstruction surgery. Therefore, this study aimed to determine whether the topical application of tranexamic acid would be useful to reduce seromas in a rat mastectomy model.

Methods: Forty-eight Sprague-Dawley rats were divided into four groups. After mastectomy and axillary lymph node dissection, 0.4 mL of normal saline was administered to group A in the dead space. In group B, 0.4 mL of a triamcinolone mixed solution was administered. In group C, 0.4 mL of a tranexamic acid (10 mg/kg) mixed solution was administered. In group D, 0.4 mL of a tranexamic acid (50 mg/kg) mixed solution was administered. Gross examination, assessment with micro-computed tomography (CT), quantitative analysis via aspiration, and histopathologic assessment were implemented 7 and 14 days postoperatively.

Result: No other complications such as wound infection and skin necrosis were observed. At postoperative week 1, groups B and C showed significantly lower seroma volume values on micro-CT ($P < 0.001$ and $P < 0.05$, respectively) and seroma volume values at aspiration ($P < 0.01$ and $P < 0.001$, respectively) than group A. According to histopathologic analysis, inflammation was observed more frequently in groups A and D than in the other groups, and angiogenesis was more active in groups B and C than in the other groups.

Conclusions: Topical application of tranexamic acid was as effective as topical application of triamcinolone to prevent seroma formation. The stability of tranexamic acid was confirmed when the high dose of tranexamic acid was used.

CASE REPORT OF A PATIENT WITH REMOVAL OF PECTORALIS MAJOR MUSCLE + LD FLAP RECONSTRUCTION WAS PERFORMED AT NCCM

Tuguldur Dashzeveg[1], Tumurchudur Enkhbaatar[1], Minjin Ulaankhuu[1], Bayart-Uils Bayar[2], Odbayar Barkhas[2], Batsukh Pushkin[2], Tsengel Naranbaatar[2], Javkhlan Ganbayar[2], Saranzaya Damdinsuren[2], Orkhon Namsum[2], Erdenekhuu Nansalmaa[3]

[1]National Cancer Center Mongolia, Department of Surgery, Mongolia, [2]National Cancer Center, Department of Medical Oncology, Mongolia, [3]National Cancer Center, Department of Pathology, Mongolia

Background: Locally recurrent soft tissue sarcoma can be devastating illness to deal with. Here we present a case where the patient initially had mastectomy and partial removal of the pectoralis major muscle due to fast growing soft tissue sarcoma on the breast, then had a local recurrence, multiple lung metastasis a month later the initial surgery. For sarcoma patients, it is important to do wide excision to reduce the local recurrence rate and also it is the only curative treatment option at the moment.Soft tissue sarcoma's are rare.

Methods: In 2023.Dec.19the a 77 year old female patient post mastectomy state had presented to our breast center with locally recurrent two small lesions on the surgical bed, upon further examination, patient had multiple lung metastasis and we reexamined and took a core biopsy from the locally recurrent lesion, the result came back with osteoclast rich osteosarcoma of the right breast. Since it is a fast growing sarcoma and the initially 2.0 cm 1.7 cm lesions at the right breast surgical bed has grown triple the size in a month. Hence the decision of prophylactic surgical bed extension, removal of pectoralis major muscle and LD flap wound closure was done 2023.1.4 at NCCM.

Result: The patient recovered from the surgery uneventfully. Had no surgery related complications. After the wound was healed, she was started on target therapy Pazopanib for her soft tissue sarcoma diagnosis. After the surgical pathology came out rmpT2N0M1 had a free margin and closest margin being the deep margin 0.6 cm. histologic grade3 LVI/+/.

Conclusions: Histologic grade 3, undifferentiated sarcomas can be aggressive and difficult to treat. It is important to do wide excision remove all of the initial tumor. Most sarcomas spread hematogenically and Lymph node metastasis is rare. There is data of surgical resection of distant pulmonary metastasis in selected patient which improved long term survival.

BOOMERANG LATISSIMUS DORSI FLAP WOUND CLOSURE FOR LOCALLY ADVANCED BREAST CANCER

Minjin Ulaankhuu[1], Batsukh Pushkin[1], Odbayar Barkhas[1], Tumurchudur Enkhbaatar[1], Tsengel Naranbat[1], Javkhlan Ganbayar[1], Saranzaya Damdin[1], Ludevdorj Nyamkhorol[1], Orkhon Namsum[2], Naran Dorj[2], Erdenekhuu Nansalmaa[3]

[1]National Cancer Center of Mongolia, Department of Breast Center, Mongolia, [2]National Cancer Center, Department of Medical Oncology, Mongolia, [3]National Cancer Center, Department of Administration, Mongolia

Background: Boomerang LD flap reconstruction can be one reliable method to close the wound for locally advanced breast cancer surgeries. Especially for patients who have smaller body frame where conventional LD flap wound closure can either be challenging to close the wound at donor site or could be too small for the chest wall defect. We report our case with locally advanced breast cancer resection and wound closure with Boomerang LD flap.

Methods: 44 year old female, first noticed left breast palpable mass in Mar.2022. Came to our National Cancer Center 2022.Dec. We did Core Needle Biopsy. Pathology result: came back infiltrating breast carcinoma with medullary pattern ER/-/ PR/-/ HER2 3+ p16++ p63/-/ Upon initial diagnosis she had bilateral axillary LN involvement, Left internal mammary LN involvement. cT4cN3bM0 St.IIIc Patient had 14 cycle NAC from 2023.1.11 to 2023.10.10 pre operative CT scan revealed tumor invading into the underlying pectoralis major muscle and the resection area measured around 25*18 cm. Defect of this size cannot be closed by skin flap and we decided to do Boomerang LD flap wound closure since the patient had a very small frame.

Result: With frozen section during the surgery the deep margin was /-/ the underlying Pectoralis major muscle was removed leaving 25*19 cm chest wall defect. And the donor site wound closure had less tension compared to conventional LD flap closure.

Conclusions: Boomerang LD flap reconstruction showcased remarkable success in post mastectomy breast reconstruction. The positive outcomes observed in this case underscore the boomerang LD flap's efficiency in achieving both aesthetic and functional goal. As the Boomerang LD flap gains recognition for its favorable outcomes, further research and case studies will undoubtedly contribute to refining and expanding it's applications.

CORRELATION BETWEEN PREOPERATIVE RADIOLOGIC EVALUATION AND PATHOLOGIC FINDINGS IN PATIENTS WITH MULTICENTRIC BREAST CANCER UNDERGOING MASTECTOMY

Seungeun Lee[1,2], Yoonwon Kook[1,2], Seung Ho Baek[1,2], Sohyun Moon[1,2], Jung Hyun Kim[1,2], Min Ji Kim[1,2], Soong June Bae[1,2], Sung Gwe Ahn[1,2], Joon Jeong[1,2]

[1]*Gangnam Severance Hospital, Department of Surgery, Korea,*
[2]*Yonsei Univ. College of Medicine, Department of Surgery, Korea*

Background: In the past, multicentric breast cancer (MCBC) has been an indication for mastectomy and retrospective studies reported higher rates of local recurrence (LR) in patients with MCBC than unifocal breast cancer before current diagnostic and therapeutic advances. Recently, several retrospective studies have evaluated outcomes of breast conserving surgery (BCS) for MCBC similar to mastectomy and ACOSOG Z11102 reported low LR rate in patients with MCBC undergoing BCS. We analyzed the rate of discordance between preoperative imaging and postoperative pathology findings to determine if BCS can be actually performed in MCBC when BCS is feasible based on preoperative imaging.

Methods: Between January 2012 and December 2022, we retrospectively identified patients with biopsy proven invasive breast cancer or DCIS undergoing upfront mastectomy in the Gangnam Severance Hospital. All patients were women aged 19 years or older with two suspicious malignancy or cancer proven in different quadrant ipsilateral breast in preoperative US and MRI. The pathologists analyzed the size and number of tumors by routine section of the surgical specimen, with reference to the preoperative imaging. We defined the rate of discordance as the presence of a malignant lesion in a different quadrant of the breast that was not seen in preoperative imaging.

Result: Among 1822 patients underwent upfront mastectomy between January 2012 and December 2022, 118 patients were eligible in analysis. The rate of discordance was low, at 2.5% (3/118). Among patients aged 70 or older, the discordance rate was 22.2%, compared to 0.9% in those younger than 70 ($p < 0.001$). Other clinical, pathologic factors were not associated with discordance rate on multivariable analysis.

Conclusions: The discordance rate was low, supporting the possibility of BCS in MCBC patients. Careful consideration of BCS is recommended for individuals aged 70 or older due to a significant association with discordance rate.

LOCAL RECURRENCE AFTER MASTECTOMY. IMPACT OF RESIDUAL TISSUE ON ONCOLOGICAL FOLLOW-UP

Marta Jimenez-Gomez[1], Carlota Duch[2], Pau Nicolau[2], Ana Martinez-Sola[2], Mar Vernet-Tomas[2], Nuria Argudo-Aguirre[2]

[1]European Institute of Oncology, Department of Surgery, Spain, [2]Hospital del Mar-Barcelona. Breast Cancer Unit, Barcelona., Department of Surgery, Spain

Background: Conservative surgery is the standard treatment for breast cancer. However, there are cases in which mastectomy is imperative. Although surgery removes all or a large part of the mammary gland, there is a risk of developing local recurrence (LR) of 2-9.5%. The objective of this study was to analyze the rate of LR after mastectomy, as well as its risk factors and the method by which they are diagnosed to assess a clinical and radiological follow-up.

Methods: We conducted a retrospective observational study of breast cancer patients who underwent mastectomy between 2000-2020. 929 mastectomies were performed,of those, we analyzed local recurrence, the risk factors and the methods that allow their diagnosis, comparing the main variables using Chisquare and T-student tests, Kaplan Meier curves and Cox Regression with a 15-year follow-up.

Result: 772 breast cancer patients were analyzed, of them 6.6% of total presented local recurrence. In the comparative study, 43.1% of these patients died ($p < 0.001$). 52.9% were diagnosed by physical examination, 47.1% appeared in residual tissue: 17% in the same breast that underwent surgery, and 23.5% in the skin scar.A significant association was obtained with axillary involvement in the final surgical piece, in the pN stage, positive axillary lymph node dissection, triple-negative (TN) histological subtype, and negative progesterone receptors (PR). Survival was significantly lower if the patient was diagnosed of LR at 5 years (84%) and decreases to 63% at 10 years. The presence of LR showed association with mortality (HR 1.839, $p = 0.009$).

Conclusions: Affected lymph nodes in the surgical specimen, positive axillary lymph node dissection and TN subtype were shown to be risk factors for LR while positive PR, a protective factor. Given the high mortality in patients with LR after mastectomy, detection of risk factors and design of a follow-up protocol for the early detection of recurrences is of vital importance.

EFFECTIVENESS OF TINOSPORA CORDIFOLIA IN THE MANAGEMENT OF CHRONIC GRANULOMATOUS MASTITIS-SINGLE INSTITUTION EXPERIENCE

Shalaka Joshi[1], Ankita Das[1,2], Arul Kumar[1], Nita Nair[1], Tanuja Shet[1], Ayushi Sahay[1], Palak Thakkar[1], Vani Parmar[1], Rajendra Badwe[1]

[1]Tata Memorial Center, Department of Surgery, India, [2]Homi Bhabha National Institute, Mumbai, Department of Surgery, India

Background: Chronic granulomatous mastitis (CGM) is an uncommon, benign, chronic inflammatory condition of the breast. The pathophysiology is poorly understood with no effective treatment. It often masquerades as malignancy. Steroids are commonly used for rapid control of symptoms; however, the response is temporary and recrudescence common. It is probably an immune mediated disorder. We explored the use of Tinospora cordifolia (Giloy/Guduchi), an ancient Ayurvedic medicinal plant extract, a known immunomodulator, for the treatment of CGM.

Methods: We retrospectively analyzed our database of patients presenting with CGM from January 2018 to December 2022 at our institute. Histopathologically proven cases of CGM were treated with a 2-week course of cephalosporins followed by Tinosporin tablet (500 mg Guduchi stem extract once a day) for a period of 3-6 months.

Result: Of 315 patients of CGM, 132 had complete clinical records. The median age at presentation was 39 years(25-77), 107(81.06%) were premenopausal. Of 132, 78 (59.09%) were clinically suspicious for breast cancer. Mammographically suspicious lesions were seen in 84 (63.64%) patients. Tinosporin was given to 91 patients for 1-7 months, 75 (82.4%) patients requiring it for < 3 months. 14 were lost to follow up. The response rate to tinosporin was 93.5% (72/77). 5 (6.5%) did not achieve response, and were treated by surgical excision. 2 patients had recurrence. Of the 41 patients who were not given tinosporin, 8 were given anti-tubercular therapy, 20 were treated with antibiotics and observation alone. Only 11 of the 28 patients (39.29%) responded to treatment. The response rate with tinosporin was significantly higher ($p < 0.00001$).

Conclusions: We recommend a non-operative, non-steroid based treatment strategy for management of CGM. Use of immunomodulators such as Guduchi extract should be further explored in prospective cohort studies and more research is needed in understanding the oetio-pathogenesis and management of this chronic, debilitating condition.

COMPARISON OF ROBOTIC NIPPLE-SPARING MASTECTOMY USING DA VINCI SP SURGICAL SYSTEM AND ENDOSCOPIC NIPPLE-SPARING MASTECTOMY FOR BREAST CANCER: A SINGLE INSTITUTION EXPERIENCE OF 67 CONSECUTIVE CASES

Dayoung Yu, Dohoe Ku, Seungyeon Ko, Hyeyoon Lee, Gilsoo Son, Youngwoo Chang

Korea Univ. Ansan Hospital, Department of Surgery, Korea

Background: The evolving concern of optimizing cosmetic outcomes in breast cancer surgery has stimulated the adoption of robotic and endoscopic surgery in the field of oncologic breast surgical practices. To address these emerging needs, our preliminary experience of endoscopic nipple sparing mastectomy (E-NSM) and robotic nipple sparing mastectomy (R-NSM) were analyzed and compared.

Methods: The medical records of the patients who underwent Endoscopic total mastectomy from April 2019 to August 2022 and Robotic total mastectomy from January 2022 and January 2024 in a single institute were collected and analyzed. Total of 50 and 17 patients were extracted, respectively. The medical records of their clinicopathologic characteristics, operative parameters, perioperative parameters, postoperative complications, and oncologic complications were collected and compared retrospectively.

Result: No significant differences were observed between two groups based on clinicopathologic characteristics and perioperative parameters. The mean operative time for surgery was comparable between both groups. There was no significant difference in the mean postoperative days and rate of acute and chronic complication between both groups.

Conclusions: Both E-NSM and R-NSM have demonstrated safety in surgical practices with comparable operative outcomes. Both surgical approaches can be considered as viable options for breast cancer patients desiring improved cosmetic outcomes in addition to favorable surgical and oncologic outcomes.

5 YEARS POOLED ANALYSIS OF BREAST CONSERVING SURGERY IN RSUP PROF. I.G.N.G. NGOERAH BALI: CLINICAL INSIGHTS WITH EMPHASIS ON PATIENT SELECTION FOR ENHANCED OUTCOMES

Desak Gede Agung Pramesti Devi, I Gede Budhi Setiawan, I Wayan Sudarsa

Prof. Dr. I.G.N.G. Ngoerah General Hospital, Denpasar, Bali., Department of Surgery, Surgical Oncology Division, Indonesia

Background: Breast Conserving Surgery (BCS) has been long recommended for treatment in Early stage of breast cancer, striking a balance between oncological efficacy and the preservation of cosmetic outcomes. The emphasis on patient selection serves as a critical aspect, acknowledging the significance of tailored approaches to optimize overall outcomes for BC patients.

Methods: Retrospective study of BC patients registered at The Surgical Oncology Division in our hospital whom underwent BCS over 5 years period was done. Clinicopathologic characteristics of patients were collected and described.

Result: From 2018 through 2023; 50 BC patients with a median age at diagnosis of 48 years were included in this study. All patients received adjuvants radiotherapy and treatments according to the subtype. 50% of patients were diagnosed at the age younger than 50 years. 66% patients were diagnosed with breast cancer at pre-menopause. 46% tumours were located in upper outer quadrant. Most tumours were T2 in size 68% with 48% presented with N1 nodal involvement. Approximately 74% of tumours were ductal-origin and 48% of them were Grade II. Luminal subtypes were observed in 70% of patients. 36% cases underwent BCS with direct reconstruction. Median follow up for this study were 24 months, with the longest follow up were 65 months. No locoregional recurrent observed in this study. 4 out 6 patients developed distant metastasis in average 7 months post op. Only 2 mortalities recorded with the shortest overall survival were 10 months.

Conclusions: BCS when appropriately selected, continues to demonstrate excellent clinical results over an extended timeframe. Tailoring surgical strategies based on individual patient profiles has proven important in optimizing not only the cosmetic aspects but also the long-term success of BCS.

PROSPECTIVE EVALUATION OF FEASIBILITY OF "AXILLARY REVERSE MAPPING" IN EARLY BREAST CANCER PATIENTS UNDERGOING UPFRONT SURGERY

Shalaka Joshi[1], Asha Reddy[1], Pragnya Chigurupati[1], Zeal Sanghvi[1], Farida Choudhary[2], Nita Nair[1], Tanuja Shet[3], Shabina Siddiqui[2], Vaibhav Vanmali[2], Rohini Hawaldar[2], Rajendra Badwe[1], Vani Parmar[1]

[1]Tata Memorial Center, Department of Breast Surgical Oncology, India, [2]Tata Memorial Center, Department of Clinical Research Secretariat, India, [3]Tata Memorial Center, Department of Pathology, India

Background: Lymphoedema is the most dreaded sequalae of axillary surgery. The lymphoedema rate ranges from 5% after sentinel lymph node biopsy (SLNB)/low axillary sampling (LAS) to 25% after a complete axillary lymph node dissection (ALND). Identifying and preserving the lymphatics and lymph node draining the upper extremity can reduce lymphoedema rate. We conducted a feasibility study of "Axillary Reverse Mapping (ARM)" to assess the crossover and ARM LN involvement rate.

Methods: A prospective study was conducted between February 2020 and February 2023 in histologically proven, non-metastatic, cT1-2, cN0-1 patients of breast cancer, after approval from Institutional Ethics Committee. All patients who gave a written, informed consent, had a methylene blue dye guided anatomical LAS procedure to stage the axilla and indocyanine green (subcutaneous on inner aspect of arm) was used to identify the ARM lymphatic and node. Patients with positive SLN on frozen section analysis had complete ALND.

Result: Eighty-eight patients underwent surgery, median age was 49 years (28-79). Median pT size was 2.8 cm (0-9), 77% patients were hormone receptor positive, 34% HER2 positive and 12.5% TNBC. SLN was identified in 78 (88.6%) patients, while ARM node was found in 65 (73.9%). In 60 patients (68.18%), both SLN and ARM nodes were identified, in 23(38.3%) of whom showed crossover. In 50/88 (56.8%) patients, ARM was identified in the anatomical LAS area. ARM lymphatics were identified in 43 patients (48.9%). ARM node was positive in 16/65 (24.6%) patients.

Conclusions: One out of 3 times, the SLN and ARM node was the same and 1 in 4 patients had a positive ARM node. A high crossover and ARM positivity rate suggests that routine use of ARM technique is not feasible in our setting. Alternative ways of reducing lymphoedema such as intra-operative lympho-venous anastomosis (LYMPHA) or early use of compression stockings in post-operative period should be explored.

AN INITIAL EXPERIENCE OF ROBOT-ASSISTED BREAST CONSERVING SURGERY: A MULTICENTER STUDY OF THE KOREA ROBOT-ENDOSCOPY MINIMAL ACCESS BREAST SURGERY STUDY GROUP (KOREA-BSG)

Hee Jun Choi[1], Se Hyun Paek[2], Hyung Seok Park[3], Lee Min Hyuk[4], Jun-Hee Lee[4], Yoon Ju Bang[1], Ku Sang Kim[5], Hyun Yul Kim[6], Jai Min Ryu[7]

[1]Samsung Changwon Hospital, Department of Surgery, Korea, [2]Ewha Womans Univ. School of Medicine, Department of Surgery, Korea, [3]Yonsei Univ. College of Medicine, Department of Surgery, Korea, [4]Soonchunhyang Univ. Hospital Seoul, Department of Surgery, Korea, [5]Kosin Univ. Gospel Hospital, Department of Surgery, Korea, [6]Pusan National Univ. Yangsan Hospital, Department of Surgery, Korea, [7]Samsung Medical Center, Department of Surgery, Korea

Background: Robot-assisted breast conserving surgery (RABCS) have cosmetic benefit without any scar on the breast over conventional breast conserving surgery (CBCS). However, data on the feasibility and safety of the RABCS are limited. The aim of this study was to present the results of early experience of RABCS.

Methods: A multi-center retrospective review was conducted to identify women who underwent RABCS as part of the Korea Robot-Endoscopy & Minimal Access Breast Surgery Study Group (KoREa-BSG) between August 2019 and October 2023. Information of the clinicopathologic characteristics, perioperative complications, operation time, recurrence, and re-operation were collected.

Result: A total of 150 patients underwent the RABCS procedure conducted by 10 breast surgeons at seven institutions. Invasive breast cancer was noted in 121 cases and ductal carcinoma in-situ was detected in 29 cases. Further, 75.3% and 65.3% of the patients had an estrogen and progesterone receptor positive status, respectively. A total of 35.3% of the patients had a HER2-positive status. The median duration of postoperative days was 5.4 days (range, 1.0-15.0 days). The incision location was the mid-axillary line and the median incision length was 37.1 mm (range, 27.0-60.0 mm). The median total operation time was 133.8 minutes. 11 cases (7.3%) showed frozen margin positive, however only one case (0.7%) required re-operation because of permanent margin positive. Six patients (4%) developed surgical complications. Postoperative bleeding was found in one case and skin burn was found in five cases (3.3%); two cases (1.3%) required skin excision and three cases (2.0%) showed spontaneous resolution. There were no cases of conversion to open surgery or mortality. Only one case (0.7%) had recurrence.

Conclusions: This was the first multicenter report of RABCS in the world. RABCS could be a technically feasible and safe. Further subsequent comparative study with CBCS and prospective research are needed to evaluate the surgical and oncologic outcomes.

SKEWING THE WISE PATTERN IN THERAPEUTIC MAMMOPLASTY- WHEN TUMOURS DON'T FOLLOW TEMPLATES

Shalaka Joshi[1], Dushyant Jaiswal[2], Priyanka Lakhwani[1], Ankita Das[1], Jessicka Shah[1], Ayushi Sahay[3], Palak Thakkar[4], Rajendra Badwe[1]

[1]Tata Memorial Center, Department of Breast Surgical Oncology, India, [2]Tata Memorial Center, Department of Plastic Surgery, India, [3]Tata Memorial Center, Department of Pathology, India, [4]Tata Memorial Center, Department of Radiology, India

Background: Therapeutic mammoplasty -TM is an excellent choice of oncoplastic procedure in large ptotic breasts planned for breast conservation surgery (BCS). It allows excision of adequate breast tissue and reconstruct to improve quality of life. The classic aesthetic mammoplasty principles need some modification to account for oncoplastic resection and may prove to be challenging. We routinely skew the Wise pattern to account for skin and volume loss at the site of the primary and inferiorly based dermo-glandular flaps are used for further volume replacement. We report an audit of this technique.

Methods: Prospectively maintained institutional database was evaluated for patients with breast cancer who had BCS and TM with skewed Wise pattern. Data was extracted from electronic medical records.

Result: Forty-three patients underwent BCS with skewed Wise pattern TM during Jan 2021 to Dec 2023. Twelve patients were diagnosed as early breast cancer (EBC) (upfront surgery), 29 were locally advanced (post-chemotherapy surgery) and 2 had malignant phyllodes. Six patients were Her2 enriched, 19 were hormone receptor positive, 7 were TNBC and 9 were triple positive. The median pT size was 3 cm and ypT was 2 for upfront and post-chemotherapy operated patients respectively. Tumours were in UOQ (33), UIQ (7), LOQ (3). Nine (20.9%) patients required secondary suturing for minor wound dehiscence and 2 patients required skin graft. Three patients had focal positive margins- 2 were negative on further margin revision and 1 opted for mastectomy. 19/43 patients had post-treatment mammography, 2 of whom showed fat necrosis. At 14-months median follow-up, 1 patient had Ipsilateral breast tumor recurrence, 1 contralateral breast cancer, 2 regional nodal recurrence and 6 distal recurrences.

Conclusions: Skewing the Wise pattern in TM is an excellent method for oncoplastic reconstruction whenever indicated and allows for optimal and safe oncological resection that includes overlying skin and wide margins, without tunnelling.

A NURSE-LED, 30-DAY BREAST CARE BUNDLE TO REDUCE SURGICAL SITE INFECTIONS AND ITS SEVERITY FOLLOWING BREAST CANCER SURGERIES IN NATIONAL UNIVERSITY HOSPITAL, SINGAPORE

Priscilla Seok Lay Ho, Li Ling See, Serene Si Ning Goh

National Univ. Hospital, Department of Surgery, Singapore

Background: Superficial surgical site infections (SSIs) can lead to delays in adjuvant therapy, poor cosmesis, increased costs and patient anxiety. In National University Hospital of Singapore (NUH), an outpatient, nurse-led, 30-day breast care bundle was initiated in 2021 in aim to reduce SSIs by empowering patients and fostering close communication between patients, nurses and surgeons. This bundle consists of 1) Preventive measures with wound care advice 2) Close wound surveillance with early detection and interventions 3) Patient education and follow up.

Methods: A retrospective study was conducted in the Breast Care Centre (BCC) of NUH between the period of January 2021 to Dec 2023. Inclusion criteria were consecutive women undergoing curative breast surgeries, such as breast conserving surgeries (both standard or oncoplastic) and mastectomies. Exclusion criteria were women with cognitive impairment or those following full breast reconstruction. Patients received preoperative educational materials comprising pictorial and video representations regarding potential postoperative SSIs. Postoperative SSIs were defined by purulent drainage from incisions, localized tenderness with erythema and warmth, or a fever exceeding 38.5C as assessed by the surgeon within 30 days postoperatively. Interventions included the use of oral antibiotics and/or antimicrobial dressings until resolution.

Result: A total of 1315 breast cancer surgeries were performed, and the ratio of breast conserving surgeries vs mastectomies is 49.8% and 50.2%. In 2021, 5.8% (28/482) patients developed SSI. In 2022, 4.4% (16/362) patients developed SSI. In 2023, 3.4% (16/471) patients developed SSI. In both 2022 and 2023, out of the 16 pts with SSI, 56% (9/16) are breast conserving surgeries and 44% (7/16) are mastectomies. All patients recovered with oral antibiotics with/without antimicrobial dressings, and none required surgical intervention for their SSIs.

Conclusions: The sustained low rates of SSIs, coupled with absence of patients requiring surgical intervention for SSIs may suggest effectiveness of the nurse-led breast care bundle.

AIR-ASSISTED MASTECTOMY FOR A BREAST CANCER PATIENT, A CASE REPORT AND THE DEFINITION OF SURGICAL TECHNIQUE

Mustafa Tukenmez, Baran Mollavelioglu, Selman Emiroglu, Neslihan Cabioglu, Mahmut Muslumanoglu

Istanbul Univ. Faculty of Medicine, Department of Surgery, Republic of Turkiye

Background: Mastectomy is a frequently used surgical method in the treatment of breast cancer. It is often performed with unipolar electrocautery. Alternative methods may be required for patients with a pacemaker in which the use of unipolar cautery is contraindicated. We aimed to present the air-assisted mastectomy technique in a patient in whom unipolar cautery could not be used.

Methods: A Stewart incision drawing was made in both breasts to include the nipple. Half-centimetre incisions were made on the skin to be excised. Air was pumped under the mastectomy flaps through these incisions with a hand pump and a lipoplasty cannula with a filter. Using the air pumped under the skin, a pneumocooper was created between the mammary glands and subcutaneous tissue. A Stewart incision was made, and the dissection was carried out with the vessel sealing device(Ligasure) from the plane between the subdermal layer and the glandular tissue formed by the air. Also a dissection plan was created between the breast tissue and the fascia of the pectoralis major muscle by pumping air through the hand cannula from the lateral border of the pectoralis major muscle. Deep plane dissection was efficiently completed using the vessel sealing device.

Result: The patient was discharged without complication. The technique had no adverse effect during the six months of follow-up.

Conclusions: This technique has been successfully applied for the first time in a breast cancer patient. Using the cannula that we designed, we could to create the same dissection plan formed by air during endoscopic mastectomy much faster with a pump and air filter without needing any port and other equipment. This technique may facilitate surgery for selected patients.

10 YEAR FOLLOW UP OF ONCOPLASTIC BREAST CONSERVING SURGERY FOR BREAST CANCER

Sharon Wing Wai Chan[1], Polly Suk Yee Cheung[2]

[1]United Christian Hospital, Department of Surgery, Hong Kong, [2]Hong Kong Sanatorium and Hospital, Department of Surgery, Hong Kong

Background: Our previous study showed the applicability of oncoplastic breast conserving surgery (OBCS) in Chinese breast cancer patients, allowing wide excision in small breast sized Chinese women and at the same time achieve good cosmetic outcome and high patient satisfaction. This study aims to evaluate the long term oncological outcome of our patients having OBCS for breast cancer.

Methods: A total of 208 patients were underwent breast conserving surgery in United Christian Hospital (UCH) and Hong Kong Sanatorium Hospital (HKSH) from Nov 2007 to Jan 2009. 203 patients with breast conserving surgery applying the oncoplastic technique were prospectively recruited for study. Patient were followed up regularly with clinical examinations and imaging. Data was recorded in a prospective database.

Result: The median age was 52 (20-96). The median tumor size was 2.8 cm (0.6-5 cm). The median excised tumor weight was 94g. 19 patients with positive or close margins that need re-excision (9%). 24 patients (12%) developed mild postoperative complications, but there is no delay from adjuvant treatment. The cumulative 10-year incidence for local, regional and distant recurrences were 2%, 1% and 10% respectively.

Conclusions: This study showed low recurrence rate on long term follow up of patients with oncoplastic breast conserving surgery. Oncoplastic breast conserving surgery allows wide excision of tumor with good cosmetic outcome; it is also oncologically safe as an alternative to mastectomy.

TUBULAR BREAST CARCINOMA. A SINGLE INSTITUTION EXPERIENCE AND LITERATURE REVIEW

Nikolaos Salemis

Army General Hospital, Athens, Greece, Department of Surgery, Greece

Background: Tubular breast carcinoma (TBC) is a rare and distinct histological subtype of breast cancer that accounts for 1-2% of all breast cancer cases. It was first described by Cornil and Ranvier in 1869. Histologically, TBC is characterized by the presence of well-differentiated tubular structures and is classified into pure and mixed types.

Methods: We retrospectively reviewed the medical records of patients who were diagnosed with TBC at our Breast Cancer Surgery Unit, over a 5-year- period. Clinical, mammographic, sonographic, and pathological findings were analyzed. We also reviewed the relevant literature on the subject.

Result: From January 2019 to January 2024, six pathologically proven cases of TBC were identified. The mean age of the patients was 54.8 years (range 42-75 years). Tumors ranged in size from 0.5 to 1.6 cm (mean 0.98 cm). No distant metastases were identified at presentation. Multifocal TBC was found in one (17%) patient. All patients underwent breast-conserving surgery. Metastatic axillary lymphadenopathy was not detected in any patient. On immunohistochemical analysis, all cases showed marked positivity for estrogen receptors (ER) and progesterone receptors (PR) and negativity for Her 2 expression. Associated Ductal Carcinoma in Situ (DCIS) was detected in 4 (67%) of the cases. Only one (17%) patient received adjuvant chemotherapy, while all patients received adjuvant radiotherapy and hormonal therapy. No locoregional recurrences or distant metastases were observed after a median follow-up time of 45.5 months (range 8-56 months).

Conclusions: TBC is a rare and distinct subtype of breast cancer associated with excellent prognosis and very low rates of locoregional recurrence and distant metastasis. TBCs tend to be small-size tumors incidentally discovered on screening mammography and on immunohistochemical analysis are always positive for estrogen (ER) and progesterone receptors (PR) and negative for Her 2 expression. Because of its favorable prognosis, some studies have suggested less aggressive treatment strategies for TBC.

THE QUALITY OF LIFE AMONG WOMEN WITH BREAST CANCER SURGERY

Zolbayar Doinon

National Cancer Center Mongolia, Department of Surgery, Mongolia

Background: Treatment type for breast cancer including surgical treatment such as mastectomy or total mastectomy (MRM), breast conserving surgery (BCS) as well as combined radiation and chemotherapy and hormone therapy. Purpose: To examine the quality of life among women with BCS and MRM.

Methods: A descriptive and cross sectional study design was used to examine the level of quality of life among women who were treated with breast surgery, MRM and BCS at the National Cancer Center of Mongolia. The sample was 120 women purposively selected who were treated with breast surgery MRM and BCS. The study was conducted between January and March 2023, and data were analyzed by using descriptive and one way Anova statistics.

Result: The results of this study shows that subjects with an average age was 49.77 ± 9.42. The majority of the subjects were treated with BCS (65.9%, n = 83). The quality of life among with breast cancer was at a moderate level with the mean overall score of 58.8 (SD = 13.08). The quality of life of BCS, MRM, and rehabilitation were statistically significant differences (F = 3.953, $P < .022$), and the quality of life of the rehabilitation treatment group was relatively higher than the other 2 groups ($P < .033$).

Conclusions: As a result of the research, the quality of life of women with breast cancer was at a moderate level (58.85 ± 13.08). There is a statistically significant difference in the quality of life of women after BCS, MRM, and rehabilitation treatment (F = 3.953, $P < .022$), and the quality of life of the rehabilitation treatment group was relatively higher than the other 2 groups ($P < .033$). In the future, it is necessary to improve the quality of life of women by implementing rehabilitation treatment after breast conservation and total breast removal surgery.

IMPACT OF MARGIN POSITIVITY ON LOCO-REGIONAL RECURRENCE IN BREAST CANCER PATIENTS UNDERGOING BREAST CONSERVING SURGERY FOLLOWED BY RADIOTHERAPY

Jongwon Kang, Eun-Kyu Kim, Hee Chul Shin, Kyung Hwak Yoon, Hyung Won Koh, Jeong Hun Oh, Hee Young Cho

Seoul National Univ. Bundang Hospital, Department of Surgery, Korea

Background: These days, breast-conserving surgery followed by radiotherapy is the treatment of choice for appropriately sized breast cancer. Due to concerns about poor prognostic results of loco-regional recurrence, some surgeons remove skin, subcutaneous fat, retromammary fat, and even fascia of pectoralis muscle in their surgeries, resulting in unsatisfactory cosmetic outcomes. In this study, we aimed to evaluate the effect of positivity in superficial and/or deep margins on loco-regional recurrence in breast cancer patients treated with breast-conserving surgery followed by radiotherapy.

Methods: In total, 2,492 invasive breast cancer patients treated with breast-conserving surgery followed by radiotherapy from January 2014 to December 2020 at Seoul National University Bundang Hospital were included in this study. These patients were divided into three groups according to margin status: negative resection margin status for all directions (group 1, n = 2,174); positive margin status in superficial and/or deep parts (group 2, n = 203); and positive radial margin regardless of superficial and/or deep margin positivities (group 3, n = 115). Margin positivity was defined as 'no ink on invasive cancer' and '< 0.2 cm from the margin on ductal carcinoma in situ'. The difference in loco-regional recurrence rates between these three groups was analyzed.

Result: Across all groups, age, BMI, tumor size, nodal status, lymphovascular invasion, histologic grade, and hormone receptor positivity status did not significantly differ. High Ki-67, HER-2 positivity, and chemotherapy not received were more prevalent in groups 2 and 3 than in group 1. Local recurrence rates during the follow-up duration in groups 1, 2, and 3 were 1.5%, 1.5%, and 1.7%, respectively. Multivariate analysis showed that among the three groups, there were no significant differences in loco-regional recurrence.

Conclusions: We could save more non-breast parenchymal tissues for better cosmetic outcome safely because if breast parenchyma is removed properly superficial and/or deep margin positivity after breast-conserving surgery is not an important factor for loco-regional recurrence.

ENDOSCOPIC-ASSISTED NIPPLE-SPARING MASTECTOMY WITH DIRECT-TO-IMPLANT SUBPECTORAL RECONSTRUCTION: MINIMALLY INVASIVE APPROACH FOR SMALL BREASTS

Voratape Kijtavee, Korawan Chandrachamnong

Police General Hospital, Department of Surgery, Thailand

Background: Traditional mastectomy with implant reconstruction can be associated with scarring, pain, long recovery, and potential sacrifice of the nipple-areola complex (NAC), impacting appearance and quality of life. Endoscopic-assisted nipple-sparing mastectomy with direct-to-implant subpectoral reconstruction (EA-NSM-DTI-SP) emerges as a minimally invasive alternative offering potential benefits. This study aimed to evaluate its feasibility, safety, and efficacy for small-breasted breast cancer patients.

Methods: This retrospective study included 25 EA-NSM-DTI-SP procedures performed between August and December 2023 on patients with small to medium-sized breasts (C cup and below; grade 0-1 ptosis). Five were bilateral reconstructions. All procedures utilized a 2-dimensional videoscope, with or without Supporix (Porcine ADM) for additional support.

Result: Operative Time: Unilateral reconstruction: 125 minutes ± 60.5 minutes (average ± standard deviation) Bilateral reconstruction: 154 minutes ± 82.7 minutes. Complications: partial nipple necrosis occurred in 5 cases (20%), managed without further surgery. All Pathology result shown all surgical margins were free of cancer cells.

Conclusions: This study demonstrates the feasibility and safety of EA-NSM-DTI-SP using a 2-dimensional videoscope for small-breasted patients. Operative times were comparable to published reports, and complications were limited to manageable partial nipple necrosis in some cases. All patients achieved clear surgical margins. Further research with larger samples and longer follow-up is needed to confirm these findings and compare with other techniques.

COMPARISON OF SINGLE AXILLARY INCISION TECHNIQUES FOR GYNECOMASTIA: ENDOSCOPIC VERSUS AIR-ASSISTED SURGERY

Mustafa Tukenmez[1], Baran Mollavelioglu[1], Selman Emiroglu[1], Erol Kozanoglu[2], Neslihan Cabioglu[1], Mahmut Muslumanoglu[1]

[1]Istanbul Univ. Faculty of Medicine, Department of Surgery, Republic of Turkiye, [2]Istanbul Faculty of Medicine, Department of Plastic Surgery, Republic of Turkiye

Background: Gynecomastia is a common type of breast tissue hypertrophy in men. Surgical excision is the most effective treatment for this condition. Minimally invasive surgical techniques can be used to avoid visible chest scarring. In this study, we compared the efficacy and safety of single-axillary-incision endoscopic and air-assisted mastectomy for the treatment of gynecomastia.

Methods: Between June 2021 and February 2023, 30 patients underwent endoscopic subcutaneous mastectomy, and 10 patients underwent air-assisted subcutaneous mastectomy. For the endoscopic mastectomy group, standard endoscopic mastectomy was performed through a 3 cm axillary incision. For the air-assisted mastectomy group, CO2 was pumped with a hand pump and a lipoplasty cannula into the subdermal plane through a 2 cm axillary incision. A pneumocooper was created between the mammary glands and subcutaneous tissue, with the air pumped by the lipoplasty cannula under the skin. The dissection was done with the vessel sealing device(Ligasure) from the subdermal and deep planes from the same incision. Mobilized breast tissue was removed from the axillary incision. The patients' Demographic and clinical data, surgery duration, and complications were investigated.

Result: The median age was 31 for the endoscopic group and 26 for the air-assisted group. Median BMI was 26.2 and 25.6, respectively. There was no difference between the two groups in terms of age, BMI, amount of tissue removed, and complication rate. Median operation time was 120 versus 73 minutes and was found to be significantly lower in the air-assisted group.

Conclusions: Air-assisted subcutaneous mastectomy is a safe and effective alternative for the surgical treatment of gynecomastia with a shorter operation time compared to the endoscopic technique.

PREOPERATIVE CHEMOTHERAPY VERSUS SURGERY FIRST IN EARLY TRIPLE NEGATIVE BREAST CANCER- A PROPENSITY SCORE MATCHED ANALYSIS

Snigdha Kamini, Shalaka Joshi, Sadhana Kannan, Vaibhav Vanmali, Rajendra Badwe

Tata Memorial Center, Department of Surgery, India

Background: Neoadjuvant chemotherapy (NACT) offers no definitive survival advantage over the same given in adjuvant setting. In TNBC, pathological complete response (pCR) is a prognosticator at the patient level however failed to show benefit at trial level suggesting that those not achieving pCR may have a detriment. We compare the outcomes of early stage TNBC who underwent "surgery first" to those who were operated after NACT.

Methods: We retrospectively analysed histologically proven, non-metastatic, early stage TNBC (cT1-2, cN0-1) patients treated during January 2016 to December 2019. Data was obtained from electronic medical records. Data analysis and propensity score matching was done using SPSS -V25.

Result: Of the 343 early-stage TNBC patients,147 had NACT and 196 had surgery first. The median cT size was 2.5 cm(Range 2-5 cm) and 3 cm(Range 1.5-5 cm) in "surgery first" and "NACT" groups respectively. Nodal involvement was seen in 33% and 15.6% patients in "surgery first" and "NACT" group respectively. At a median follow-up of 47 months, 4-year overall survival (OS) was 92.6% and 88.5% ($p = 0.32$) and disease-free survival (DFS) was 93.8% and 89.3% in the "surgery first" and "NACT" groups respectively ($p = 0.2$) (Kaplan Meier and Log Rank test). On propensity score matching for T and N stage (1:1, n = 252). 4-year OS was 91.7% and 89.7% in the "surgery first" and "NACT" group respectively ($p = 0.8$). Overall pCR rate was 49.7% and those patients who had pCR had a 4-year DFS of 94.4%. On Cox Regression univariate and multivariate analyses, none of the factors; timing of surgery, age and clinical tumour size had a significant effect on DFS or OS.

Conclusions: We show a 4.1% better OS in patients of early TNBC who underwent "surgery first" although this did not achieve statistical significance probably owing to small sample size. Perioperative interventions need to be explored prospectively vis a vis modern chemo and immunotherapy for TNBC.

SURGICAL MANAGEMENT FOR HEREDITARY BREAST CANCER

Odbaatar Myagmar, Bold Altangerel

Intermed Hospital, Department of Surgery, Mongolia

Background: Hereditary breast cancer, constituting 5-10% of all breast cancers, is linked to mutations in the BRCA1/BRCA2 genes and follow an autosomal dominant inheritance pattern. Research indicates that BRCA gene mutations elevate the risk of breast cancer by up to 70%. Globally, strategies such as early detection, disease prevention surgeries, and preventive chemotherapy are employed to mitigate these risks. Surgical interventions to preemptively address genetic breast cancer have demonstrated a 90% reduction in cancer development risk. However, the status of BRCA gene mutation screening remains unknown in our country. This case series study presents our initial experience with risk-reducing surgical interventions for patients diagnosed with BRCA gene mutations.

Methods: We retrospectively analyzed the medical histories of five patients who tested positive for BRCA gene mutations abroad and sought treatment at Intermed Hospital.

Result: Among the patients, three were diagnosed with breast cancer, while two, with healthy breasts, were a cousin of one of the diagnosed breast cancer patients. Surgical procedures included nipple skin-preserving mastectomy and reconstruction with implants for the patient with healthy breasts, while the three breast cancer patients underwent nipple skin-preserving mastectomy combined with chemotherapy. All patients had reconstructive surgery with an implant. All patients also underwent bilateral salpingo-oophorectomy concurrently with breast surgery. Notably, there were no significant postoperative complications, tumor recurrence, or metastasis during the follow-up period.

Conclusions: The diagnosis and optimal management of hereditary breast cancer are subjects of ongoing research in developed countries, lacking a universally accepted treatment approach. We assert that introducing such diagnostic modalities and refining treatment methodologies is a crucial priority for our country. Future endeavors should involve concerted research efforts on hereditary breast cancer, necessitating the formation of a national expert team, the establishment of a conducive diagnostic and treatment infrastructure, and the integration of associated costs into health insurance financing.

LYMPHATIC MICROSURGICAL PREVENTIVE HEALING APPROACH FOR LYMPHEDEMA PREVENTION AFTER AXILLARY LYMPH NODE DISSECTION: A SINGLE INSTITUTION EXPERIENCE AND FEASIBILITY TECHNIQUE

Yohana Danoe Gordy[1], Birgitta M Dewayani[2], Reza Harahap[3]

[1]Hasan Sadikin General Hospital, Department of Surgery/ Faculty of Medicine Universitas Padjadjaran, Indonesia, [2]Hasan Sadikin General Hospital, Department of Pathology, Indonesia, [3]Hasan Sadikin General Hospital, Department of Theranostics & Nuclear Medicine, Indonesia

Background: Breast cancer survivors often experience chronic lymphedema, a debilitating condition causing swelling and pain in the arm. This study aimed to assess the feasibility of a new surgical technique, LYMPHA, in preventing lymphedema using methylen blue agent as guiding to reverse axillary mapping.

Methods: Patients with breast cancer undergoing axillary lymph node dissection (ALND) with complete or partial mastectomy were offered LYMPHA prior to surgery. Limb measurements and lymphoscintigraphy were performed pre- and postoperatively. Intraoperatively use of operatively use methylen blue and lymphoscintigraphy preserving cut lymphatic for LLVA ± . Patient data including demographics, operative details, complication and long-term outcomes were recorded.

Result: Over 15 months, 11 patients with breast cancer underwent axillary lymph node dissection (ALND). The average follow-up time was 14.45 months, with a standard deviation of 3 months. The median age of the patients was 52.7 years old, with a range of 30.8 years to 74.6 years. The median body mass index (BMI) was 24.5, with a range of 16.6 to 32.4. Four patients underwent a unilateral mastectomy. Two patients underwent a bilateral mastectomy. Five patients underwent a partial mastectomy. Nine patients underwent reconstructive surgery after their mastectomy. The average number of LVA per patient was 2.1, with a range of 1 to 4. The average surgery time was 63.5 minutes, with a range of 32 to 95 minutes.

Conclusions: The study found LYMPHA was successfully performed in all patients, only two patients experienced temporary lymphedema, which resolved with treatment. Imaging showed normal lymphatic flow in the assessed patients. LYMPHA appears to be a feasible, safe, and minimally invasive procedure that could potentially prevent lymphedema. While these early results are promising, longer-term studies are needed to confirm the effectiveness of LYMPHA.

ROBOTIC MASTECTOMY FOLLOWING NEOADJUVANT CHEMOTHERAPY FOR BREAST CANCER TREATMENT: A RETROSPECTIVE ANALYSIS IN A SINGLE CENTER

Eunju Shin, Tae-Kyung Yoo, Sae Byul Lee, Il Yong Chung, Jisun Kim, Hee Jeong Kim, Jong Won Lee, Byung Ho Son, Beom Seok Ko

ASAN Medical Center, Department of Surgery, Korea

Background: The utility of robotic technology into surgical oncology has marked a significant advancement, offering potential benefits in the treatment of breast cancer with better precision and recovery. However, the application of robotic mastectomy in patients with advanced breast cancer who have received neoadjuvant chemotherapy remains underexplored. This study aims to evaluate the feasibility, safety and outcomes of robotic mastectomy in this patient population.

Methods: This retrospective study analyzed the data of patients who underwent robotic mastectomy and immediate robotic breast reconstruction after receiving neoadjuvant chemotherapy between 2020 and 2023 at Asan Medical Center (AMC), a single institution. Variables collected included preoperative data, perioperative data, clinical and postoperative pathologic data, complications, and subsequent adjuvant therapies.

Result: Overall, data from 65 female patients who underwent robotic mastectomy were included in the analysis. Before neoadjuvant therapy, the majority of patients presented with T2 and T3 tumors (55.4% and 35.4%, respectively) and following systemic therapy, a significant proportion of patients showed reduction in tumor stage to T0/is and T1 (35.4% and 30.7%, respectively), with a pathologic complete response (pCR) rate of 20.8%. Lesion characterization revealed that 20% of cases involved a single lesion, 58.5% were multifocal, and 21.5% were multicentric. The average total operative time was 242 minutes, with the robotic mastectomy portion averaging 174 minutes. Most patients (70.8%) experienced minimal blood loss (< 10 ml). the average duration for drain maintenance was 5.6 days, with and average drainage volume of 596 ml.

Conclusions: The advent of robotic mastectomy has introduced a viable surgical option for patients with breast cancer undergoing neoadjuvant chemotherapy. The findings of this study suggest that robotic mastectomy is not only feasible but also safe for this patient demographic, indicating a potential expansion of indications for robotic mastectomy in breast cancer treatment.

SINGLE-CENTER RETROSPECTIVE STUDY OF THE DA VINCI SP SURGICAL SYSTEM FOR ROBOT-ASSISTED NIPPLE SPARING MASTECTOMY

Sae Byul Lee, Jisun Kim, Tae-Kyung Robyn Yoo, Hee Jeong Kim, Il Yong Chung, Jong Won Lee, Byung Ho Son, Beom Seok Ko

Univ. of Ulsan College of Medicine, Division of Breast Surgery, Korea

Background: The Da Vinci SP single-port robot (SP robot) can perform surgery using one port. Additionally, compared to the existing single-joint Da Vinci Si and Xi robots, the SP robot has two joints, making it easier to access the surgical field. We investigated the characteristics of breast cancer patients who underwent nipple sparing mastectomy (NSM) and reconstruction using this SP robot.

Methods: In this retrospective study, medical records of patients who underwent an SP robot NSM procedure with immediate reconstruction by experienced breast surgeons from October 2020 to October 2023 were evaluated. We included 300 females aged ≥ 19 years at the time of surgery, who underwent SP robot-assisted surgery for unilateral or bilateral NSM with immediate reconstruction.

Result: Most common pathological tumor-node-metastasis stage was stage I (124, 41.5%), followed by stage II (102, 34.1%), stage III (41, 13.7%) and 0 (32, 10.7%). The median total operation time was 159.5 min (interquartile range [IQR], 130.0-195.3 min) for NSM by a breast surgeon, and 129.0 min (IQR, 82.0264.0 min) for reconstruction by a plastic surgeon. No case of conversion to robotic multiport or open surgery was encountered.

Conclusions: The SP robot successfully performed NSM in breast cancer patients without the need for conversion to open surgery and significant perioperative complications.

ANALYSIS OF BREAST CONSERVING SURGERY USING 3D PRINTED SURGICAL GUIDE IN BREAST CANCER PATIENTS WHO RECEIVED NEOADJUVANT CHEMOTHERAPY

Ah Yoon Kim, Beom Seok Ko

ASAN Medical Center, Department of Surgery, Korea

Background: Breast cancer is a significant health concern for women worldwide, with early detection and treatment being crucial for successful outcomes. It is important to accurately predict the extent of the tumor before surgery because tumor involvement in the resection margin during partial breast resection is closely related to recurrence and prognosis. Recently, 3D printing technology has been used to create surgical guides that assist in breast cancer surgery.

Methods: This study was designed as a retrospective single-institution cohort study. The patients from November, 2015 to October, 2021 were enrolled. Patients who have been diagnosed with invasive breast cancer by histologic diagnosis and have received or are receiving neoadjuvant chemotherapy. A 3D printed surgical guide is used during surgery to help the surgeon precisely locate the area of concern and guide the surgical instruments to remove the cancerous tissue.

Result: 203 patients enrolled during the study period. The median age of patients was 49.7years (range 26-76 years). The median follow-up period was 38.5 months (range 1.8-100.6 months). There were 106 patients (52.2%) over 50 years of age. In 200 cases (98.5%) of patients' pathology revealed IDC, and the histologic grade was mostly (95.5%) 2 or higher. Axillary surgery was performed in all patients, and axillary node dissection was performed in 124 patients (61.1%). Clinical stage was I in 1(0.5%), II in 152(74.9%), III in 46(22.7%), and IV in 4(1.9%). Meanwhile, the pathologic stage was 0 in 68(33.5%), I in 63(31%), II in 52(25.6%), III in 16(8.0%), and IV in 4(1.9%). In the permanent pathologic result, complete remission was confirmed in 68 patients (33.5%). During follow-up period, 18(9%) of patient experienced recurrence. And only 2(1%) of patient had confirmed local recurrence.

Conclusions: Overall, the use of 3D printed surgical guide in breast BCS is a promising development that has the potential to improve patient prognosis.

BREAST CONSERVING SURGERY BASED ON INITIAL TUMOR SIZE REDUCES IPSILATERAL BREAST TUMOR RECURRENCE IN PATIENTS WITHOUT COMPLETE RESPONSE ON MRI AFTER NEOADJUVANT CHEMOTHERAPY

Jai Hyun Chung, Miyoung Jang, Ji Hye Kim, Yong Yeup Kim, Woo Young Kim, Jae Bok Lee, Sang Uk Woo

Korea Univ. Guro Hospital, Department of Breast and Endocrine Surgery, Korea

Background: Conflicting results have been reported on risk factors for ipsilateral breast tumor recurrence (IBTR) of patients undergoing breast cancer surgery after neoadjuvant chemotherapy (NAC). Extent of resection is one such controversial risk factor, having been evaluated mostly as a type of surgery: by comparing breast conserving surgery (BCS) with mastectomy. In this study, we evaluate the extent of resection by measuring actual size of resected specimen while identifying risk factors of IBTR after NAC and BCS.

Methods: In this single-institution, retrospective study, a total of 172 patients who had received NAC and underwent BCS from January 1, 2009 to June 30, 2022 were identified. Patients with bilateral invasive breast cancer or without adjuvant radiotherapy were excluded. The size of excised specimen was measured by the length of longest dimension and was reported as a percentage of initial tumor size on MRI before NAC. Kaplan-Meier curves were used for estimating IBTR-free survival according to the size of excised specimen. Multivariate analysis with Cox regression model was used to identify risk factors for IBTR.

Result: At a median follow-up of 54 months, 17 patients experienced IBTR while 155 patients did not. Specimen size of 139.05% or greater (hazard ratio, 0.223; 95% CI, 0.073-0.686; $p = 0.009$) and ypN2-3 (hazard ratio, 3.842; 95% CI, 1.417-10.418; $p = 0.008$) were independently associated with development of IBTR. IBTR-free survival was significantly better in whose specimen size was equal to or greater than 139.05% of initial tumor size, for all patients ($p = 0.005$) and for those without radiologic complete remission (rCR) in breast ($p = 0.002$). This difference was not significant in patients with breast rCR ($p = 1.000$).

Conclusions: Among the patients without breast rCR after NAC, the extent of resection in BCS should be based on initial tumor size of MRI before NAC. Further studies with prospective design and other approaches to measuring specimen size are needed.

ADVANCES IN ROBOT-ASSISTED NIPPLE-SPARING MASTECTOMY TECHNIQUES AMONG EXPERT BREAST CANCER SURGEONS

Young-Joon Kang[1], Joo Heung Kim[2], Hyung Suk Park[3], Ku Sang Kim[4], Sae Byul Lee[5], Jai Min Ryu[6], Jung Eun Choi[7], Moo Hyun Lee[8], Jeeyeon Lee[9], Young Woo Chang[10], Se Hyun Paek[11], Sun Young Min[12], Ji Young You[10], Chihwan Cha[13], Yong Yeup Kim[10], Hee Jun Choi[14], Eun-Shin Lee[10], Su Hyun Lim[1], Jae Pak Yi[1], Se Jeong Oh[1]

[1]The Catholic Univ. of Korea, Incheon St. Mary's Hospital, Department of Surgery, Korea, [2]Yongin Severance Hospital, Department of Surgery, Korea, [3]Yonsei Univ. College of Medicine, Department of Surgery, Korea, [4]Kosin Univ. College of Medicine, Department of Surgery, Korea, [5]ASAN Medical Center, Department of Surgery, Korea, [6]Samsung Medical Center, Department of Surgery, Korea, [7]Yeungnam Univ. College of Medicine, Department of Surgery, Korea, [8]Keimyung Univ. School of Medicine, Department of Surgery, Korea, [9]Kyungpook National Univ. Chilgok Hospital, Department of Surgery, Korea, [10]Korea Univ. College of Medicine, Department of Surgery, Korea, [11]Ewha Womans Univ. School of Medicine, Department of Surgery, Korea, [12]Kyung Hee Univ. Medical Center, Department of Surgery, Korea, [13]Hanyang Univ. College of Medicine, Department of Surgery, Korea, [14]Samsung Changwon Hospital, Department of Surgery, Korea

Background: Robotic surgery has become essential in performing minimally invasive procedures for many organs. Robot surgery began in the breast later than in other organs. Robot-Assisted Nipple-Sparing Mastectomy (RANSM) represent the next frontier in breast cancer surgery. However, the shift to RANSM presents unique challenges, particularly for breast surgeons accustomed to conventional methods. This study aimed to analyze the change in operation time of RANSM performed by expert breast surgeons over time.

Methods: This multicenter retrospective study used data from the Korea Robot-endoscopy Minimal Access Breast Surgery Study Group. Surveys were collected from participating surgeons, and patient data was collected from November 2016 to October 2022. Linear regression analysis assessed the correlation between surgeons' years of practice and operative time.

Result: Over a six-year period, 308 patients underwent analysis. Results showed no significant difference between years of practice and total mastectomy time ($p = 0.325$). The console time looked to decrease over time ($p = 0.025$). However, there were no correlations between years of practice and operation time for both total and console time ($R^2 = 0.003$ and 0.017, respectively). Mean total mastectomy and console times were 177 ± 71.7 and 69 ± 41.5 minutes, respectively. Surgeon experience varied widely, with annual cases ranging from 50 to 500 and cumulative cases from 95 to 3500. Education programs mainly consisted of cadaver workshops or observation, with most surgeons participating only once.

Conclusions: There was no dramatic change in operation time as time passed after the initiation of RANSM. This observation may suggest that the technique was effectively established early on, or that surgeons who commenced initially had adequate prior experience. Further subgroup analysis is needed to understand this. Additionally, the training options for the transferability of open techniques to robotic surgery are considered.

BROADENING THE OMISSION OF AXILLARY LYMPH NODE DISSECTION: CLINICALLY N2-3, PATHOLOGICALLY N0 AFTER NEOADJUVANT CHEMOTHERAPY

Ee Jin Kim, Tae Kyung Yoo, Jisun Kim, Il Yong Chung, Beom Seok Ko, Hee Jeong Kim, Jong Won Lee, Byung Ho Son, Sae Byul Lee

ASAN Medical Center, Department of Surgery, Korea

Background: The omitting axillary lymph node dissection (ALND) have many benefits on quality of life. But the consensus on omitting ALND is just only with highly selective condition. Thereby we aimed to know a possibility of broadening that condition especially in clinically N2-3, pathologically N0 patients treated with neoadjuvant chemotherapy (NAC). Because little is known about clinically N2-3, we more focus on clinically N2-3.

Methods: We retrospectively reviewed data of 1,389 breast cancer patients who were diagnosed clinically N2-3, M0 and underwent NAC followed by surgical resection between January 2008 to December 2021. Univariate analyses of overall survival (OS), disease-free survival (DFS), and recurrence-free survival (RFS) were performed before and after propensity score matching (PSM). PSM was performed based on axillary surgery, breast surgery, T stage, molecular subtype.

Result: 521 (37.5%) patients achieved complete pathological response in the axilla (ypN0). The 521 patients with clinically T any, N2-3, M0, 293(56.2%) received sentinel lymph node biopsy (SLNB) only. The median OS follow-up was 49 months. Before PSM and after PSM, univariate analysis indicated that there were no significant differences between the ALND and SLNB groups in OS (hazard ratio[HR] = 0.9, 95% confidence interval[CI] 0.5-1.8, $p = 0.899$; HR = 1.0, 95% CI 0.4-2.2, $p = 1.000$).

Conclusions: Thereby the omission of ALND in cN1-3, pN0 patients after NAC was not inferior to ALND which may lead to lymphedema, lymphangitis, and numbness. Our findings suggest that cN2-3 patients who were converted to ypN0 following NAC may be safely treated with SLNB only.

SAFETY AND EFFICACY OF ROBOT-ASSISTED MASTECTOMY IN LOCALLY ADVANCED BREAST CANCER: SINGLE-CENTER RETROSPECTIVE ANALYSIS

Hanseul Lim, Tae Kyung Yoo, Sae Byul Lee, Jisun Kim, Il Yong Chung, Hee Jeong Kim, Jong Won Lee, Byung Ho Son, Beom Seok Ko

ASAN Medical Center, Department of Surgery, Korea

Background: Most of the robot-assisted breast surgeries reported so far are for patients with prophylactic mastectomy or early cancer, so research on safety and effectiveness in advanced cancer is needed. This study aims to present data from our center focusing on patients with advanced breast cancer beyond T3 staging who underwent robot-assisted mastectomy (RM).

Methods: This retrospective study analyzed advanced breast cancer patients undergoing RM at a single center to assess characteristics of those with clinical T3 or higher staging, including preoperative data, surgical observations, clinical assessments, postoperative pathology, complications, and adjuvant therapy details.

Result: Patients included in this study underwent RM between October 2020 and October 2023 at Asan Medical Center. A total of 300 RM procedures were performed, among which 38 were diagnosed with advanced breast cancer with T3 or higher staging. Of these, 25 who received neoadjuvant chemotherapy were excluded. Analysis was conducted on the remaining 13 patients who did not receive neoadjuvant chemotherapy. Only one patient had bilateral breast cancer. The median operation time was 188 minutes for RM alone and 425 minutes when combined with reconstruction by a plastic surgeon. ALND was done in 5 patients (38.46%) with mastectomy, while 13 had SNB only. The average total drain volume was 494.05 ml until POD3. Pathological review found nipple-areolar complex involvement in 4 patients, shifting from NSM to SSM. There was one case with positive superficial resection margin. One-month post-surgery follow-up: 1 seroma, 2 ecchymosis, no re-operations needed. The median follow-up period after surgery was 370 days. Two patients had local recurrence, one during chemotherapy. However, there were no metastasis occurred.

Conclusions: RM seems safe and effective for locally advanced breast cancer, with few complications. It's a viable option for selected cases, but long-term studies are needed for oncological safety

250 ROBOTIC NIPPLE -SPARING MASTECTOMY CASES WITH DTI RECONSTRUCTION, A -5 YEAR SURVIVAL, COMPLICATIONS, LOCAL RECURRENCE AND PATIENT REPORT OUTCOME

Fiona Tsui-Fen Cheng, Yu-Meng Lin, Chung-Wei Wu

Shin Kong Wu Ho-Su Memorial Hospital, Department of Surgery, Taiwan

Background: Our institute started Robotic Nipple-Sparing Mastectomy in 2018 April, while at that period, this was a very new surgical technique, the breast surgeon performed mastectomy and also breast implant reconstruction all by using Robotic-assisted, the Robotic system from da Vinci SI to XI model, having great improvement in the operating time and skills. The surgeon collects these cases to evaluate it Onco-safety, feasibility, complication rate, and the patient report outcome

Methods: A retrospective study was conducted from April 2018 to February 2024 at Taipei New Light Hospital on patients undergoing breast cancer surgery using robotic-assisted nipple-sparing mastectomy and immediate implant-based reconstruction. There were 202 patients, some undergoing bilateral procedures, resulting in 250 procedures. Over the 5 years, one patient died due to brain metastasis, three experienced local recurrence (at 4 and 3 years, respectively), and four had implants removed due to infection, including one patient NAC necrosis

Result: Over the 5 years, one patient died due to brain metastasis, three experienced local skin-flap recurrence (at 4 and 3 years, respectively), and four patients had implants removed due to infection, including one patient developing NAC necrosis. In the questionnaire survey, the majority of patients reported being highly satisfied.

Conclusions: Nipple-sparing mastectomy performed with robotic- assistance is a safe surgical approach. Postoperative complications and 5-year survival rates are the same as conventional or Endoscopic breast cancer surgery But with high patient satisfaction.

NEOADJUVANT CHEMOTHERAPY AS AN INDICATION TO PRESERVE NIPPLE AREOLAR COMPLEX IN ADVANCED BREAST CANCER

Sarah Alsafi[1], Hee Jeong Kim[2], Tae-Kyung Yoo[2], Sae Byul Lee[2], Jisun Kim[2], Il Yong Chung[2], Beom Seok Ko[2], Jong Won Lee[2], Byung Ho Son[2]

[1]Al Adan Hospital, Ministry of Health, Kuwait, Department of Surgery, Kuwait, [2]ASAN Medical Center, Department of Surgery, Korea

Background: Nipple areolar skin sparing mastectomy (NASSM) has similar oncological safety to skin sparing mastectomy (SSM) and conventional mastectomy. It provides a superior cosmetic outcome, patient satisfaction and quality of life. With the increasing rate of pathological response with neoadjuvant chemotherapy (NAT), nipple preservation can be achieved. The aim of our study is to evaluate whether NASSM is an appropriate surgical procedure for patients with radiological evidence of extension or involvement of nipple areolar complex (NAC) prior to NAT.

Methods: Patients with advanced breast cancer received neoadjuvant chemotherapy and NASSM or SSM between June 2006 and December 2021 at Asan Medical Center were retrospectively reviewed. We excluded patients with metastatic breast cancer on presentation, bilateral cancer and inflammatory breast cancer. Kaplan-Meier survival analysis and Cox proportional hazard models were applied to determine clinicopathological and radiological factors favoring NAC preservation.

Result: A total of 1,105 patients were inculded. The majority (71.7%) underwent NASSM. 13% had a change in the pre-NAT surgery decision. 83 patients had nipple involvement on final pathology. 76 patients in SSM group had nipple involvement on final pathology. Clinical T & N stage, histologic & nuclear grade, cancer subtype, multifocal/multicentric disease pre/post-NAT, tumor-to-nipple distance and mass size pre/post-NAT, presence of non mass extension to NAC post-NAT, NAC thickening on any image pre/post-NAT and presentation with nipple retraction and skin changes were statistically significant. Multivariate regression analysis showed cancer subtype, tumor-to-nipple distance pre-NAT, NAC thickening on MRI pre-NAT, clinical response and nipple retraction post-NAT were statistically significant and indicators of nipple involvement on final pathology.

Conclusions: NASSM is a safe procedure in patients who had tumor extension to NAC prior to NAT and showed improvement post-NAT as evident on MRI. Further prospective studies are needed to establish criteria to preserve NAC in this subgroup of patients.

IMPACT OF TUMOR-TO-NIPPLE DISTANCE ON OUTCOMES IN ROBOTIC NIPPLE-SPARING MASTECTOMY AND RECONSTRUCTION

Joonsuk Moon, Saebyul Lee, Taekyung Yoo, Jisun Kim, Beomseok Ko, Heejeong Kim, Jongwon Lee, Byungho Son

ASAN Medical Center, Department of Surgery, Korea

Background: The relationship between tumor-to-nipple distance (TND) and surgical outcomes in robotic nipple-sparing mastectomy (NSM) with immediate reconstruction remains unclear. This study aims to assess the impact of TND on nipple-areola complex (NAC) involvement and the incidence of adverse events, to evaluate the feasibility of robotic NSM in patients with close TND.

Methods: A retrospective analysis was conducted on patients with primary breast cancer who underwent robotic NSM with immediate reconstruction from October 2020 to October 2023. Patients were divided into two groups based on their preoperative TND: ≤ 1 cm (n = 57) and > 1 cm (n = 202). We compared the rates of margin positivity in intraoperative subareolar resection margin frozen section and permanent pathology, and the occurrence of adverse events, including NAC necrosis, between the two groups.

Result: There were no significant differences in margin positivity rates between the groups in both intraoperative frozen section (10.5% [n = 6] vs. 5.4% [n = 11]; $p = 0.221$) and permanent pathology (8.8% [n = 5] vs. 4.5% [n = 9]; $p = 0.199$). Additionally, there were no significant differences between the groups in terms of the rates of adverse events (15.8% [n = 9] vs. 10.4% [n = 21]; $p = 0.261$) or NAC necrosis (0.0% [n = 0] vs. 2.0% [n = 4]; $p = 0.579$).

Conclusions: The findings suggest that a preoperative TND of ≤ 1 cm should not be a contraindication for robotic NSM with immediate reconstruction. There were no significant differences in the rates of NAC involvement or adverse events between patients with TND ≤ 1 cm and those with TND > 1 cm. These results support the consideration of NAC preservation even in patients with closely located tumors, emphasizing the safety and feasibility of robotic NSM in this subgroup.

CLINICAL PATTERN ANALYSIS OF REPEAT SENTINEL LYMPH NODE BIOPSY IN LOCAL RECURRENT BREAST CANCER PATIENTS: A RETROSPECTIVE STUDY

Eun-Gyeong Lee[1], So-Youn Jung[1], Jai Hong Han[1], Seok-Ki Kim[2], Seeyoun Lee[1]

[1]National Cancer Center, Department of Surgery, Korea, [2]National Cancer Center, Department of Nuclear Medicine, Korea

Background: The approach to axillary lymph node (ALN) surgery in locally recurrent breast cancer remains controversial. This study aimed to investigate the clinical characteristics of ALN surgery in patients with this condition.

Methods: We retrospectively identified patients with locally recurrent breast cancer at the National Cancer Center in Korea from 2016 to 2022. Medical records containing clinicopathologic information were collected and analyzed. The data was categorized by tumor subtype, axillary mapping type, and ALN surgery.

Result: Among the 61 patients with locally recurrent breast cancer, 4 had ductal carcinoma in situ, and 57 had invasive cancer. Two patients did not undergo axillary surgery, while 59 patients did. Of these, 47 underwent repeat sentinel lymph node biopsy (SLNB), 11 had ALN dissection including ALN sampling, and 1 underwent another form of biopsy. The mapping types were as follows: Radioisotope (RI) only in 89.5% (51/57) of cases, vital dye only in 1.8% (1/57), RI plus vital dye in 1.8% (1/57), and RI plus indocyanine green fluorescence in 7% (4/57). The sentinel lymph node (SLN) identification rate was 98.2% (56/57). Among the patients who underwent axillary surgery, 52 had node-negative results. The average number of retrieved axillary nodes was 2.6.

Conclusions: This study demonstrates that repeat SLNB is a common procedure in patients with locally recurrent breast cancer, especially those who underwent breast-conserving surgery. It also highlights the high identification rate of SLN in these patients, indicating that repeat SLNB is a reliable method for axillary surgery in this context.

THE VALIDATION OF TARGET AXILLARY DISSECTION AFTER NEOADJUVANT SYSTEMIC THERAPY IN BREAST CANCER PATIENTS

Zhu-Jun Loh, Hui-Ping Hsu, Kuo-Ting Lee

National Cheng Kung Univ. Hospital, Department of Surgery, Taiwan

Background: Down staging of the breast cancer is one of the important goals of neoadjuvant systemic treatment (NST). Ideally, breast conserving surgery was permitted without increasing local relapse. Omission of axillary lymph node dissection (ALND) instead of sentinel lymph node biopsy (SLNB) could avoid the post -operative complication. The false-negative rate (FNR) of SLNB in node positive patients treated with NST was 12.6% in ACOSOG Z1071 trial. The impairment of the performance of SLNB might correlated to the alteration of lymphatic flow induced by tissue fibrosis or tumor deposits after NST. Evaluation of axilla nodal status after NST was determined by clip placement in biopsy confirmed nodes. Our study was to validate the safety of target axillary dissection (TAD) in improving the FNR compared with SLNB only.

Methods: This is a prospective study of 20 patients with axilla lymph node metastases who undergo NST. Clipped node was proven by fine-needle aspiration cytology. The SLNB will be performed by dual tracer. TAD included SLNB plus clipped node. The FNR of SLNB and TAD were determined.

Result: 20 patients were enrolled in this study. All patients underwent conventional ALND following SLNB with 20% of pathological complete response (pCR) in tumor and axilla lymph node. 75% of pCR in lymph node only. Lost clip were detected in 3 patients with two remained residual disease. The mean numbers of SLN was four. 60% patients revealed residual nodal disease, resulting metastases in clipped node in 10 patients with FNR of 16.7%, sensitivity of 83.3%, specificity of 100%, and negative predictive value of 80%. Over 50% of clipped node was not included in SLNs. There was an improved reduction of FNR down to 0% in patients who received ALND following TAD.

Conclusions: TAD improved the FNR of SLNB and is reliable in evaluation of residual axilla nodal status after NST.

SENTINEL LYMPH NODE BIOPSY IN ACCESSORY BREAST CANCER

Young Jin Choi, Sungmin Park, Bi Kwon

Chungbuk National Univ. Hospital, Department of Surgery, Korea

Background: Primary breast cancer in accessory breast tissue is very rare and the incidence is 0.2-0.6%. It may have aggressive course with tendency for early metastasis. Due to its rarity, variety of differentials, and lack of clinical awareness, treatment is usually delayed. In view of axillary surgery, sentinel lymph node mapping in patients with axillary breast cancer is technically challenging and poorly described.

Methods: We present here an interesting case of a 53-year-old woman with 0.5 × 1-cm hard lump in right axillary region for 2 years with progressive growing for 6 months and with no concomitant breast lesion or axillary lymphadenopathy. Core needle biopsy revealed invasive ductal carcinoma with ER and PgR expression and HER2 negative. Mammography and breast MRI revealed no evidence of primary breast lesion and there was no evidence of systemic metastasis.

Result: After diagnosis of primary invasive cancer arising accessory breast, she underwent wide total excision of right accessory breast and sentinel lymph node biopsy. After dual mapping with subareolar radionuclide tracer injection and intra-tumoral indigocarmine injection, five sentinel lymph nodes were successfully dissected and was not pathologically involved. Adjuvant therapy include radiotherapy to right breast and axilla and hormonal therapy.

Conclusions: Since accessory axillary breast tissue is out of the image of screening breast examination, it is necessary for the oncologists to be aware of this entity and associated pathologies. Sentinel lymph node biopsy can be successfully performed with dual mapping in accessory breast cancer surgery.

CHARACTERISTICS AND RISK FACTORS OF AXILLARY LYMPH NODE METASTASIS OF MICROINVASIVE BREAST CANCER

Soo-Young Lee, Tae-Kyung Yoo, Jisun Kim, Il Yong Chung, Beom Seok Ko, Hee Jeong Kim, Jong Wong Lee, Byung Ho Son, Sae Byul Lee

ASAN Medical Center, Department of Surgery, Korea

Background: Microinvasive breast cancer(MIBC) accounts for 0.7-3.4% of all breast cancers, and its management with axillary surgery has been controversial. Characteristics and risk factors of axillary lymph node metastasis (ALNM) in MIBC were investigated to help select patients who would benefit most from sentinel lymph node biopsy (SLNB).

Methods: This retrospective study included 1,688 patients with MIBC who underwent breast surgery with axillary staging at the Asan Medical Center from 1995 to 2020.

Result: Most patients underwent SLNB alone (83.5%). Seventy (4.1%) patients were node-positive, and the majority had positive lymph nodes < 10 mm, with micro-metastases occurring frequently (n = 37; 55%). Node-positive patients underwent total mastectomy and axillary lymph node dissection (ALND) more than breast-conserving surgery (BCS) and SLNB compared with node-negative patients ($p < 0.001$). In the multivariate analysis, independent predictors of ALNM included young age (OR: 0.959; 95% CI: 0.927-0.993; $p = 0.019$), ALND (OR: 11.486; 95% CI: 5.767-22.877; $p < 0.001$), number of lymph nodes harvested (≥ 5) (OR: 3.184; 95% CI: 1.555-6.522; $p < 0.001$), lymphovascular invasion (OR = 6.831; 95% CI: 2.386-19.557; $p < 0.001$), presence of multiple microinvasion foci (OR: 2.771; 95% CI: 1.329-5.779; $p = 0.007$), prominent lymph nodes in preoperative imaging (OR: 2.675; 95% CI: 1.362-5.253; $p = 0.004$), and hormone receptor positivity (OR: 2.491; 95% CI: 1.230-5.046; $p = 0.011$).

Conclusions: Low ALNM rate (4.1%) suggests that routine SLNB for patients with MIBC is unnecessary but valuable for patients with specific risk factors. Ongoing trials for omitting SLNB in early breast cancer, and further subanalyses focusing on rare populations with MIBC are necessary.

POTENTIAL CANDIDATES OF OMISSION OF SENTINEL LYMPH NODE BIOPSY AFTER NEOADJUVANT SYSTEMIC THERAPY IN TRIPLE NEGATIVE AND HER-2+ BREAST CANCER PATIENTS WITH NON-BREAST PATHOLOGIC COMPLETE RESPONSE

Jiwon Park[1], Hee Jun Choi[2], Dong Seung Shin[1], Se Kyung Lee[1], Byung Joo Chae[1], Jonghan Yu[1], Jeong Eon Lee[1], Seok Won Kim[1], Seok Jin Nam[1], Jai Min Ryu[1]

[1]Samsung Medical Center, Department of Surgery, Korea, [2]Samsung Changwon Hospital, Department of Surgery, Korea

Background: Several studies have demonstrated that in patients with human epidermal growth factor receptor-2 (HER2+) and triple negative breast cancer (TNBC) with clinical node negative (cN0), axillary pathologic complete response (ApCR) is accompanied in almost all patients who achieved breast pathologic complete response (BpCR) after Neoadjuvant chemotherapy (NAC). This understanding has led to ongoing prospective studies aiming to omit SLNB in such cases. However, despite the favorable responses to NAC, BpCR is not achieved and small residual tumor often remains. It is necessary to explore a potential candidates for omitting SLNB in this patient group.

Methods: We retrospectively reviewed the records of 2342 patients with HER-2+ and TNBC who were treated with NAC followed by surgery between 2008 and 2021 at Samsung Medical Center (SMC). We selected patients who did not achieve BpCR, and divided them into a group that achieved ApCR (ypN0 group) and a group with residual nodal disease (ypN+ group). Univariable and multivariable logistic regression analysis were performed to explore the factors affecting to ApCR.

Result: Out of 1085 eligible non-BpCR patients, ApCR was acheived in 670(61.8%) of the patients after NAC. ApCR was associated with initial clinical T stage ($P < 0.001$), clinical N stage ($P < 0.001$), Ki-67 index ($P < 0.001$) and residual tumor size ($P < 0.001$). In patients with cN0 and residual tumor size less than 1 cm, the 96.2% (101/105) of patients achieved ApCR. In patients with cN+ and residual tumor size less than 1 cm, the 66.8% (261/391) of patients achieved ApCR. Overall, the size of the residual cancer decreases, the probability of achieving ApCR increase (Adjusted OR = 1.363, 95% CI, 1.260-1.476, $P < 0.001$).

Conclusions: In patients with HER-2+ and TNBC treated with NAC, if the clinical node is negative and the size of residual tumor is less than 1 cm, omitting axillary surgery can be considered. Based on our study, additional prospective studies should be conducted.

FEASIBILITY OF INDOCYANINE GREEN-HYALURONIC ACID MIXTURE (LUMINOMARKTM) FOR TARGETING SUSPICIOUS AXILLARY LYMPH NODE IN PATIENTS WITH BREAST CANCER

Junhyun Park, Jeeyeon Lee, Byeongju Kang, Heejung Keum, Jin Hyang Jung, Ho Yong Park

Kyungpook National Univ. Chilgok Hospital, Department of Surgery, Korea

Background: LuminoMarkTM, a novel approach using macroaggregated albumin as an Indigo-carmine carrier, provides real-time visualization and minimizes dye spread ensuring a clear surgical field. The authors aimed to evaluate the clinical utility of applying LuminoMarkTM to targeted axillary surgery (TAS), during breast cancer surgery.

Methods: From November to December, 2023, 13 breast cancer patients with suspicious axillary lymph node (ALN) underwent TAS using charcoal and LuminoMarkTM. Charcoal was injected into perinodal tissues by radiologists before surgery, and LuminoMarkTM (0.4 cc) was injected into ALNs in the surgical field. Clinicopathological factors, visibility, excision duration, and adverse reactions were assessed. We investigated the concordance of LNs injected with LuminoMarkTM, examining their alignment with Sentinel lymph nodes (SLN), non-SLNs, and compared these results with LNs tattooed with charcoal.

Result: Out of 13 patients, 4 (30.8%) underwent fine needle aspiration cytology, resulting in 3 (23.1%) metastatic carcinoma diagnoses and 1 (7.7%) benign condition. 11 (84.6%) underwent breast-conserving surgery (BCS), and 11 (84.6%) underwent sentinel lymph node biopsy (SLNB), while 2 (15.4%) had axillary sampling. Discovering the SLN took about 15.6 minutes from the start of the skin incision. Identification times for Charcoal-tattooed LN and LuminoMarkTM illuminated LN were 25.6 minutes and 17.7 minutes, respectively. On average, 1.5 SLNs and 2.5 non-SLNs were retrieved, with metastases confirmed in 8 cases (61.5%). Except for one case, in most cases, both Charcoal and LuminoMarkTM were well detected. 10 cases (76.9%) demonstrated concordance between LuminoMarkTM and charcoal. LuminoMarkTM left no trace postoperatively, whereas Charcoal tattooing persisted even after three months.

Conclusions: LuminoMarkTM targeting demonstrates higher detection rates (100%), and there was a high concordance rate (76.9%, 10 cases) with charcoal tattooing. This novel approach proves to be a feasible alternative, offering the advantage of reduced postoperative adverse reactions and improved surgical precision.

IS AXILLARY REVERSE MAPPING (ARM) TRULY HELPFUL IN ELIMINATING LYMPHEDEMA AND INCREASE THE QUALITY OF LIFE? -KMUH EXPERIENCE

Chieh-Ni Kao, Ming-Feng Hou, Fang-Ming Chen, Cheng-Che Wu, Li-Chun Kao, Chung-Liang Li

Kaohsiung Medical Univ. Chung-Ho Memorial Hospital, Department of Surgery, Taiwan

Background: Axillary reverse lymphatic mapping (ARM) is a surgical technique that was first described in 2007 to identify and preserve the lymphatic drainage route of the upper limb during axillary lymph node biopsy or dissection in breast cancer patients, ARM recently been developed to prevent lymphedema and decrease the possibility of arm dysfunction.

Methods: Breast cancer patients undergoing sentinel lymph node biopsy (SLNB) or axillary lymph node dissection (ALND) from December 2020 to February 2022 at the were prospectively recruited for the study. ARM was performed in all patients before surgery.

Result: The analysis included 106 patients. Of the 76 patients who underwent SLNB, 30 patients underwent ALND and follow-up for 2 years. No metastatic breast cancer patients were included. Pathological N0 = 71, N1 = 27, N2 = 5, N3 = 3. The incidence of lymphedema was higher in the ALND group than in the SLNB group (0.67% vs. 2.6%). All the lymphedema patients are pathological nodal positive and all belong to stage 1 (international society of lymphedema stage) lymphedema. All the patients with ARM showed the high satisfaction rate that less arm dysfunction and less painful sensation after the operation

Conclusions: The ARM procedure is indicated for SLNB and ALND. However, the severity is still in proportional to the degree of lymphedema. The ARM procedure is effective in decrease the complication rate of lymphedema and limitation of arm movement, but should be careful apply for patients with nodal positive breast cancer due to oncological safety concern.

IS SENTINEL LYMPH NODE BIOSPY ALONE SAFE IN THE MANAGEMENT OF THE AXILLA WITH POSITIVE NODES IN TOTAL MASTECTOMY?

Marilynn Omondi[1,2], Suk Jun Lee[2], Seung Hye Yang[2], Jee Hyun Ahn[2], Jee Ye Kim[2], Hyung Seok Park[2], Seung Il Kim[2], Byeong Woo Park[2], Seho Park[2]

[1]Kenyatta National Hospital Nairobi Kenya, Department of Surgery, Kenya, [2]Yonsei Univ. College of Medicine, Department of Surgery, Korea

Background: Management of the axilla in Breast cancer has undergone a paradigm shift with the publication of the ACOSOG Z011 and the AMAROS trials. These trials showed no survival benefit with axillary lymph node dissection and locoregional control could be achieved with limited nodal surgery without the associated morbidity that comes with axillary clearance.

Methods: Retrospective database analysis study of operable stage T1-2 patients with nodal metastasis who underwent either partial or total mastectomy with sentinel and/or axillary lymph node dissection at Severance Hospital in Yonsei University Hospital. The study analysis spanned the period from January 2010 to December 2018 and included a total of 1095 patients. Analysis was done using SPSS version 29.

Result: The median follow-up period was 81.1 months, ranging from a minimum of 1 month to a maximum of 155 months. The clinical characteristics were stratified based on the type of surgery performed. Partial mastectomy (PM) patients exhibited higher rates of micrometastases-pN1 nodal involvement compared to total mastectomy (TM) patients who had higher nodal stages. Binary logistic regression applied to total mastectomy patients, assessing the nodal stage showed T stage and lymphovascular invasion as significant predictors while multivariate analysis for disease free survival in PM patients, Larger size tumours (pT2) and extranodal involvement correlated with poorer survival outcomes. In TM patients, the luminal B and TNBC molecular subtypes had statistical significance. In terms of Overall survival, age was a significant factor as patients over 50 face a higher risk of mortality.

Conclusions: There Is an increased likelihood of non-SLN metastasis with more extensive SLN involvement, particularly in patients with SLN ≥3 macrometastases while the presence of micrometastases or 1-2 macro metastases in SLNs indicates a lower likelihood of extensive nodal involvement, potentially justifying a decision against more aggressive axillary surgery.

OMITTING AXILLARY LYMPH NODE DISSECTION IN CN2 AND CN3 BREAST CANCER PATIENTS AFTER NEOADJUVANT SYSTEMIC THERAPY

Jeong Hun Oh, Hee Chul Shin, Kyung Hwak Yoon, Hyoung Won Koh, Jong Won Kang, Heeyoung Cho, Eun-Kyu Kim

Seoul National Univ. Bundang Hospital, Department of Surgery, Korea

Background: As breast cancer systemic therapy advances, more cN2 and cN3 patients exhibit radiologic complete response (rCR) after neoadjuvant treatment. Pathologic complete response (pCR) is often confirmed with axillary lymph node dissection (ALND). Recent studies exploring ALND omission when sentinel lymph node biopsy (SLNB) indicates ≤ 2 involved nodes have broadened possibilities. This probes SLNB as an initial approach for cN2 or higher status post-systemic therapy.

Methods: This study included patients with cT1-4cN2-3 status who underwent breast and axillary surgery after neoadjuvant chemotherapy between 2016 and 2018. For the axilla, rCR was defined as cortical thickness ≤ 0.3 cm on ultrasound and < 1 cm longitudinal extent on MRI. In the breast, it was defined as the absence of lesion detection in either modality.

Result: Among the 454 patients who underwent surgery after neoadjuvant chemotherapy, 130 had cN2 and cN3 status. Axillary cortical thickness on ultrasound (odds ratio (OR), 0.417; 95% CI 0.210-0.831; $p = 0.013$) and ER status (OR, 0.100; 0.014-0.709; $p = 0.021$) were found to be associated with two or fewer pathologic lymph node metastases. Out of the 130 patients, 79 (60.7%) had confirmed two or fewer axillary lymph node metastases. When satisfying the conditions of ER negativity and axillary lymph node cortical thickness ≤ 0.3 cm on ultrasound, this proportion increased to 25 out of 28 patients (89.2%).

Conclusions: The association between ER-negative status and axillary lymph nodes with a cortical thickness of 0.3 cm or less on ultrasound was found to be correlated with two or fewer pathologic lymph node metastases in cN2 and cN3 patients. Even in cases where the initial staging was cN2 or higher, for specific subtypes showing favorable treatment response, consideration might be given to omitting ALND and attempting SLNB as the primary approach.

ASSESSING THE DIAGNOSTIC PERFORMANCE OF ULTRASOUND AND MRI IN PREOPERATIVE AXILLARY STAGING OF INVASIVE LOBULAR CARCINOMA

Byeongju Kang, Ho Yong Park, Jeeyeon Lee, Jin Hyang Jung, Hee Jung Keum

Kyungpook National Univ. Chilgok Hospital, Department of Surgery, Korea

Background: Invasive lobular carcinoma (ILC) accounts for approximately 10-15% of all breast cancers. Diagnosing this type of cancer can be challenging, especially using imaging techniques. This difficulty is not limited to identifying breast lesions but also extends to axillary staging. The purpose of this study is to assess the diagnostic performance of imaging methods in ILC.

Methods: This study retrospectively reviewed patients diagnosed with ILC who underwent breast cancer surgery at our institution from 2017 to 2023. Patients who received neoadjuvant chemotherapy were excluded. The inclusion criteria encompassed patients who underwent preoperative breast ultrasound or breast MRI. A total of 221 patients were enrolled in the study. For further details and comprehensive analysis, it's recommended to refer to the full text of the study. Out of the 211 patients included in the study, 62 were confirmed to have lymph node metastasis.

Result: In this study, the sensitivity of USG in patients was 41% (26/62), specificity was 89% (141/158), positive predictive value was 60% (26/43), and negative predictive value was 79% (141/177). For MRI, the sensitivity was 43% (23/54), specificity 90.4% (133/147), positive predictive value 62% (23/37), and negative predictive value 81% (133/164). When combining USG and MRI, the results indicated a sensitivity of 72% (18/25), specificity of 82% (123/150), a positive predictive value of 33% (18/54), and a negative predictive value of 83% (123/147).

Conclusions: In conclusion, combining ultrasound USG and MRI enhances sensitivity in preoperative axillary staging of ILC, overcoming some of the limitations of using these modalities independently. This integrative approach provides an effective strategy for more accurately identifying lymph node metastases, potentially minimizing the need for unnecessary surgeries.

PATHOLOGIC RESPONSE OF AXILLAE TO PREOPERATIVE SYSTEMIC THERAPY REGIMENS INCLUDING CARBOPLATIN AND PEMBROLIZUMAB IN EARLY TRIPLE-NEGATIVE BREAST CANCER

Yoonwon Kook, Min Ji Lee, Sohyun Moon, Seung Ho Baek, Soong June Bae, Joon Jeong, Sung Gwe Ahn

Gangnam Severance Hospital, Department of Surgery, Korea

Background: The regimen utilized in the KEYNOTE-522 (KN-522) trial, comprising pembrolizumab, carboplatin, anthracyclines, and paclitaxel, has emerged as a new standard of care for high-risk TNBC. In this study, our focus was on assessing the pathologic response of axillae in TNBC patients who underwent neoadjuvant systemic therapy (NST) based on three distinct chemotherapy regimens: an anthracycline-taxane regimen, a carboplatin-containing regimen, and the KN-522 regimen, which incorporates both carboplatin and pembrolizumab.

Methods: A retrospective review was conducted on non-metastatic TNBC patients who underwent NST followed by surgery at Gangnam Severance Hospital between January 2007 and December 2023. Excluding recurrent or bilateral breast cancer, incomplete neoadjuvant pembrolizumab regimen, or those enrolled in surgical de-escalation trials, patients were categorized into three cohorts: cohort 1 (anthracycline, cyclophosphamide + taxane [AC-T]), cohort 2 (AC-T + carboplatin [AC-TC]), and cohort 3 (KN-522). Pathologic responses were assessed in surgical specimens, examining overall pathologic complete response (pCR), breast pCR, axillary pCR, and axillary pCR in initially clinical node-positive (cN+) patients.

Result: This study included 384 patients: cohort 1 with 201 patients (158 cN+), cohort 2 with 116 patients (94 cN+), and cohort 3 with 67 patients (55 cN+). The overall pathological complete response (pCR) rate was 35.8%, 56.9%, and 65.7% in the respective cohorts, showing a significant increase from AC-T to AC-TC ($p < 0.001$). The breast pCR rate was 40.3%, 59.5%, and 67.2% with a significant increase ($p = 0.001$) from AC-T to AC-TC. The axilla pCR rate was 75.6%, 82.8%, and 85.1%, with no significant increase observed. The axillary pCR rate among cN+ patients was 69.6%, 80.9%, and 83.6%. A significant increase was observed in pCR rate from AC-T to AC-TC ($p = 0.049$).

Conclusions: The addition of carboplatin to NST increased the axillary pCR rate in cN+ TNBC while the addition of pembrolizumab did not yield a significant impact on axillary pathologic response.

REGIONAL NODE IRRADIATION STRATEGIES FOR PATIENTS WITH POSITIVE SENTINEL LYMPH NODE OMITTING AXILLARY DISSECTION

Pengfei Qiu, Yongjin Lu, Zhiqiang Shi, Yanbing Liu, Binbin Cong, Zhao Bi, Yong-Sheng Wang

Shandong Cancer Hospital & Institute, Department of Surgery, China

Background: The omission of axillary lymph node dissection (ALND) for patients with sentinel lymph node (SLN) limited involvement has become the standard approach for axillary surgical management in early-stage breast cancer. However, the regional node irradiation (RNI) strategy remains controversial in these patients. In this study, clinicopathological data and survival prognostic indicators of SLN-positive patients without ALND were analyzed to explore the significance of RNI in these patients.

Methods: From 2014/09/01 to 2022/08/31, a total of 312 patients with SLN involvement who did not undergo ALND were divided based on whether the RNI were performed. The differences in recurrence and survival between the two groups were analyzed. The primary endpoint was disease-free survival (DFS), and the secondary endpoint was overall survival (OS).

Result: At a median follow-up of 28 months, 2 cases of recurrence (one in the ipsilateral breast and one in the ipsilateral supraclavicular lymph nodes) and 1 breast cancer-related death were observed, all of which occurred in the non-RNI group. However, Kaplan-Meier survival analysis revealed no statistically significant differences in DFS ($P = 0.125$) and OS ($P = 0.343$) between the two groups.

Conclusions: In patients with axillary sparing breast cancer with positive sentinel lymph node biopsy, RNI did not provide a survival benefit for the overall study population in SLN-positive patients who omitted ALND, but was still significant for local-regional control. In clinical practice, RNI strategies should be personalized by combining the residual tumor burden of lymph nodes and tumor biological indicators.

PROGNOSIS AND AXILLARY LYMPH NODE METASTASIS OF MICROINVASIVE DUCTAL CARCINOMA (MIDC) ACCORDING TO TUMOR SUBTYPES

Dong Seung Shin, Jai Min Ryu, Se Kyung Lee, Byung Joo Chae, Jonghan Yu, Seok Won Kim, Seok Jin Nam, Jeong Eon Lee

Samsung Medical Center, Department of Surgery, Korea

Background: There are many cases in which ductal carcinoma in situ (DCIS) is diagnosed preoperatively but microinvasive ductal carcinoma (MIDC) is confirmed postoperatively. Several studies have shown that MIDC has a worse oncologic outcome than pure DCIS. We aim to investigate whether axillary lymph node (LN) metastasis status and recurrence pattern of MIDC differ by tumor subtypes.

Methods: We retrospectively reviewed the data of patients who underwent breast cancer surgery between January 2008 and December 2018 at Samsung Medical Center. Among the 19,220 patients who underwent upfront surgery, there were 563 patients (2.9%) who had diagnosed with MIDC on final pathologic result. We excluded the patients with bilateral breast cancers, and those with palliative surgery.

Result: The median follow-up period of a total of 563 MIDC patients was 75.8 months (range, 0.4-169.8) and the median age of the cohort was 50 years (range, 19-81). There were 19 patients (3.4%, 19/563) who had no axillary surgery and 19 patients (3.5%, 19/544) had tumor involvement on axillary LNs (pN0(i+) = 3, pN1mi = 8, pN1 = 7, pN2 = 1, respectively). In the follow-up periods, there were 31 local recurrences (5.5%), 12 contralateral breast cancers (2.1%), and 7 distant metastases (1.2%). There were no significant differences between subtype groups (Hormone receptor [HR]+/ Human Epidermal Growth Factor Receptor 2 [HER2]-, HR+/ HER2-, HR-/HER2+, and HR-/HER2-) in locoregional recurrence-free survival (LRFS), disease-free survival (DFS), distant metastasis-free survival (DMFS), or overall survival (OS, Log-rank p-value = 0.55, 0.73, 0.38, and 0.26, respectively).

Conclusions: In conclusion, we found that there were axillary metastases in less than 4% of MIDC patients and the axillary involvement had no association with tumor subtypes. There were also no significant differences between the subtypes on the oncologic outcomes of MIDC.

A COMPARATIVE STUDY OF SUTURE SCAFFOLD TECHNIQUE VERSUS BREAST GLANDULAR FLAP TECHNIQUE IN BREAST CONSERVING SURGERY: IMPLICATIONS FOR TISSUE REMODELING AND SCAR FLEXIBILITY

Reiko Mitsueda[1], Yukari Mochitomi[2], Rie Takaki[2], Yoshitaka Fujiki[1], Naomi Gondo[1], Junko Kawano[1], Daisuke Yotsumoto[1], Megumi Teraoka[1], Shuichi Kanemitsu[1], Yoshiaki Rai[1], Masahiro Kashiwaba[4], Yasuyo Ohi[3], Reiki Nishimura[1], Yoshiaki Sagara[1], Shinji Ohno[1], Yasuaki Sagara[1]

[1]Sagara Hospital, Department of Surgery, Japan, [2]Sagara Hospital, Department of Clinical Laboratory, Japan, [3]Sagara Hospital, Department of Pathology, Japan, [4]Sagara Hospital Miyazaki, Department of Surgery, Japan

Background: The suture scaffold technique (SST) is an oncoplastic approach used in breast conserving surgery (BCS) that is gradually gaining popularity in Japan, but its global adoption remains limited. We have previously reported that SST improves patient cosmetic satisfaction without increasing blood loss or operative time (Mitsueda et al. Annals of Surgical Oncology, 2022). In this study, we compared SST and breast glandular flap technique (BGFT) in terms of tissue remodeling and scar tissue flexibility.

Methods: Distinct from conventional breast oncoplastic techniques, SST leaves the resection defect open without any fillers, supported instead with scaffold made of non-absorbable sutures. We observed the process of scar formation after SST based on ultrasound and pathological findings. A cross-sectional study was also conducted to analyze changes in scar tissue size over three years and elastography shear wave velocity [Vs (m/s)] was measured to evaluate tissue flexibility after BCS.

Result: Ultrasonographic and pathological findings short after SST showed granulation tissue forming around the scaffold sutures, confirming progressive scar formation after BCS. Long-term changes in scar tissue were observed in 41 cases, 20 SST and 21 BGFT. The mean age was 56.3 years old (± 10.9), and the mean postoperative period was 4.39 years (± 1.04). All patients received postoperative radiation therapy. The scar tissue size at one year postoperatively was the same for SST and BGFT, and both reduced over time. Vs of the postoperative scar area also did not differ significantly between the methods (SST vs BGFT +0.06; 95% CI, -0.77–0.90; $p = 0.87$).

Conclusions: In STT, the presence of a non-absorbable scaffold stabilizes the skin and allows the defect to be gradually filled with granulation tissue without causing indentation. Considering its favorable patient satisfaction and safety profile, SST warrants broader clinical application in BCS.

EVALUATING ONCOLOGICAL OUTCOMES FOLLOWING ONCOPLASTIC BREAST CONSERVING SURGERY (OBCS) FOR LOCALLY ADVANCED BREAST CANCER: A SYSTEMATIC REVIEW

Megan Chua, Ashley Lee, Serene Goh

National Univ. of Singapore, Department of Surgery, Singapore

Background: To date, most of the literature addressing the safety of Oncoplastic breast conserving surgery (OBCS) has centered around early-stage breast cancers. Little is known about the oncological safety of OBCS in locally advanced breast cancer (LABC). This systematic review aims to explore the oncological safety of OBCS in patients with LABC.

Methods: PubMed, Cochrane and Embase electronic databases were searched from inception to 2024. Keywords were "locally advanced breast cancer", "oncoplastic surgery" and "oncologic* outcomes". Oncological outcomes recorded include the local recurrence rate (LRR), disease free survival (DFS) and overall survival (OS).

Result: Thirty-three studies were eligible. 32 studies were published within the last 6 years. 21(63.6%) were retrospective studies, 11 (33.3%) were prospective studies, and one (3.0%) was a case series. Twelve studies compared OBCS to standard breast conserving surgery (SBCS), one study compared OBCS to mastectomy, whilst the rest were solely about OBCS. 22 studies included a mix of LABC and non-LABC patients undergoing OBCS, while ten included only LABC patients undergoing OBCS. Average initial tumour size ranged from 50 mm to 77 mm. Most common oncoplastic techniques used were Therapeutic Mammoplasty (TM), Pedicle reductions and Round block (RB) techniques. Di Leone et al. reported comparable DFS and OS rates between OBCS and SBCS groups (DFS = 95.1% vs 96.2% $p = 0.286$, OS = 95.7% vs 95.0% $p = 0.394$). Khan et al. reported a higher 5-year DFS rate of 98.3% for the SBCS group compared to a 5-year DFS rate of 92.2% for the OBCS group ($p < 0.01$), and comparable OS rates between SBCS and OBCS groups (97.9% vs 99.2% $p = 0.79$). The 3 to 5-year LRR ranged from 0% to 10%, 3 to 10-year DFS ranged from 67.4% to 99.1%, and 3 to 10-year OS ranged from 85.3% to 100%.

Conclusions: Whilst OBCS holds promise for women with LABC, evidence from randomised trials is essential to evaluate its long-term safety.

PATIENT SATISFACTION POST LEVEL 1 ONCOPLASTIC BREAST CONSERVATION SURGERY IN A NON-SUBSPECIALIZED HOSPITAL: A CASE-SERIES

Yi Ping Lim[1], Nadia Rashid[1], Aminnur Hafiz[2]

[1]Bintulu Hospital, Sarawak, Malaysia, Department of Surgery, Malaysia, [2]Sarawak General Hospital, Kuching, Sarawak, Malaysia, Department of Surgery, Malaysia

Background: Oncoplastic breast conservation surgery (OBCS) is gradually becoming part of routine breast cancer management. OBCS is viewed as an extension of standard breast conservation surgery for resecting tumours safely without compromising cosmetic outcomes. Level 1 OBCS does not require specialised plastic surgery techniques and is used to prevent deformities from tumour excisions and involves simple reshaping. As we move towards globalising surgical services, we would like to provide these services to patients in the district regions of Sarawak, the largest state in Malaysia, as this would routinely require travelling to Sarawak's tertiary centre in Kuching. In view of this drawback, we have embarked on Level 1 oncoplastic services in a non-subspecialized hospital, with the objective of looking at the feasibility of providing Level 1 oncoplastic surgeries and assessing patients' satisfaction post surgery in a non-subspecialized environment.

Methods: This case series was performed in Bintulu Hospital, located in the central region of Sarawak. A total of 8 patients had their breast lumps removed using Level 1 oncoplastic techniques; round block or lateral mammoplasty. Post operatively, patients' satisfaction was assessed quantitatively using the Breast-Q questionnaire, Breast Conserving Therapy (BCT) Module.

Result: Overall, 5 tumours were benign in nature and 3 were malignant. The mean scores for psychosocial well-being, impact on work, physical well-being, satisfaction with breasts were 78.5 (± 15.2), 89.9 (± 9.5), 82.1 (± 13.2) and 73.8 (± 13.3) respectively. The median scores for satisfaction with surgeon and medical team were 100 each. Comparing with previous published data, our results showed small differences between the means of BREAST-Q domain scores (ranging between 2 and 9.6).

Conclusions: Level 1 oncoplastic surgery is feasible for malignant and large benign tumours in a non-subspecialized hospital with acceptable patient satisfaction post surgery. Prospective data collection will contribute to a generation of stronger evidence for implementing this practice in a non-subspecialized setting.

BENEFITS OF RUNNING A JOINT BREAST/PLASTICS CLINIC FOR PATIENTS ON A BREAST SURGICAL PATHWAY FOR BILATERAL MASTECTOMY CONSIDERING IMMEDIATE AUTOLOGOUS RECONSTRUCTION

Radhika Merh, Joanna Bovis, Francesca Ruccia, Maire-Caitlin Casey, Rachel O'connell, Katherine Krupa, Kieran Power

The Royal Marsden NHS Foundation Trust, Department of Surgery, United Kingdom

Background: Bilateral mastectomy either as a therapeutic or risk-reducing (RR) prophylactic option is offered to patients with breast cancer and/or genetic mutations including BRCA1 and 2. Women are offered immediate or delayed breast reconstructive options at the time of discussing mastectomy, including the gold standard option of autologous reconstruction; decision-making is supported by an established multi-disciplinary surgical pathway. In a high-volume tertiary breast unit in the United Kingdom (UK), we introduced a pilot joint breast/plastics (JBP) clinic to the pathway to improve quality of service, reduce clinic appointments and save costs.

Methods: A pilot monthly JBP clinic was introduced from July-December 2023 and outcomes were analyzed at 6 months. An excel spreadsheet was maintained of all patients reviewed in the JBP clinic, and total number of clinic appointments with breast and plastic surgical teams were recorded for patients in the 6-month period operated by the same surgical team in the unit who were seen in separate clinics versus JBP clinic. Cost analysis was also completed.

Result: A total of 7 patients were seen in the JBP clinic, and 5 patients were seen separately prior to being operated by the same breast/plastics surgical team. An average of 3 appointments per patient was saved by reviewing patients in the JBP clinic, leading to a total cost saving of US$6671.95 through saved clinic appointments in this period.

Conclusions: A JBP clinic is a useful and cost-effective adjunct to the pathway, making the process more streamlined and efficient, both for the patients and surgeons, with financial benefits to the unit. Surgical planning related decisions were able to be made cohesively between the breast and plastic surgical teams, integrating patient preferences, with continuity of care leading to improved patient experience. More detailed patient recorded outcome and experience measures will be analyzed for completion.

IMPLICATION OF INDOCYANINE GREEN IN CHEST WALL PERFORATOR FLAP RECONSTRUCTION

Sarun Thongvitokomarn, Sikrit Denariyakoon

King Chulalongkorn Memorial Hospital, Department of Queen Sirikit Centre for Breast Cancer, Thailand

Background: There are a few options for volume replacement after the breast conserving surgery. Most of the myocutaneous flaps result in limited muscle function and increase hospital stay. Chest wall perforator flap (CWPF) could be used as an alternative option. Although this has the advantage of a shorter hospital stay and muscle preservation, the dissection of perforator vessels are required. Using Indocyanine Green (ICG) intraoperatively can identify small perforator vessels. Additionally, perfusion time with ICG could potentially predict post-operative complications.

Methods: Twelve patients who had chest wall perforator flap reconstruction were retrospectively reviewed at Queen Sirikit Centre for Breast Cancer, King Chulalongkorn Memorial Hospital. Patients' baseline characteristics, type of chest wall perforator flap, number of perforators with and without ICG, complications, and perfusion time of ICG were reviewed.

Result: Five patients had anterior chest wall perforator flap reconstruction (AICAP). Six patients had lateral intercostal arterial perforator flap reconstruction (LICAP) with or without lateral thoracic arterial perforator flap reconstruction (LTAP). One patient had Thoracodorsal arterial perforator reconstruction (Tdap). Eleven of them had 3 ml of ICG injection during surgery. The perforator flap reconstructions were done for volume replacement after wide local excision or for correction deformity. Mean tumour size was 33 mm (16 mm–59 mm). Two patients had multifocality tumours. Most patients had 2 perforators identified. Two patients had an additional perforator identified by ICG. One patient had partial flap necrosis, which required further surgery. The perfusion time of ICG in the patient with flap necrosis was more than 4 minutes. Conversely, the other ten patients who had no complications had ICG perfusion time to the flap in less than 2 minutes (20–108 seconds).

Conclusions: Using ICG as an adjunctive tool in chest wall perforator flap reconstruction could help identify perforators. Delay in ICG perfusion time may predict the flap complication post-operatively.

EOSINOPHILIC DERMATOSES: CAUSE OF NON-INFECTIOUS ERYTHEMA AFTER VOLUME REPLACEMENT WITH DICED ACELLULAR DERMAL MATRIX IN BREAST CANCER

Byeongkwan Park[1], Seung Taek Lim[1], Young Jin Suh[1], Young Yi An[2], Hyunjoo Choi[3]

[1]The Catholic Univ. of Korea, St. Vincent's Hospital, Department of Surgery, Korea, [2]The Catholic Univ. of Korea, St. Vincent's Hospital, Department of Radiology, Korea, [3]The Catholic Univ. of Korea, St. Vincent's Hospital, Department of Pathology, Korea

Background: Non-infectious erythema, or red breast syndrome (RBS), has been observed on the skin where acellular dermal matrix was implanted, although the exact cause is yet to be determined.

Methods: 214 female patients underwent breast-conserving surgery (BCS) and volume replacement using diced acellular dermal matrix (dADM) for breast cancer between December 2017 and December 2018. After collecting and evaluating relevant clinical data, inflammation markers along with NK cell status presented by IFN-γ secretion assay were measured using ELISA.

Result: Nineteen patients (8.88%) presented with RBS after BCS and dADM use. A significant increase of platelet-to-lymphocyte ratio was noted in the non-RBS group ($p = 0.02$). Compared to the RBS group ($p = 0.042$), the WBC level of the non-RBS group showed significant decrease over time. Eosinophil counts increased significantly at follow-up, but went up higher in the RBS group. Multivariate analysis showed preoperative chemotherapy significantly increased the hazard of RBS (OR 3.274, $p = 0.047$ and OR 17.098, $p < 0.001$, respectively).

Conclusions: Though no causal relationship between RBS and immune status was proven, the results suggest an association between preoperative chemotherapy and RBS in addition to the possible role of eosinophilia leading to eosinophilic dermatoses, which warrants further exploration and elucidation.

ENDOSCOPIC NIPPLE-SPARING MASTECTOMY AND IMMEDIATE AUTOLOGOUS FLAP RECONSTRUCTION: A PRELIMINARY EXPERIENCE

Chee Meng Lee[1], Benita Kiat-Tee Tan[1], Allen Wei-Jiat Wong[2], Jia-Jun Feng[2], Yee Onn Kok[2], Sabrina Ngaserin[1]

[1]Sengkang General Hospital, Singapore, Department of Surgery, Singapore, [2]Sengkang General Hospital, Singapore, Department of Plastic Surgery, Singapore

Background: For breast cancer patients undergoing nipple-sparing mastectomy, the minimally invasive endoscopic approach confers the advantage of enhanced aesthetic outcomes, while respecting the principles of oncological safety. Autologous flap reconstruction can be challenging to perform via the small endoscopic total mastectomy (ETM) incision. We report our preliminary experience of ETM patients who received immediate autologous reconstruction.

Methods: We studied female patients with operable breast cancer who underwent ETM with immediate autologous reconstruction. Clinical-radiological-pathological characteristics, surgery, complications, and aesthetic outcomes were reviewed.

Result: 23 patients underwent ETM with immediate autologous reconstruction. Two were bilateral, one for bilateral cancer and one prophylactic, with a total of 25 procedures. Mean age was 51.2 years (range 35-67). 4% were stage 0, 24% stage I, 48% stage II, and 12% stage III cancers. Mean tumor size was 37.6 mm (range 1-88). 56.5% had preoperative neoadjuvant systemic therapy. Mean specimen weight was 409 g (range 72-800). Mean operative time was 156.2 minutes (range 78-275). 60% were performed via a 4 cm inferior mammary fold (IMF) incision and 36% were performed via a mid-axillary line incision. 32% underwent immediate deep inferior epigastric perforator (DIEP), 20% underwent MS-2 transverse rectus abdominis musculocutaneous (TRAM), 12% underwent MS-1 TRAM, 24% underwent pedicled TRAM, and 12% underwent latissimus dorsi flap reconstruction. Average ischemic time was 38.9 minutes (range 22-50). One patient required re-exploration of bilateral DIEP flaps and revision of the vascular anastomosis with successful flap salvage. Margins were clear, no nipple or skin necrosis, and no flap failure occurred. In the aesthetic outcome evaluation, 24% were deemed excellent, 68% good, 2% fair, and none were unsatisfactory. Average follow-up was 17.7 months (range 4-38).

Conclusions: ETM with immediate autologous reconstruction can be a safe means of treating patients who require mastectomy. Our preliminary experience suggests minimal complications and patients report positive "aesthetically scarless" outcomes.

TIMING AND RISKS OF AUTOLOGOUS FAT GRAFTING IN POSTOPERATIVE RECONSTRUCTION FOR BREAST CANCER PATIENTS - INSIGHTS FROM META-ANALYSIS

Honggang Guo, Jung Eun Choi

Yeungnam Univ. Medical Center, Department of Surgery, Korea

Background: Autologous fat grafting (AFG), known for its excellent plastic and expanding capacity, is becoming a postoperative reconstruction option for breast cancer patients. Despite its apparent aesthetic advantages, the oncological safety of AFG for postoperative reconstruction in breast cancer patients remains the subject of ongoing research. Recent clinical studies have suggested potential oncological risks associated with AFG. In this meta-analysis study, we evaluated the oncologic outcome and risk of AFG based on preclinical and clinical studies.

Methods: A literature search was performed in PubMed, Embase, and Cochrane Library until 1 February 2023, according to the PRISMA guidelines. The outcomes were the locoregional recurrence(LRR) rate in clinical studies and the various tumor cell changes in preclinical studies.

Result: Thirty-two clinical studies with 13,472 cases,12 animal studies, and eight cell studies were included. Meta-analysis of clinical studies showed that the LRR rate in the AFG group was not significantly different with that in the control group($p = 0.07$). However, a focused analysis on the timing of AFG surgery revealed that the shorter interval between AFG and tumor surgery was associated with a higher LRR rate (within 10 months: OR 1.81; 95% CI 1.07-3.07; $P = 0.03$). Meta-analysis of animal studies showed that increased content of Adipose-derived Stem Cells (ASCs) in AFG amplified tumor-promoting effects. Meta-analysis of cell studies showed that ASCs significantly enhanced the proliferation and migration of tumor cells rather than invasion.

Conclusions: This meta-analysis of all oncological data from the published literature demonstrated the timing of receiving AFG after tumor surgery may be a critical factor affecting its oncological safety, and ASCs may also play a role. Consequently, it is advisable to prolong the interval between surgeries, and ASCs should be used cautiously after tumor surgery.

SETTING UP A SUCCESSFUL AND SUSTAINABLE ROBOTIC BREAST SERVICE

Celene Ng, Wei Qi Leong, Priya Tiwari, Yan Lin Yap

National Univ. Hospital, Singapore, Department of Breast Surgery, Singapore

Background: The enhanced visualization and degree of movement, elimination of tremor and minimization of manpower has revolutionized minimally invasive surgery. Uptake in breast surgery has been hindered by the lack of long-term oncological outcomes coupled with higher costs and resource limitations. Overlying this is the nuance of the local healthcare system's renumeration. This prohibits many institutions from establishing successful programs.

Methods: We share our experience in setting up a robotic breast surgery service from ground up in our tertiary hospital based in Singapore, a co-payment healthcare system. The key components include establishing a multidisciplinary robotic team: business proposal and sustainability plan, training, implementation and launch, data collection and reflection of outcomes, continuation plan.

Result: We received console training by our local Da Vinci Xi distributer and completed at least 20 hours of simulation training. We attended a hands-on cadaver course with IERBS and engaged an expert proctor. We launched our service in December 2023 with Robotic week. To date (Feb 2024), we have performed 14 robotic mastectomies with a combination of implant and autologous reconstruction. We mounted the learning curve after our 5th case (bearing in mind that training above time saving was our priority in the first 5 cases) which is the first case we performed without our proctor. We attributed this to proper training both at the dry lab and simulation and proctorship. Patient reported outcomes (PROMs) and sensory testing were collected for all patients. No adverse outcomes have been reported.

Conclusions: Robotic breast surgery has been shown to improve PROMs. A team prepared to dedicate time and effort is required to overcome the administrative barriers associated with robotic surgery. However, with proper training, once buy-in is sought and protocol is established, costs and operative time can be kept low with comparable to superior outcomes for patients.

SURGICAL OUTCOME OF THE "WATER-DROP" SHAPE ADM WRAPPING METHOD IN PREPECTORAL BREAST RECONSTRUCTION

Eunhwa Park[1], Sue Yeon Kim[1], Jian Choi[2], Younjung Cha[1], Bohyun Hwang[1], Mijoo Choi[1]

[1]Dong-A Univ. Hospital, Department of Surgery, Korea, [2]Dong-A Univ. College of Medicine, Department of Surgery, Korea

Background: Implant-based breast reconstruction is the most commonly used reconstruction technique after mastectomy. Among them, prepectoral breast reconstruction was abandoned in the past due to various complications but has recently made a resurgence due to the development of acellular dermal matrix (ADM) and innovative techniques. There are various ADM wrapping methods, which may affect the cosmetic result. The aim of this study is to evaluate short-term complication rates of prepectoral reconstructions using an acellular dermal matrix and the result of ADM wrapping methods.

Methods: We retrospectively reviewed the data of 70 cases of prepectoral prosthetic breast reconstruction direct-to-implant with ADM following skin-sparing mastectomy between June 2019 and December 2023. The incidence of surgical complications, patient demographics, and satisfaction after reconstruction were studied. ADM wrapping methods were used "wonton" (full wrap using single piece ADM) until July 2022. After that, the "water-drop" wrapping is used to replace breast upper pole volume

Result: The median age was 49 years (26~64) and the median body mass index was 23.34(18.52~40.95). The Complication rate that occurred within 6 months after primary reconstruction was 27.14%. The most common cause of reoperation under local anesthesia was skin or areolar complex necrosis, accounting for 10 cases (14.28%). Major complication which required general anesthesia operation was 2 cases (2.86%). No remarkable difference in complication were noted in wonton and water-drop groups. Average length of follow-up was 24 months (range, 1.7 to 56.4 months). In the result after 6 months, patient satisfaction level after surgery was similar in the two groups, and the surgeon's satisfaction level was better in the water drop group.

Conclusions: The "water-drop" method in prepectoral breast reconstruction are comparable to the wonton method, with complication aspect. Also, this method can be recommendation because is maintains natural contour and has better satisfaction with the surgeon.

SEEKING PROGNOSTIC FEATURES OF LYMPHEDEMA FOR BREAST CANCER PATIENTS IN SAUDI ARABIA-, SINGLE INSTITUTE EXPERIENCE

Abdulaziz Alhamad[1], Esam Murshid[1], Mohammed Alfayez[1], Abdulrhman Aldakheal[2], Taleb Buhlaiqah[1]

[1]Prince sultan military medical city, Department of Radiation Oncology, Saudi Arabia, [2]King Faisal specialized hospital & research center, Department of Radiation Oncology, Saudi Arabia

Background: Giving that hypofractionated radiotherapy became standard either after lumpectomy or mastectomy we tried to identify any group of patients who might not be at risk of devloping lymphedema.

Methods: We conducted retrospective data for patients post adjuvant radiotherapy for breast cancer at Prince Sultan military medical city (PSMMC) from March 2016 till May 2023. To assess the risk of develop G2 & G3 Lymphedema we look at many variant include extra-capsular extension (-ECE), Lymphovascular invasion (LVI-) or Boost of irradiation (BST).

Result: 570 ladies with age (22-83) been included with average F/Up 726 days About (ECE) patients post Mastectomy +ve ECE 76.5% developed G0&G1 lymphedema and 23.5% developed G2&G3 Lymphedema compared to -ve ECE 86.5% developed G0&G1 Lymphedema compared 12.29% developed G2&G3 Lymphedema, *p* Value .0.426. while for lumpectomy +ve ECE 91.3% developed G0&G1 Lymphedema while 8.6% developed G2&G3 Lymphdema in contrary to -ve ECE 97.28% developed G0&G1 lymphedema and 2.71% developed G2&G3 Lymphedema, *p* value 0.44. For (LVI) patients post Mastectomy +ve LVI 84.1% developed G0&G1 Lymphedema and 15.9% developed G2&G3 Lymphedema compared to -ve LVI 85.2% developed G0&G1 Lymphedema compared 14.8% with *p* value .085. patients post lumpectomy +ve LVI 97.6% developed G0&G1 Lymphedema while 2.4% developed G2&G3 Lymphdema in contrary to -ve LVI 96.3% developed G0&G1 lymphedema and 3.8% developed G2&G3 Lymphedema, *p* value 0.7. For (BST) patients post Mastectomy +ve BST 80.5% developed G0&G1 Lymphedema and 19.5% developed G2&G3 Lymphedema compared to -ve BST 89.1% developed G0&G1 Lymphedema compared 10.9%, *p* value 0.9. patients post lumpectomy +ve BST 96.8% developed G0&G1 Lymphedema while 3.2% developed G2&G3 Lymphdema in contrary to -ve BST 96.6% developed G0&G1 lymphedema and 3.4% developed G2&G3 Lymphedema, *p* value 0.72.

Conclusions: Although there's some trend for increase Lymphedema. Still we couldn't find pathological features for developing Lymphedema.

DO WE UNDERESTIMATE THE LATE SKIN PIGMENTATION FOR CHEST WALL HYPOFRACTIONATED RADIOTHERAPY, SINGLE INSTITUTE EXPERIENCE IN SAUDI ARABIA

Abdulaziz Alhamad[1], Esam Murshid[1], Mohammed Alfayez[1], Abdulrhman Aldakheal[2]

[1]Prince sultan military medical city, Department of Radiation Oncology, Saudi Arabia, [2]King Faisal specialized hospital & research center, Department of Radiation Oncology, Saudi Arabia

Background: Giving the many randomized trials of hypofractionated radiotherapy after lumpectomy, however a lot of retrospective trials of hypofractionated radiotherapy for chest wall after mastectomy we are comparing the late skin toxicity (Pigmentation) for breast hypofractionated Vs Chest wall hypofractionated radiotherapy.

Methods: We conducted retrospective data for patients who underwent adjuvant hypofractionated radiotherapy 42.4Gy/16fx ± Boost 10Gy/4fx) for breast cancer patients at Prince Sultan military medical city (PSMMC) from March 2016 till June 2023. To assess the risk of develop G3 & G4 Pigmentation Vs G1 & G2 between breast Vs Chest wall hypofractionation.

Result: 586 ladies with age (22-83) with Breast Cancer been treated at (PSMMC) from March 2016 till May 2023 with average F/Up 435 days For patients who underwent lumpectomy (Breast) 231 patients developed G1 & G2 late skin pigmentation Vs 45 patients who developed G3&G4 late skin pigmentation with 16.3% of worse skin outcomes. For patients who underwent Mastectomy (Chest wall) 144 patients developed G1 & G2 late skin pigmentation Vs 113 patients who developed G3 & G4 late skin pigmentation with 43.9.% of worse skin outcomes. Comparing the two groups even there was trend toward worse skin (Pigmentation) for patients who underwent Mastectomy (Chest wall) hypofractionated with p value 0.094 however this difference still not significant

Conclusions: Even though there's some trend for worse late skin pigmentation for patients who underwent hypofractionated radiotherapy (42,4Gy/16fx) for chest wall compared to those who underwent lumpectomy only. This still need larger group, multicentric institutes as well to be more care full with using Boost for Chest wall hypofractionated radiotherapy.

EVALUATION OF COSMETIC OUTCOMES IN BREAST RECONSTRUCTION PATIENTS UNDERGOING RADIOTHERAPY USING AN ANOMALY GENERATIVE ADVERSARIAL NETWORK MODEL

Bum-Sup Jang, Choong-Won Lee, Kyung Hwan Shin, Ji Hyun Chang

Seoul National Univ. Hospital, Department of Radiation Oncology, Korea

Background: Considering the rising prevalence of breast reconstruction followed by radiotherapy (RT), evaluating the cosmetic impact of RT is crucial. Currently, there are limited tools for objectively assessing cosmetic outcomes in patients who have undergone reconstruction. Therefore, we validated the cosmetic outcome using a previously developed anomaly Generative Adversarial Network (GAN)-based model and evaluated its utility.

Methods: Between January 2016 and December 2020, we collected computed tomography (CT) images from 82 breast cancer patients who underwent immediate reconstruction surgery followed by radiotherapy. Among these patients, 38 received immediate implant insertion, while 44 underwent autologous breast reconstruction. Anomaly scores (AS) were estimated using an anomaly GAN model at pre-RT, 1st follow-up, 1-year (Post-1Y) and 2-year (Post-2Y) after RT. Subsequently, the scores were analyzed in a time-series manner, considering reconstruction types (implant versus autologous), RT techniques, and the incidence of major complications.

Result: The median age of the patients was 46 years (range 2962). The AS between Post-1Y and Post-2Y demonstrated a positive relationship (coefficient 0.515, $P < 0.001$). The AS was significantly associated with objective cosmetic indices, namely Breast Contour Difference ($P = 0.009$) and Breast Area Difference ($P = 0.004$), at both Post-1Y and Post-2Y. Subgroup analysis stratified by type of breast reconstruction revealed significantly higher AS values in patients who underwent prosthetic implant insertion compared to those with autologous reconstruction at all follow-up time points (1st follow-up, $P = 0.001$; Post-1Y, $P < 0.001$; and Post-2Y, $P < 0.001$). A threshold AS of ≥ 1.9 was associated with a 10% predicted risk of developing major complications.

Conclusions: The feasibility of an AS generated by a GAN model for predicting both cosmetic outcomes and the likelihood of complications following RT has been successfully validated. Further investigation involving a larger patient cohort is warranted.

PROGNOSTIC FACTORS AND THE EFFECT OF POSTMASTECTOMY RADIOTHERAPY IN T2N1 BREAST CANCER PATIENTS

Taeryool Koo

Hallym Univ. Sacred Heart Hospital, Department of Radiation Oncology, Korea

Background: We evaluated prognostic factors for pT2N1 breast cancer patients who underwent total mastectomy with or without postmastectomy radiotherapy (PMRT).

Methods: Medical records of 72 breast cancer patients receiving total mastectomy between 2008 and 2019 were reviewed. Of these patients, PMRT was performed in 36 patients (50%). Locoregional and distant failures, malignancies in contralateral breast or other sites, and death were defined as invasive diseases.

Result: The median follow-up time was 87.4 months (range, 13.8 - 186.3 months). At 5 years, the overall survival (OS) and invasive disease-free survival (iDSFS) rates were 89.2% and 72.0%, respectively. The larger tumor size (> 3.5 cm) was associated with worse OS (hazard ratio [HR] 3.82; 95% confidence interval [CI] 1.14 - 12.77) and iDSFS (HR 2.80; 95% CI 1.13 - 6.92). Also, histologic grade (HG) was a prognostic factor for OS (HR 5.13; 95% CI 1.53 - 17.17) and iDSFS (HR 4.29; 95% CI 1.82 - 10.09). PMRT was not associated with OS and iDSFS. However, the prognostic value of tumor size and HG was diminished by PMRT. In the patients receiving PMRT, there was no significant difference in OS and iDFS according to tumor size or HG.

Conclusions: In the patients with pT2N1 breast cancer, the larger tumor size (> 3.5 cm) and HG 3 were associated with poor survival. For these patients, the addition of PMRT may be considered to overcome the poor prognosis, although PMRT is not mandated for pT2N1 breast cancer.

QUALITY ASSURANCE DUMMY RUN FOR TAILORED RADIOTHERAPY ACCORDING TO THE RESPONSE AFTER NEOADJUVANT CHEMOTHERAPY FOLLOWED BY SURGERY IN LOCALLY ADVANCED BREAST CANCER: RTANAC PHASE II STUDY

Yeon-Joo Kim[1], Wonhyeong Lee[1,8], Jin Hee Kim[2], Sung-Ja Ahn[3], Jong Hoon Lee[4], Younghee Park[5], Jin Hwa Choi[6], Jin-Ho Song[7], Yoonsun Chung[8]

[1]National Cancer Center, Department of Radiation Oncology, Korea, [2]Keimyung Univ. School of Medicine, Department of Radiation Oncology, Korea, [3]Chonnam National Univ. Medical School, Department of Radiation Oncology, Korea, [4]St. Vincent's Hospital, The Catholic Univ. of Korea College of Medicine, Department of Radiation Oncology, Korea, [5]Ewha Woman's Univ. College of Medicine, Department of Radiation Oncology, Korea, [6]Chung-Ang Univ. College of Medicine, Department of Radiation Oncology, Korea, [7]Seoul St. Mary's Hospital, The Catholic Univ. of Korea College of Medicine, Department of Radiation Oncology, Korea, [8]Hanyang Univ., Department of Nuclear Engineering, Korea

Background: The RTaNAC study (KCT0009061) evaluates the safety and efficacy of tailored radiotherapy according to the response after neoadjuvant chemotherapy followed by surgery in locally advanced breast cancer patients. Dosimetric variations in radiotherapy (RT) plans among participating institutions can impact clinical outcomes. This study aimed to develop an RT plan protocol to minimize inter-institutional dosimetric variations.

Methods: Seven institutions developed RT plans for three clinical scenarios using CT images: (1) no lymph node (LN) boost, (2) LN boost up to 60 Gy3.5 EQD2 (2 Gy equivalent dose with $\alpha/\beta = 3.5$ Gy), and (3) LN boost up to 66 Gy3.5 EQD2. In the first step, RT plans were created according to each institution's policies. In the second step, the central institution provided additional information (AI auto-contours, organ-at-risk constraints, target area definition, LN boost target volume) for incorporation into RT plans. Dose-volume histograms were analyzed based on a reference structure set.

Result: In the first step, variations in dose distribution were observed among institutions. The second step demonstrated a decrease in dosimetric variation among institutions in breast, axilla levels I, II, III and interpectoral LN area. Specifically, for axilla level III in scenario (2), the D95% (%) (minimum dose, relative to prescribed dose, delivered to 95% volume of the structure) range was 12%-126% in the first step and narrowed to 104%-112% in the second step. Fleiss's kappa values assessing inter-institutional agreement for the 95% isodose lines for LN boost in scenario (2) improved from 0.355 in the first step to 0.732 in the second step.

Conclusions: This study demonstrates that variations in dose distribution among institutions can be decreased by integrating additional information. The institutions reached a consensus on the RT plan protocol through this dummy run study, providing a foundation for expanding the RTaNAC study into a multi-institutional investigation.

COMPARISON OF PARTIAL IRRADIATION TECHNIQUES IN BREAST CANCER: INTRAOPERATIVE RADIOTHERAPY VS EXTERNAL PARTIAL IRRADIATION. STUDY OF LONG-TERM EFFECTIVENESS, COMPLICATIONS, AND QUALITY OF LIFE

Marta Jimenez-Gomez[1,2], Anna Isabel Navarro[2], Ana Martinez-Sola[2], Javier Sanz[3], Mar Vernet-Tomas[2], Pau Nicolau-Batalla[2], Paula Maso-Marrodan[2], Manuel Algara[3], Nuria Argudo-Aguirre[2]

[1]European Institute of Oncology, Department of Surgery, Spain, [2]Hospital del Mar-Barcelona. Breast Surgery Unit, Barcelona., Department of Surgery, Spain, [3]Hospital del Mar-Barcelona. Radiation Oncology Unit, Barcelona., Department of Radiation Oncology, Spain

Background: Breast cancer represents 11.6% of all neoplasms worldwide. The results of randomized studies have shown that conservative surgery and radiotherapy are as effective as mastectomy in terms of local control, and conservative treatment can offer a better survival rate. Whole breast irradiation (WBI) reduces ipsilateral recurrence but can produce skin toxicity and fibrosis. Accelerated partial breast irradiation (APBI) focuses irradiation only to the tumor bed. Many APBI techniques have been developed but there are no comparative studies evaluating exclusive intraoperative irradiation (IORT) vs exclusive external partial breast irradiation (EPBI). The objective of this study is to improve our knowledge about the efficacy and safety of the two accelerated APBI techniques used in our center.

Methods: Observational comparative ambispective including patients who underwent breast cancer surgery in our hospital and met the ASTRO criteria for low-risk, receiving exclusive IORT or EPBI treatment. The primary outcome was acute and chronic toxicity and secondary outcome was patient's quality of life and aesthetic results. The minimum follow-up was 2 years since local treatment. This included a questionnaire BreastQ, symptoms, photographs to assess aesthetics with Breast Cancer Conservative Treatment cosmetic results software (BCCT. core) and physical exam to detect chronic toxicity.

Result: 42 patients who met ASTRO criteria were studied: 17 EPBI and 25 IORT. EPBI was associated with a nearly sevenfold increase in the risk of acute toxicity (OR 6.92; CI 1.30-6.8; $p < 0.05$) and an eight-fold increased risk of chronic toxicity (OR 8.25; CI 1.77-38.4, $p < 0.01$). IORT reported less intense symptoms and better quality of life scores and aesthetic outcomes.

Conclusions: Our study suggests the superiority of IORT over EPBI, since it offers a lower incidence of toxicity clinically and statistically significant and provide better outcomes in terms of symptoms, quality of life and asthetics. Further studies are needed to expand upon this knowledge that our research shows.

LOCOREGIONAL RECURRENCE IN ADENOID CYSTIC CARCINOMA OF THE BREAST: A RETROSPECTIVE, MULTICENTER STUDY (KROG 22-14)

Sangmin Lee[1], Bum-Sup Jang[1], Won Park[2], Yong Bae Kim[3], Jin Ho Song[4], Jin Hee Kim[5], Tae Hyun Kim[6], In Ah Kim[7], Jong Hoon Lee[8], Sung-Ja Ahn[9], Kyubo Kim[10], Ah Ram Chang[11], Jeanny Kwon[12], Hae Jin Park[13], Kyung Hwan Shin[1]

[1]Seoul National Univ. College of Medicine, Department of Radiation Oncology, Korea, [2]Samsung Medical Center, Department of Radiation Oncology, Korea, [3]Yonsei Cancer Center, Department of Radiation Oncology, Korea, [4]The Catholic Univ. of Korea, Seoul St. Mary's Hospital, Department of Radiation Oncology, Korea, [5]Keimyung Univ. Dongsan Medical Center, Department of Radiation Oncology, Korea, [6]National Cancer Center, Department of Radiation Oncology, Korea, [7]Seoul National Univ. Bundang Hospital, Department of Radiation Oncology, Korea, [8]The Catholic Univ. of Korea, Eunpyeong St. Mary's Hospital, Department of Radiation Oncology, Korea, [9]Chonnam National Univ. Medical School, Department of Radiation Oncology, Korea, [10]Ewha Womans Univ. Mokdong Hospital, Department of Radiation Oncology, Korea, [11]Soonchunhyang Univ. Hospital Seoul, Department of Radiation Oncology, Korea, [12]Chungnam National Univ. Hospital, Department of Radiation Oncology, Korea, [13]Hanyang Univ. Seoul Hospital, Department of Radiation Oncology, Korea

Background: Adenoid cystic carcinoma (ACC) of the breast is an uncommon malignant tumor, and there is limited clinical data. This study aims to evaluate the treatment approaches and locoregional patterns for ACC in the breast.

Methods: A total of 93 patients diagnosed with primary ACC in the breast between 1992 and 2022 were collected from multi-institutions. All patients underwent surgical resection, including breast-conserving surgery (BCS) or total mastectomy (TM). The recurrence patterns and locoregional recurrence-free survival (LRFS) were assessed.

Result: Seventy-five patients (80.7%) underwent BCS, and 71 of them (94.7%) received adjuvant radiation therapy (RT). Eighteen patients (19.3%) underwent TM, with 5 of them (27.8%) also receiving adjuvant RT. With a median follow-up of 50 months, the LRFS rate was 84.2% at 5 years. Local recurrence (LR) was observed in 5 patients (5.4%) and 4 cases (80%) of the LR occurred in the tumor bed. Three of LR (60%) had a history of BCS followed by RT, meanwhile, two of LR (40%) had a history of mastectomy. Regional recurrence occurred in 2 patients (2.2%), and both cases had a history of RT with (N = 1) and without (N = 1) irradiation of the regional lymph nodes. RT in BCS group ($p = 0.96$), partial breast irradiation ($p = 0.35$) and BCS ($p = 0.96$) had no significant association with LRFS.

Conclusions: BCS followed by postoperative radiotherapy (PORT) was the predominant treatment approach for ACC of the breast and local recurrence mostly occurred in the tumor bed. The findings of this study suggest that partial breast irradiation might be considered for post-operative RT in primary breast ACC.

EXCLUSION OF AXILLARY LEVEL 1 FROM THE REGIONAL NODAL IRRADIATION IS NOT ASSOCIATED WITH AN INCREASED RISK OF AXILLARY RECURRENCE IN PATIENTS WITH BREAST CANCER

Hwa Kyung Byun[1], Hyung Seok Park[2], Seo Hee Choi[3], Seho Park[2], Jee Suk Chang[3], Ik Jae Lee[3], Yong Bae Kim[3]

[1]Yongin Severance Hospital, Department of Radiation Oncology, Korea, [2]Yonsei Cancer Center, Department of Surgery, Korea, [3]Yonsei Cancer Center, Department of Radiation Oncology, Korea

Background: The optimal extent of regional nodal irradiation (RNI) in postoperative radiotherapy for breast cancer, particularly regarding axillary level 1 (AXL1), remains uncertain. This study aims to compare clinical outcomes between extensive RNI including the entire axilla and limited RNI excluding AXL1 in patients with breast cancer.

Methods: A retrospective analysis included 1,780 women with non-metastatic unilateral breast cancer who underwent RNI during postoperative radiotherapy between 2007 and 2018. Patients were classified into extensive and limited RNI groups based on AXL1 inclusion in the radiation field. Propensity score matching yielded a cohort of 1,020 patients. Non-inferiority of limited RNI compared to extensive RNI was assessed with a defined margin of ≤ 2% in the 5-year axillary recurrence rate.

Result: After a median follow-up of 67.9 months, the 5-year axillary recurrence rates were similar between extensive and limited RNI groups (1.2% vs. 1.6%; Plog-rank = 0.790). Limited RNI demonstrated non-inferiority with a 0.4% difference (95% confidence interval, -1.1%1.9%; Pnon-inferiority = 0.018). Disease-free survival (87.9% vs. 91.5%; Plog-rank = 0.122) and overall survival (94.1% vs. 96.9%; Plog-rank = 0.260) at 5 years were not significantly different between extensive and limited RNI groups. Multivariable analysis revealed that lymphovascular invasion (hazard ratio [HR], 6.23; $P = 0.009$) and negative hormone receptor status (HR, 10.46; $P = 0.003$) were associated with a higher risk of axillary recurrence, while limited RNI showed no significant association (HR, 1.28; $P = 0.710$). Subgroup analysis demonstrated that extensive RNI did not improve axillary control in patients with lymphovascular invasion, hormone receptor negativity, high N stage, or a small number of nodes removed.

Conclusions: Limited RNI, excluding AXL1 from the radiation field, demonstrated axillary recurrence rates comparable to those of extensive RNI in patients with breast cancer. The study suggests that extensive RNI may not provide additional therapeutic benefits, while limited RNI appears to be a valid option for regional control.

INFLUENCE OF RADIOTHERAPY AND FRACTIONATION ON FAT NECROSIS IN BREAST CANCER PATIENTS UNDERGOING OMENTAL FLAP RECONSTRUCTION

Jung Bin Park[1,2], Bum-Sup Jang[1], Kyubo Kim[3], Eun-Kyu Kim[4], Kyung-Hwak Yoon[4], Hyoung Won Koh[4], In Ah Kim[2,3]

[1]Seoul National Univ. Hospital, Department of Radiation Oncology, Korea, [2]Seoul National Univ. College of Medicine, Department of Radiation Oncology, Korea, [3]Seoul National Univ. Bundang Hospital, Department of Radiation Oncology, Korea, [4]Seoul National Univ. Bundang Hospital, Department of Surgery, Korea

Background: Omental flap (OM) is a novel option for autologous breast reconstruction, with advantages of facile malleability and abundant vascularity, minimizing scars at donor sites. This study evaluated the impact of postoperative radiotherapy (RT) on in-breast complications following immediate OM-based reconstruction for breast cancer patients.

Methods: A total of 208 patients with OM-based reconstruction were evaluated; 83 without RT and 125 with RT. The primary endpoint included the incidence of fat necrosis. A grading system for fat necrosis was established: grade 1, asymptomatic with radiologic findings only; grade 2, palpable or visible changes; grade 3, symptomatic necrosis requiring medical intervention; and grade 4, severe necrosis requiring surgical intervention or hospitalization.

Result: With a median follow-up of 5.2 years, 31 fat necrosis events were reported: 10 grade 1, 7 grade 2, 9 grade 3, 5 grade 4 events. The 5-year fat necrosis rates were 8.9% and 20.6% in patients without and with RT, respectively ($p = 0.04$). Univariate analysis revealed RT, age >45, BMI >23, invasive carcinoma size >3.5 cm, harvested omental volume >150cc as significant risk factors of fat necrosis. However, in multivariate analysis, RT was not significantly associated with fat necrosis ($p = 0.11$). For grade 3+ events, the 5-yr rates were 2.4% and 10.0% in patients without and with RT, respectively ($p = 0.06$). Among patients who received RT, the rates of fat necrosis exhibited no significant differences between conventional and hypofractionation regimens for all grades (24.1% vs. 18.6%; $p = 0.50$) and grade 3+ (10.7% vs. 10.9%; $p = 0.86$).

Conclusions: Postoperative RT was associated with a higher rate of fat necrosis without statistical significance after OM-based reconstruction. RT fractionation appears to affect no discernible differences. Further analyses are needed to investigate the optimal RT technique for OM-based reconstruction.

THE CORRELATION BETWEEN THE DELTA OF NEUTROPHIL-TO-LYMPHOCYTE RATIO WITH CLINICAL RESPONSE IN LOCALLY ADVANCED BREAST CANCER RECEIVING NEOADJUVANT CHEMOTHERAPY

Asdi Wihandono, Hadian Rahman, Dwi Hari Susilo, Iskandar Ali

Medical Faculty Airlangga Univ., dr. Soetomo General Hospital Surabaya, Department of Surgical Oncology, Indonesia

Background: Neutrophil-to-lymphocyte ratio is a predictive marker that can be used to predict chemotherapy response in breast cancer patients. The difference in the neutrophil-to-lymphocyte ratio (NLR) before and after neoadjuvant chemotherapy (NACT), commonly called delta NLR, is thought to be a better predictive factor for clinical response, compared to pre-chemotherapy or post-chemotherapy NLR only.

Methods: We retrospectively included 130 locally advanced breast cancer (LABC) patients who received anthracycline-based NACT at dr. Soetomo General Hospital Surabaya from January 2017 to December 2021. The correlation between NLR scores (pre-chemotherapy, post-chemotherapy, and delta NLR) and other common predictive factors with clinical response was analyzed using the Chi-square test for bivariate analysis and logistic regression model for multivariate analysis.

Result: Of 130 patients included, 91 (70.0%) responded either complete or partial to NACT. Bivariate analysis showed a significant relationship between delta NLR and chemotherapy response ($p = 0.002$). Patients with delta NLR < 0 achieved a significantly higher rate of clinical response to NACT compared to those with delta NLR ≥ 0 in multivariate analysis (OR 4.67, 95% CI: 1.69–12.85, $p = 0.003$).

Conclusions: This study shows that patients with LABC who have a delta NLR < 0 respond clinically to anthracycline-based NACT four-times better than those with a delta NLR ≥ 0. This study demonstrated that delta NLR had predictive significance for clinical outcomes. Routine NLR evaluation may be a simple and cost-effective way to predict clinical response in BC patients receiving NACT.

ASSOCIATIONS OF HEMATOLOGIC PARAMETERS AND IMMUNE-MEDIATED ADVERSE EVENTS WITH PATHOLOGIC COMPLETE RESPONSE IN TNBC PATIENTS TREATED WITH NEOADJUVANT CHEMOTHERAPY COMBINATION WITH PEMBROLIZUMAB

Hoshie Hirai[1], Akihiko Shimomura[2], Kazuki Hashimoto[1], Yayoi Honda[1], Dai Kitagawa[1], Chikako Shimizu[2]

[1]National Center for Global Health and Medicine, Department of Surgery, Japan, [2]National Center for Global Health and Medicine, Department of Medical Oncology, Japan

Background: Pembrolizumab with neoadjuvant chemotherapy (NAC) is established for treating triple-negative breast cancer (TNBC), showing improved pathologic complete response (pCR) and event-free survival (EFS) in the KEYNOTE-522 study. Although immune-mediated adverse events (imAE) are rare, their correlation with pCR remains unexplored.

Methods: We retrospectively analyzed TNBC patients treated with NAC and pembrolizumab at our institute, focusing on pCR rates, imAEs, and hematologic parameters including absolute lymphocyte count (ALC), neutrophil-to-lymphocyte ratio (NLR), and platelet-to-lymphocyte ratio (PLR), using median values as cutoffs. Fisher's exact test determined the correlation between these parameters and pCR.

Result: From September 2022 to December 2023, 15 female patients with stage II-III TNBC, median age 46, were treated. pCR was achieved by 53%, with the same percentage developing imAEs, and 27% experiencing grade 3 or higher. Patients with pCR had a significantly higher median ALC (1.65×10^9/L) than non-pCR ($P = 0.041$). No correlation was found between NLR and pCR ($P = 1.0$). A lower PLR was noted in the pCR group, but without statistical significance ($P = 0.619$). Seventy-five percent of patients with pCR experienced imAEs of varying grades.

Conclusions: Higher ALC before treatment correlated with pCR, and a trend towards lower PLR in the pCR group was observed, while NLR showed no association. These prognostic parameters suggest a link between immune profiles and treatment outcomes. However, due to the small sample size, further research with a larger cohort and extended follow-up is essential for definitive conclusions.

A STUDY OF BREAST CANCER CASES IN ELDERLY PATIENTS OVER 80 YEARS OF AGE IN OUR HOSPITAL

Mai Kitazawa[1], Yoshihiro Kawaguchi[1], Bei Wang[1], Shigeyuki Sugie[2], Rino Matsunami[3], Saeka Mori[3]

[1]Asahi Univ. Hospital, Department of Surgery, Japan, [2]Asahi Univ. Hospital, Department of Pathology, Japan, [3]Asahi Univ. Hospital, Department of Radiology Department, Japan

Background: The number of elderly patients with breast cancer has increased in recent years with the growth of the elderly population, and many elderly breast cancer patients over the age of 80 are being seen. Elderly patients often have comorbidities, making standard treatment difficult in many cases. We reviewed breast cancer patients over the age of 80 in our hospital.

Methods: Sixty-nine patients aged 80 years or older who were diagnosed with breast cancer in our hospital between January 2014 and December 2022 were studied.

Result: The median age was 84.4 years (80-96 years). 41 (59.4%) patients were diagnosed with subjective symptoms, 24 (34.8%) were diagnosed in health-related facilities, and 4 (5.8%) were diagnosed during cancer screening or physical examinations. Eight patients (12.3%) had dementia and 7 (10.8%) had multiple cancers at the time of initial diagnosis. Four patients (6.2%) lived alone. Only 8 patients had noninvasive cancer, the rest had invasive cancer (61 patients). The subtypes were luminal type (53 cases, 76.8%), pure HER2 type (4 cases, 2.9%), luminal/HER type (5 cases, 7.2%), and basal type (9 cases, 13.0%). Stage 0 was 8 (11.6%), stage I 24 (34.8%), stage II 30 (43.5%), stage III 5 (7.2%), and stage IV 2 (2.9%). Initial treatment consisted of surgery in 58 patients (84.1%), endocrine therapy in 8 patients (11.6%), neoadjuvant chemotherapy in 2 patients (2.9%), and no treatment in 1 patient (1.4%). Fourteen patients underwent partial mastectomy, 39 patients underwent mastectomy, and 7 patients underwent tumor resection, some of which was performed under local anesthesia. No major postoperative complications occurred. Postoperative adjuvant therapy included weekly paclitaxel, trastuzumab or trastuzumab/pertuzumab therapy, endocrine therapy, and oral 5-FU.

Conclusions: Patients undergoing surgery were treated considering their comorbidities, and no serious complications were observed. Postoperative adjuvant therapy was performed with oral agents with minimal side effects.

VALIDATION AND ADAPTATION OF THE UNIVERSITY OF TENNESSEE MEDICAL CENTER ONCOTYPE DX NOMOGRAM FOR BREAST CANCER IN A KOREAN POPULATION

Joo Heung Kim[1], Nak-Hoon Son[2], Suk Jun Lee[1], Seho Park[1]

[1]Yonsei Univ. College of Medicine, Department of Breast Surgery, Korea, [2]Keimyung Univ. School of Medicine, Department of Statistics, Korea

Background: Breast cancer remains the most prevalent malignancy among women globally, with diverse subtypes necessitating tailored treatment approaches. The Oncotype DX assay, pivotal for hormone receptor-positive, HER2-negative breast cancers, poses challenges due to its cost and accessibility. The University of Tennessee Medical Center utilized data from a substantial cohort of 84,339 patients within the National Cancer Data Base to create a predictive nomogram. Its effectiveness, however, in populations outside the Western context, like that of Korea, has not been previously verified.

Methods: Our multicenter retrospective study encompassed 1,517 Korean breast cancer patients from two university hospitals, treated from March 2020 to December 2022. We evaluated the American nomogram's performance in predicting Oncotype DX scores within this cohort, analyzing its predictive accuracy against actual test results.

Result: The nomogram exhibited a specificity of 98.69% and an area under the receiver operating characteristic curve (AUC) of 0.76, indicating high predictive value for identifying low-risk patients. Positive and negative predictive values were 60.47% and 87.04%, respectively, underscoring the nomogram's reliability in predicting low-risk Oncotype DX outcomes.

Conclusions: Although the nomogram slightly underestimates risk in the Korean population, its high accuracy in identifying low-risk patients suggests a viable alternative to Oncotype DX testing, particularly in settings where the test is not readily available or economically feasible. Further research is needed to refine this tool, ensuring broader applicability and precision across diverse populations.

WEEKLY CISPLATIN AND 24-HOUR-INFUSION OF HIGH-DOSE 5-FLUOROURACIL AND LEUCOVORIN (P-HDFL): AN EFFECTIVE TREATMENT FOR METASTATIC BREAST CANCER WITH HYPERBILIRUBINEMIA SECONDARY TO LIVER METASTASES

Po-Hsiang Huang[1], I-Chun Chen[2], Wei-Wu Chen[1], Wei-Li Ma[1], Dwan-Ying Chang[1], Ming-Han Yang[1], Ching-Hung Lin[2], Yen-Shen Lu[1]

[1]National Taiwan Univ. Hospital, Department of Medical Oncology, Taiwan, [2]National Taiwan Univ. Cancer Center, Department of Medical Oncology, Taiwan

Background: Available treatment options for breast cancer with non-obstructive hyperbilirubinemia secondary to liver metastases are limited. We evaluated the efficacy of weekly infusional cisplatin and high-dose 5-fluorouracil/leucovorin (P-HDFL), a non-hepatic metabolized regimen, in this challenging scenario.

Methods: We performed a retrospective review of breast cancer patients with liver metastases and serum bilirubin levels greater than 3 mg/dL who received P-HDFL treatment in our hospital from 2008 to 2018. Biochemical response was defined as the complete resolution of hyperbilirubinemia. 6-month non-treatment-failure rate (treatment failure defined as treatment discontinuation for any reason, including cancer progression, toxicity, or death) and overall survival (OS) were calculated.

Result: A total of 30 metastatic breast cancer patients with liver metastases and serum bilirubin levels greater than 3 mg/dL were treated. 14 patients (46.7%) had hormone receptor-positive disease, and 12 patients (40.0%) had HER2-positive disease. 13 patients (43.3%) received P-HDFL as first or second-line chemotherapy in the metastatic setting, while the remainder of patients were heavily pretreated. The majority (83.3%) of HER2-positive patients also received trastuzumab concurrently. Among the 18 HER2-negative patients, 5 (27.8%) received bevacizumab concurrently. A total of 17 patients (56.7%) had a biochemical response. The 6-month non-treatment-failure rate was 16.7%. The median OS was 7.9 months. Median OS was 16.8 months in patients with biochemical response and 0.7 months in patients without biochemical response (hazard ratio 0.05; 95% CI, 0.01-0.18, $p < 0.0001$). Among the 21 patients with serum bilirubin levels greater than 6 mg/dL, 11 patients (52.4%) had a biochemical response. The 6-month non-treatment-failure rate was 19.0%. The median OS was 7.9 months. Median OS was 16.8 months in patients with biochemical response and 0.7 months in patients without biochemical response (hazard ratio 0.02; 95% CI, 0.004-0.11, $p < 0.0001$).

Conclusions: P-HDFL is a safe and effective regimen for breast cancer patients with hyperbilirubinemia secondary to liver metastases.

A HIGHER RATE OF COMPLETE CELL CYCLE ARREST IN PREMENOPAUSAL PATIENTS COMPARED TO POSTMENOPAUSAL PATIENTS AMONG THOSE WITH HR+HER2- BREAST CANCER RECEIVING NEOADJUVANT CHEMOTHERAPY

Sohyun Moon[1,2], Yoonwon Kook[1,2], Seung Ho Baek[1,2], Seung Eun Lee[1,2], Jung Hyun Kim[1,2], Min Ji Kim[1,2], Soong June Bae[1,2], Joon Jeong[1,2], Sae Byul Lee[3], Sung Gwe Ahn[1,2]

[1]Gangnam Severance Hospital, Department of Surgery, Korea, [2]Gangnam Severance Hospital, Department of Precision Medicine, Korea, [3]ASAN Medical Center, Department of Surgery, Korea

Background: Reduction of Ki67 expression in response to neoadjuvant endocrine therapy is associated with improved survival in HR+HER2- breast cancer. Additionally, the anti-estrogenic effect of chemotherapy-induced amenorrhea may impact the level of Ki67 in premenopausal women. We compared the rate of complete cell-cycle arrest (CCCA) according to age group and evaluated the prognostic effect of CCCA in each age group among HR+HER2- breast cancer patients treated with neoadjuvant chemotherapy (NAC).

Methods: Patients with HR+HER2- breast cancer who underwent NAC in Gangnam Severance Hospital and Asan Medical Center between January 2007 and June 2021 were identified retrospectively. We included patients with a Ki67 value in the surgical specimen showing residual invasive cancer. CCCA was defined as Ki67 less than or equal to 2.7%. The rate of CCCA was compared between patients aged under 45 and those over 55.

Result: In 918 patients with residual invasive breast cancer after NAC, the CCCA rate was 60.1% (552/918). The rate was 66.8% (250/374) in younger patients (age ≤ 45), whereas it was 40.1% (81/202) in older patients (age ≥ 55) ($p < 0.001$). Multivariable analysis demonstrated that younger age was a significant factor, with an odds ratio of 0.361 (95% CI, 0.265-0.493, $p < 0.001$). In both younger and older subgroups, the presence of CCCA after NAC was associated with prolonged RFS.

Conclusions: We suggest that the anti-estrogenic effect of chemotherapy-induced temporary suppression of ovarian function might contribute to the higher rate of CCCA led by chemotherapy in the younger age group among patients with HR+HER2- breast cancer treated with NAC.

PROGNOSTIC FACTORS AND BENEFIT POPULATIONS OF OVARIAN FUNCTION SUPPRESSION IN PREMENOPAUSAL PATIENTS WITH HR+/HER2+ EARLY-STAGE BREAST CANCER WHO RECEIVED TRASTUZUMAB: EVIDENCE FROM A REAL-WORLD STUDY

Jie Ju[1], Peng Yuan[2]

[1]Cancer Hospital, Chinese Academy of Medical Sciences, Department of Medical Oncology, China, [2]Cancer Hospital, Chinese Academy of Medical Sciences, Department of Vip Medical Services, China

Background: Hormone receptor-positive (HR+)/human epidermal growth factor receptor 2-positive (HER2+) breast cancer exhibits significant heterogeneity, and it is of great interest whether patients with premenopausal HR+/HER2+ breast cancer treated with trastuzumab can similarly benefit from ovarian function suppression (OFS) therapy in the same way as HR+/HER2- breast cancer. We conducted a real-world study in this population to identify who would derive significant benefits from the addition of OSF and the clinicopathological factors with potential prognostic value.

Methods: 253 premenopausal patients with HR+/HER2+ early-stage breast cancer who received trastuzumab from October 2009 to October 2018 were retrospectively included. Kaplan-Meier method was used for survival analysis, while Log-rank test was used to compare the survival rates. Univariate and multifactor Cox regression analysis was performed to analyze the independent risk factors affecting invasive disease-free survival (IDFS).

Result: After a median follow-up of 98.50 months, compared with tamoxifen/toremifene alone, tamoxifen//toremifene/aromatase inhibitors plus OFS demonstrated significant benefits in the overall study population (HR = 0.289, 95% CI: 0.100-0.835, $P = 0.022$, 8-year IDFS rate: 90.78% vs. 95.54%), especially in the lymph node-positive subgroup and age ≤ 40 years subgroup. Age ≤ 40 years, histological grade > 2, lymph node involvement, progesterone receptor (PR) ≤ 50%, and tamoxifen alone were independent prognostic factors.

Conclusions: For premenopausal HR+ breast cancer patients, HER2 positivity alone is an indication for the addition of OFS in adjuvant endocrine therapy. Age, histologic grade, lymph node status, the expression of PR, and whether to receive OFS treatment were independent prognostic factors in this population.

EXPLORING THE EFFICACY OF EXTENDED ENDOCRINE THERAPY IN PURE MUCINOUS BREAST CARCINOMA

Young-Won Lee, Tae-Kyung Yoo, Sae Byul Lee, Jisun Kim, Il Yong Chung, Beom Seok Ko, Hee Jeong Kim, Byung Ho Son, Jong Won Lee

ASAN Medical Center, Department of Breast Surgery, Korea

Background: Pure mucinous breast carcinoma (PMBC) typically undergoes a 5-year endocrine therapy regimen due to favorable histology, but therapy may extend to 10 years to prevent late recurrence. This study aims to compare the efficacy of 5-year versus 10-year endocrine therapy in PMBC patients, emphasizing late recurrence, and to identify factors influencing disease-free survival for personalized treatment insights.

Methods: Retrospective analysis included 489 PMBC patients who underwent breast cancer surgery between July 1996 to December 2014 at Asan Medical Center. Exclusion criteria included stage IV cases, ductal carcinoma in situ, history of breast cancer, mixed histology, and a duration of endocrine therapy lesser than 1 year. Recurrence was categorized into early and late, defined by recurrence before and after 5 years from diagnosis.

Result: During a median follow-up duration of 135 months, early recurrence affected 73 patients (15%), late recurrence after 5 years impacted 191 patients (39%), and 225 patients (46%) had no recurrence. Factors correlating with late recurrence included higher histologic grade, axillary lymph node metastasis, and adjuvant chemotherapy-equivalent to early recurrence risk factors. Among 5-year disease-free survivors, endocrine therapy duration didn't impact 10-year disease-free survival rate (5-year endocrine therapy 94.4% vs. 10-year endocrine therapy 92.1%, $p = 0.504$). Subgroup analysis in high-risk patients (T2 or higher T stage, nodal involvement, or high histologic grade) also revealed no survival difference based on endocrine therapy duration.

Conclusions: Extended endocrine therapy showed no significant reduction in late recurrence in PMBC, even in high-risk patients. Risk factors for early and late recurrence aligned with established breast cancer prognostic indicators. Consistently favorable long-term survival rates highlight the importance of personalized treatment strategies.

VALIDATION OF BREAST CANCER RESPONSE AXILLA NEOADJUVANT CHEMOTHERAPY IN BREAST AND AXILA

Marta Jimenez-Gomez[1,2], Nuria Argudo-Aguirre[2], Juan Ramon Hernandez-Hernandez[3], Isabel Gutierrez-Giner[3], Victor Vega-Benitez[4]

[1]European Institute of Oncology, Department of Surgery, Spain, [2]Hospital del Mar-Barcelona. Breast Cancer Unit, Barcelona., Department of Surgery, Spain, [3]Hospital Insular-Gran Canaria. General Surgery Department. Las Palmas de Gran Canaria, Department of Surgery, Spain, [4]Hospital San Roque-Las Palmas. Breast Cancer Unit. Las Palmas de Gran Canaria, Department of Surgery, Spain

Background: Neoadjuvant treatment is the preferred option in stage II breast cancer. These patients could benefit from breast-conserving surgery and selective sentinel node biopsy. The main objective of the study was to show that there is no higher rate of tumor recurrence in patients regarding to type of surgery in the breast and axilla after a good response.

Methods: We made an observational study between 2010-2017 with a 5 years follow-up. 227 patients were treated with neoadjuvant chemotherapy (59,4%), 128 patients were positive axilla at diagnosis (cN+) and 99 patients were negative axilla (cN0). We carried out a comparative analysis based on the response to neoadjuvant chemotherapy in two groups: breast and axilla.We made a descriptive and longitudinal analysis of the evolution over time, contingency tables to assess the validity of post-neoadjuvant sentinel lymph node biopsy and radiological tests.

Result: Pathologic complete response rate in the breast was 33%. Response predictors were postneoadjuvant axillary response, negative estrogen receptors, histological subtype (specifically Her2 positive) and the absence of lymphovascular invasion. The response rate in breast and axilla was 26.4%. 63% of patients decreased the tumor size equal to or above 50% of the initial size. 82,8% of patients were able to perform conservative surgery and avoid mastectomy. 47% of patients with a positive axilla, had an axillary complete response. 84% avoided axillary lymphadenectomy, which was replaced by radiotherapy. Absence of axillary disease after chemotherapy was an important disease free survival factor.

Conclusions: Our study shows, with a long-term follow-up, that neoadjuvant chemotherapy could avoid "aggressive" surgeries, obtaining pathologic complete response in the breast and axilla in Her2 positive and triple negative subtypes. Selective post-neoadjuvant sentinel node biopsy provides valid and reliable information with a high intraoperative detection rate and a low false negative rate. Axillary pathologic response was the most powerful predictor of disease-free survival.

INVESTIGATION OF D-DIMER MEASUREMENT AND POSITIVITY RATES IN PATIENTS TAKING ABEMACICLIB

Yumiko Shimanuki[1], Akihiko Shimomura[2], Shuji Kubota[3], Masato Komuro[1], Takahiro Nishimura[1], Chikako Shimizu[2]

[1]Center Hospital of the National Center for Global Health and Medicine, Department of Pharmacy, Japan, [2]Center Hospital of the National Center for Global Health and Medicine, Department of Breast and Medical Oncology, Japan, [3]Center Hospital of the National Center for Global Health and Medicine, Department of Cardiology, Japan

Background: Abemaciclib (ABE) is known to have the side effect of venous thromboembolism (VTE). However, there is limited information on how D-dimer (DD) measurement can be used in patients on ABE.This study aimed to investigate DD measurement and positivity rates in ABE-treated patients.

Methods: We conducted a retrospective study in patients who started ABE from January 2022 to December 2023. Information on hormone antagonists taken, VTE risk factors (age, obesity, diabetes, hypertension, etc.), DD measurement and positivity rates before and during ABE treatment (including timing), and the number of patients with thrombosis were collected.

Result: A total of 60 patients participated, with 29 were early breast cancer (EBC) and 31 were metastatic breast cancer (MBC). DD was measured in 21 (72%) and 11 (38%) patients with EBC before and during ABE treatment, respectively. In MBC, DD was measured in 11 (35%) and 10 (32%) patients. The number of DD-positive patients was four (14%) and two (7%) in EBC, and six (19%) and six (19%) in MBC. Although more patients taking Tamoxifen (TAM; 72%) had DD measured before starting ABE compared to those on Aromatase inhibitors (AI; 45%), there was no difference during treatment. In patients with MBC, the rates of DD measurement (before; 53% vs 14%, during; 47% vs 14%) and positivity (before; 29% vs 7%, during; 35% vs 0%) were higher before and during treatment in patients with VTE risk factors. DD was measured irregularly when considering surgery for lymphedema, observing cellulitis-like symptoms or edema. One patient developed thrombosis, and DD was measured when edema occurred during treatment, which was positive.

Conclusions: DD measurement during ABE treatment may help differentiate thrombosis from other symptoms.

REAL-WORLD EVALUATION OF CDK4/6 INHIBITOR TREATMENT IN HORMONE RECEPTOR-POSITIVE METASTATIC AND RELAPSED BREAST CANCER: INSIGHTS FROM AN ASIAN POPULATION

Bo-Fang Chen[1,2], Yi-Fang Tsai[1,2,3], Pei-Ju Lien[2], Yen-Shu Lin[1,2,3], Chin-Jung Feng[3,4], Yen-Jen Chen[1,2,3], Han-Fang Cheng[1,2,3], Chun-Yu Liu[2,5,6,7], Ta-Chung Chao[2,6,8], Jiun-I Lai[5,9,10], Ling-Ming Tseng[1,2,3,11], Chi-Cheng Huang[1,2,12]

[1]Division of Breast Surgery, Taipei Veterans General Hospital, Department of Surgery, Taiwan, [2]Comprehensive Breast Health Center, Taipei Veterans General Hospital, Department of Surgery, Taiwan, [3]School of Medicine, National Yang-Ming Chiao-Tung Univ., Department of School of Medicine, Taiwan, [4]Division of Plastic and Reconstructive Surgery, Taipei Veterans General Hospital, Department of Surgery, Taiwan, [5]Division of Medical Oncology, Taipei Veterans General Hospital, Department of Oncology, Taiwan, [6]Faculty of Medicine, School of Medicine, National Yang-Ming Chiao-Tung Univ., Department of School of Medicine, Taiwan, [7]Division of Transfusion Medicine, Taipei Veterans General Hospital, Department of Medicine, Taiwan, [8]Division of Cancer Prevention, Taipei Veterans General Hospital, Department of Oncology, Taiwan, [9]Center of Immuno-Oncology, Taipei Veterans General Hospital, Department of Oncology, Taiwan, [10]Institute of Clinical Medicine, School of Medicine, National Yang-Ming Chiao-Tung Univ., Department of School of Medicine, Taiwan, [11]Taipei Veterans General Hospital, Department of Surgery, Taiwan, [12]Institute of epidemiology and preventive medicine, School of Public Health, College of Public Health, National Taiwan Univ., Department of College of Public Health, Taiwan

Background: Cyclin-dependent kinase 4/6 inhibitors (CDK4/6i) combined with hormone therapy have demonstrated significant clinical benefits in terms of progression-free survival and overall survival. This study investigates the outcomes associated with two types of CDK4/6i in patients with luminal-type metastatic and relapsed breast cancer (mBC, rBC) to inform real-world evidence of treatment strategies.

Methods: This retrospective study included 223 Taiwanese patients with metastatic or relapsed luminal-type breast cancer from the Taipei Veterans General Hospital Database, between 2018 to 2023. We analyzed patient characteristics, treatment strategies, efficacy, and toxicity associated with two CDK4/6i treatments.

Result: Patients receiving ribociclib and palbociclib showed comparable median ages (61 years) with no significant differences in BMI or biomarker status (ER, PR, HER2, and Ki-67 levels). Ribociclib exhibited a higher prevalence in IDC histology (89.22% versus 80.17%, $p < 0.05$). Disease status distribution(local recurrence, distant metastasis, or de novo stage IV) and hormone therapy partner usage were similar between the two groups. Adverse events and dose adjustments were consistent, although ribociclib demonstrated a significantly higher nausea and vomiting rate (7.84% versus 1.56%). Patients initially treated with ribociclib showed superior progression-free survival ($p < 0.05$).

Conclusions: Patient choice between CDK4/6i types did not significantly differ, asserting the safety of CDK4/6i in the Asian population. Notably, ribociclib demonstrated superior efficacy in terms of survival outcomes in the real-world setting.

APTAMERS AS A POTENTIAL THERAPEUTIC TOOL FOR BLOCKING EPITHELIAL-MESENCHYMAL TRANSITION IN TRIPLE NEGATIVE BREAST CANCER MODEL

Cristina Mayorga-Lobos[1], Francisca Sepulveda[2,3], Ana Riveros[1,3], Marcelo Kogan[1,3], Lorena Lobos[2,3]

[1]Facultad de Ciencias Quimicas y Farmaceuticas, Universidad de Chile, Department of Breast Cancer Research Cell Communication, Chile, [2]Centro De Medicina Regenerativa, Instituto De Ciencias E Innovacin En Medicina, Facultad De Medicina Clnica Alemana, Department of Breast Cancer Research, Chile, [3]Advanced Center for Chronic Diseases, ACCDIS, Department of Medical Oncology, Chile

Background: Breast cancer (BC) is the leading cause of death among women worldwide. For the diagnosis of lactadherin, a glycoprotein overexpressed in BC cells has been suggested as a novel BC biomarker. Additionally, lactadherin has been detected in Extracellular Vesicles (EVs) secreted by tumor BC cells. These EVs participate in Epithelial-Mesenchymal Transition (EMT) in recipient cells. At this moment only immunotherapy has been used for blockage the migratory process, for that reason lactadherin is considered a possible target for gene therapy. Aim: To evaluate aptamers as a potential therapeutic tool for evaluating EMT in receptor cells for blocking lactadherin present in EVs secreted by BC cells.

Methods: EVs were purified and characterized from MDA-MB-231 cells, and EVs lactadherin quantification was performed by ELISA. The EMT markers were analyzed by RT-PCR, and migration assays were performed in Boyden chambers to evaluate aptamers.

Result: Cell viability and metabolic activity were analyzed in the presence of aptamers, and aptamer-gold-nanoparticles. Lactadherin present in EVs-MDA can be blocked by aptamers and aptamer-gold-nanoparticles, diminishing the migratory effect and EMT markers compared with cells stimulated with EVs-MDA

Conclusions: Blocking lactadherin EVs with aptamers diminished the migratory capacity.

ASSOCIATION BETWEEN SERUM HER2 EXTRACELLULAR DOMAIN AND TRASTUZUMAB DERUXTECAN IN PATIENTS WITH HER2-LOW AND HER2-POSITIVE METASTATIC BREAST CANCER

Kazuki Nozawa, Ayumi Kataoka, Haruru Kotani, Akiyo Yoshimura, Masaya Hattori, Masataka Sawaki, Hiroji Iwata

Aichi Cancer Center, Department of Medical Oncology, Japan

Background: Trastuzumab deruxtecan (T-DXd) is a standard treatment for pretreated HER2-positive and low metastatic breast cancer (MBC). The predictive factors of T-DXd for MBC with HER2 positive and low are unclear. The HER2 extracellular domain (HER2-ECD) has been confirmed as a prognosis marker and predictive marker of treatment for HER2-positive MBC. We hypothesized that HER2-ECD could serve as a biomarker for T-DXd.

Methods: A retrospective study of consecutively treated patients between 2019 and 2023 with HER2-low and HER2-positive MBC was performed. HER2 status was diagnosed according to 2020 ASCO-CAP guidelines. HER2-ECD high was defined as >15.0 ng/ml. HER2-ECD was collected before T-DXd treatment. We compared overall response (ORR), progression-free survival (PFS), and overall survival (OS) in HER2-ECD high and low groups. Cox regression analyses were performed to assess the ORR. We used the Kaplan-Meier method to estimate the PFS and OS and the log-rank test to compare each treatment group.

Result: A total of 48 MBC patients were included. Patients with HER2-low and HER2-positive were 10 and 38, respectively. Among HER2 low (n = 10), HER2-ECD high and low are 3 (30%) and 7 (70%) patients, respectively. Among HER2 positive (n = 38), HER2-ECD high and low are 20 (52%) and 18 (48%) patients, respectively. The ORR of T-DXd was 86% and 50% in the HER2-ECD high and low groups, respectively ($p < 0.001$). All 6 cases with CR were HER2-ECD high. The median PFS in the HER2-ECD high group showed longer than the HER2-ECD low group, 21.8 vs. 8.0 months (HR 0.32; 95%CI, 0.14-0.76, $p = 0.010$). Although there were no significant differences in OS, the HER2 ECD high group tended to show longer OS (HR 0.25; 95%CI, 0.06-1.01, $p = 0.05$).

Conclusions: T-DXd showed significantly better response and prolonged PFS in the group with high HER2-ECD. HER2-ECD has the potential to become a biomarker for T-DXd.

RECURRENCE AND PROGNOSIS OF HER2-POSITIVE BREAST CANCER PATIENTS WHO DID NOT RECEIVED ANTI-HER2 THERAPY WITH A TUMOR SIZE ≤1CM

Janghee Lee[1], Soojung Kim[1], Yeonjoo Kwon[1], Jung Ho Park[2], Sanghwa Kim[2], Young Ah Im[1], Hee-Joon Kang[1], Doyil Kim[2]

[1]Dongtan Sacred Heart Hospital, Department of Surgery, Korea, [2]Hallym Univ. Sacred Heart Hospital, Department of Surgery, Korea

Background: Previous APT trial demonstrated the efficacy of trastuzumab in HER2-positive breast cancer with a tumor size ≤3cm. Nevertheless, clinicians remain uncertain about use of trastuzumab in small HER2-positive breast cancer. Especially in cases of tumors with micro-invasiveness or size ≤1cm, there is suspicion regarding the cost-effectiveness of using trastuzumab. Our study analyzed the long-term recurrence and prognosis of HER2-positive breast cancer with a tumor size ≤1cm, who did not receive trastuzumab.

Methods: We retrospectively selected patients diagnosed with HER2-positive breast cancer with a tumor size ≤1cm from two hospitals from Jan 2003 to Dec 2019. The primary objective was to assess the recurrence rate in these patients, and the secondary objective was to find the factor including tumor size associated with RFS. Recurrence-free survival (RFS) was defined as the period between breast cancer surgery and recurrence or any cause of death. Cox proportional hazard model were employed to evaluate RFS.

Result: A total 67 patients were included and the average age as 52.2. All patients had no lymph node metastasis, and 14 patients (20.9%) received adjuvant chemotherapy. The median follow-up duration was 72 months. During follow-up, there were RFS event in 4 patients, and 5-year RFS was 93.8%. When comparing pTmi with pT1a or pT1b in Kaplan-Meier curve, paradoxically, pTmi appeared to have significantly worse RFS ($P = 0.042$). However, when the tumor size was divided based on 5 mm, there was no significant difference in RFS. In multivariable analysis, the only factor associated with RFS was chemotherapy without trastuzumab (hazard ratio, 0.10; 95% confidence intervals, 0.01-0.98; $P = 0.048$).

Conclusions: We did not find evidence to support the omission of anti-HER2 therapy in HER2-positive cancer with a tumor size ≤1cm. On the contrary, the results that chemotherapy may be helpful in reducing recurrence, indicated the possibility chemotherapy with trastuzumab can be more beneficial in small HER2-positive breast cancer.

TRASTUZUMAB SUBCUTANEOUS: EXPERIENCE OF A PERUVIAN REFERENCE ONCOLOGY CENTER

Silvia Neciosup, Iris Otoya, Cindy Calle, Natalia Valdiviezo, Zaida Morante, Carlos Castaneda, Tatiana Vidaurre, Carlos Munive, Hugo Fuentes, Bruno Munante, Mivael Olivera, Henry Gomez

Instituto Nacional de Enfermedades Neoplasicas, Department of Medical Oncology, Peru

Background: In Peru, breast cancer is the second neoplasm with the highest mortality rate and is the predominant malignant neoplasm among women. In 2013, a subcutaneous formulation of trastuzumab was developed for neoadjuvant and adjuvant treatment of early HER2+ breast cancer.

Methods: An observational, descriptive, cross-sectional, and retrospective study was conducted. The study population consisted of women aged 18 years or older diagnosed with HER2+ early breast cancer who received care at the National Institute of Neoplastic Diseases during 2019-2021 and were treated with at least one dose of Trastuzumab subcutaneously in a neo/adjuvant setting, either with or without chemotherapy. The prescribed treatment regimen was 600 mg fixed dose every 3 weeks, administered over 18 cycles.The objective of the present study was to determine the impact of treatment on patient survival and associated adverse events.

Result: The analysis involved 70 female patients treated with Subcutaneous Trastuzumab between 2018 and 2019. The average age was 52.6 ± 12.4 years, with a mean tumor size of 19.7 ± 16.1 mm. Lymph node status showed a balanced distribution of positive (44.78%) and negative nodes (55.22%). TNM classification indicated predominance of T2 N0/1/2/3 M0 (36.76%), followed by T3 N0/1/2/3 M0 (35.29%), T4 N0/1/2/2 M0 (17.65%), and T1 N0/1/2 (10.30%). Treatment initiation: 63.77% in neoadjuvant, 36.23% in adjuvant setting. After 36 months, 7 patients (4.55%) experienced disease progression, with a PFS rate of 89.0%, and 4 deaths occurred (5.88% of the population) yielding a 95.6% overall survival rate. 30% reported grade 2/3 adverse events: arthralgia (47.62%), diarrhea, fatigue, and injection site reaction (9.52% each). Treatment was discontinued by 2.86% due to severe toxicity, mainly cardiotoxicity and hypertension.

Conclusions: This study demonstrates the efficacy of early stage treatment in terms of progression-free survival and overall survival with an acceptable safety profile, consistent with data from controlled clinical trials.

EVALUATING THE EFFICACY AND SAFETY OF PALBOCICLIB AND RIBOCICLIB IN HORMONE-POSITIVE METASTATIC BREAST CANCER: A RETROSPECTIVE STUDY IN TAIWAN

Cheng-Wei Chou[1], Chih-Chiang Hung[2], Yen-Dun Tony Tzeng[3]

[1]Taichung Veterans General Hospital, Department of Medical Oncology, Taiwan, [2]Taichung Veterans General Hospital, Department of Surgery, Taiwan, [3]Kaohsiung Veterans General Hospital, Department of Surgery, Taiwan

Background: In hormone-positive metastatic breast cancer, combining CDK4/6 inhibitors with endocrine therapy is now standard. This retrospective study evaluates the effectiveness and safety of palbociclib and ribociclib in first-line hormone-positive, HER-2 negative metastatic breast cancer in Taiwan.

Methods: This retrospective observational study involved patients receiving palbociclib or ribociclib at two tertiary medical centers. It focused on progression-free survival and overall survival, assessing the safety profiles of these agents in real-world scenarios.

Result: The study analyzed 104 patients. There were 51 patients in the palbociclib group, and 53 patients in the ribociclib group. At 24 months, progression-free survival rates were comparable between palbociclib and ribociclib groups (55.2% and 55.4% respectively, $P = 0.736$). Similar two-year overall survival rates were also observed in the palbociclib and ribociclib groups (91.9% versus 84.8%, respectively, $P = 0.099$). Adverse effects did not significantly differ between the two groups.

Conclusions: In real-world data, palbociclib and ribociclib demonstrate comparable efficacy and safety profiles. No new adverse events were reported.

EFFICACY OF DIFFERENT NEOADJUVANT SYSTEMIC TREATMENT REGIMENS IN CHINESE PATIENTS WITH HER2-POSITIVE EARLY BREAST CANCER: A REAL-WORLD RETROSPECTIVE MULTI-CENTER COHORT STUDY

Ying Zhu[1], Weiwei Zhang[2], Rong Deng[1], Wen Yun[1], Jue Wang[3]

[1]Department of General Surgery, Jiangsu Cancer Hospital & Jiangsu Institute of Cancer Research & The Affiliated Cancer Hospital of Nanjing Medical Univ., Nanjing, China, Department of Surgery, China, [2]Department of Breast and thyroid surgery, Taizhou Hospital of Zhejiang Province affiliated to Wenzhou Medical Univ., Linhai, Zhejiang, China, Department of Surgery, China, [3]Department of breast surgery, the First Affiliated Hospital of Nanjing Medical Univ., Department of Surgery, China

Background: Neoadjuvant systemic treatment (NST) is often used to treat inoperable locally advanced breast cancer. For human epidermal growth factor receptor 2 (HER2) positive patients, we usually choose chemotherapy combined with targeted therapy, such as epirubicin/cyclophosphamide followed by docetaxel/trastuzumab (EC-TH), epirubicin/cyclophosphamide followed by docetaxel/trastuzumab/pertuzumab (EC-THP), docetaxel/trastuzumab/pertuzumab followed by epirubicin/cyclophosphamide (THP-EC), and docetaxel/carboplatin/trastuzumab/pertuzumab (TCbHP).

Methods: The study aims to design a real-world study to retrospectively evaluate the effects of different regimens on the efficacy of NST with HER2-positive disease. The efficacy is further subdivided into total pathological complete response (tpCR), breast pathological complete response (bpCR), and axillary pathological complete response (apCR) for more detailed analysis.

Result: A total of 505 patients from 5 centers were included in this study from May 2014 to April 2022. In terms of tpCR and bpCR, the THP-EC regimen is superior to the EC-TH regimen ($p = 0.046$ and 0.037), but there is no difference in efficacy compared to EC-THP and TCbHP (all $p > 0.05$). The selection of four regimens has no effect on apCR. Patients with HER2 3+ in situ hybridization (ISH) are more likely to achieve pCR (tpCR, bpCR, and apCR) than those with HER2 2+ ISH and HER2 amplication.

Conclusions: EC-THP, THP-EC, and TCbHP regimens are superior to the EC-TH regimen in NST with HER2-positive disease. The selection of dual-target therapy regimens and medication sequence have no effect on the efficacy of NST. The higher the expression of HER2, the more benefits it can benefit from targeted therapy.

PREOPERATIVE CONSIDERATION OF ADVERSE EVENTS OF PEMBROLIZUMAB WITH NEOADJUVANT CHEMOTHERAPY IN PATIENTS WITH TRIPLE NEGATIVE BREAST CANCER (DBCSG-001)

Jeeyeon Lee[1], Jung Eun Choi[2], Moohyun Lee[3], Ho Yong Park[1], Jin Hyang Jung[1], Byeongju Kang[1], Soo Jung Lee[2], Su Hwan Kang[2], Jin Gu Kang[2], Sun Hee Kang[3], Jihyoung Cho[3], Yee Soo Chae[4], Soo Jung Lee[4], In-Hee Lee[4], Keon Uk Park[5], Hyera Kim[5], Sung Ae Koh[6], Daegu Breast Cancer Study Group[7]

[1]Department of Surgery, School of Medicine, Kyungpook National Univ., Kyungpook National Univ. Chilgok Hospital, Daegu, Korea, Department of Surgery, Korea, [2]Yeungnam Univ. College of Medicine, Department of Surgery, Korea, [3]Keimyung Univ. School of Medicine, Daegu, Korea, Department of Surgery, Korea, [4]School of medicine, Kyungpook National Univ., Kyungpook National Univ. Chilgok Hospital, Daegu, Korea, Department of Medical Oncology, Korea, [5]Keimyung Univ. College of Medicine, Daegu, Korea, Department of Medical Oncology, Korea, [6]Yeungnam Univ. College of Medicine, Department of Medical Oncology, Korea, [7]Daegu Breast Cancer, Department of Study Group, Korea

Background: Pembrolizumab is a novel immunotherapy agent that improves oncological outcomes. However, there are various immune-related adverse events (irAEs) when it is combined with chemotherapy. The aims of this study were to investigate irAEs that occurred after neoadjuvant chemotherapy (NAC) with pembrolizumab for triple-negative breast cancer (TNBC) and to identify fatal irAEs that should be corrected before surgery.

Methods: Between 2022 and 2023, a total of, 37 cases from 36 patients who completed NAC with pembrolizumab based on KEYNOTE-522 regimen (wP/Cab+pembrolizumab followed by AC+pembrolizumab) followed by surgery were reviewed based on their medical records. All irAEs that occurred were investigated and classified into five categories: systemic, gastrointestinal, respiratory, musculoskeletal, and endocrine.

Result: The stages at diagnosis were as follows: I (n = 1, 2.7%), IIA (n = 12, 32.4%), IIB (n = 12, 32.4%), IIIA (n = 6, 16.2%), and IIIC (n = 6, 16.2%). After NAC with pembrolizumab, the pathologic complete response (pCR) rate in the breast was 59.5% (22/37), and the pCR rate in the axillary lymph nodes was 45.9% (17/37). Twenty-three patients (62.2%) experienced adverse events, and the number of adverse events were as follows: 1 (n = 6, 26.1%), 2 (n = 3, 13.0%), and ≥ 3 (n = 14, 60.9%). Systemic adverse events were the most common (n = 18, 48.6%), and gastrointestinal symptoms were the second most common (n = 14, 37.8%). Among fatal irAEs, including colitis and pneumonitis, they occurred in 9 and 3 patients (24.3%, 8.1%), respectively. There was no case of hepatitis, myocarditis, or hypophysitis as fatal irAEs after NAC and pembrolizumab for TNBC. Although hypothyroidism, which was not fatal but needed to be corrected to undergo surgery under general anesthesia, occurred in 2 cases (5.4%), those cases underwent surgery without specific treatment due to the subclinical status of hypothyroidism.

Conclusions: IrAEs that occurred after NAC with pembrolizumab in TNBC were quite diverse, and some fatal adverse events occurred. Therefore, irAEs should be evaluated and corrected before surgery if necessary.

SUCCESSFUL NEOADJUVANT IMMUNOTHERAPY AND CHEMOTHERAPY TREATMENT FOR LOCALLY ADVANCED TRIPLE-NEGATIVE BREAST CANCER: A CASE REPORT

Mergen Dugarsuren

National Cancer Center of Mongolia, Department of Surgery, Mongolia

Background: This case report details the comprehensive management of a 64-year-old female patient diagnosed with right breast cancer in November 2022. The initial clinical TNM staging was cT2N2M0 disease. The tumor (TNBC) measured 3.2 cm × 4.8 cm × 4.9 cm before neoadjuvant treatment. The case explores the challenges and outcomes associated with this combined treatment approach.

Methods: The neoadjuvant regimen, including chemotherapy and immunotherapy, aimed to downstage the tumor. The patient underwent 9 courses of Pembrolizumab with 4 cycles of Carboplatin + Paclitaxel, and 4 cycles of Cyclophosphamide + Doxorubicin. In July 2023, the patient developed interstitial pneumonia attributed to Cytomegalovirus infection as an adverse effect of immunotherapy. Symptomatic treatment was provided for the ensuing two months. Modified Radical Mastectomy (MRM) was performed in October 2023, and the histological examination of the resected specimen was analyzed for residual carcinoma and lymph node involvement.

Result: Histological examination post-MRM revealed an absence of residual invasive carcinoma, with only Ductal Carcinoma In Situ (DCIS) being identified. The tumor showed a complete response to neoadjuvant treatment. Notably, none of the 22 removed lymph nodes showed signs of metastasis, resulting in a favorable TNM classification of ypTis. The case highlights the successful eradication of invasive carcinoma and the absence of lymph node involvement following neoadjuvant systemic therapy, despite the temporary setback of interstitial pneumonia. The patient is currently in a follow-up phase and is in good health.

Conclusions: This case underscores the efficacy of neoadjuvant immunotherapy and chemotherapy in achieving a pathologic complete response in locally advanced triple-negative breast cancer. The successful outcome, with no residual invasive carcinoma and negative lymph nodes post-MRM, supports the potential of this combined treatment strategy. The transient interstitial pneumonia, while an adverse effect, was managed effectively, emphasizing the need for vigilant monitoring and prompt intervention in the course of advanced breast cancer treatment.

COMPLETE RESPONSE TO TRASTUZUMAB DERUXTECAN AS FOURTH-LINE CHEMOTHERAPY IN UNRESECTABLE LOCALLY ADVANCED BREAST CANCER: A CASE REPORT

Yoshie Kobayashi[1], Hideo Shigematsu[1], Daisuke Komoto[2], Noriaki Matsuura[2], Takahiro Uemura[3], Kazuya Kuraoka[4], Tomoyuki Yoshiyama[1]

[1]National Hospital Organization Kure Medical Center and Chugoku Cancer Center, Department of Surgery, Japan, [2]National Hospital Organization Kure Medical Center and Chugoku Cancer Center, Department of Radiology, Japan, [3]National Hospital Organization Kure Medical Center and Chugoku Cancer Center, Department of Plastic Surgery, Japan, [4]National Hospital Organization Kure Medical Center and Chugoku Cancer Center, Department of Pathology, Japan

Background: Trastuzumab deruxtecan (T-DXd, DS-8201) is a meaningfully novel HER2 targeting antibody-drug conjugates (ADC) that has a high drug-to-antibody ratio (DAR) and cytotoxic bystander effect. DESTINY-Breast03 showed a significant improved overall survival (OS) and progression-free survival (PFS) compared with trastuzumab emtansine (T-DM1) in HER2-positive unresectable or metastatic breast cancer patients.

Methods: A 64-year-old woman was diagnosed with HER2-positive unresectable breast cancer cT4bN1M0 Stage IIIB, which revealed skin redness and edema of the entire right breast at the first visit. Four courses of treatment with pertuzumab and trastuzumab in combination with docetaxel and then 4 courses of AC therapy were performed. The patient was diagnosed with PD due to worsening skin redness over the entire right breast, and 6 courses of treatment with T-DM1 were conducted. MRI showed a reduction effect, while pathologically remained skin lesion by skin biopsy. Anti-HER2 drug was changed from T-DM1 to T-DXd as fourth-line chemotherapy. After 5 courses of T-DXd therapy, the lesion was reduced by MRI and skin biopsy did not detect pathologically remained skin lesion. However, the lesion of skin and breast appeared to remain because of observing the color change of the entire right breast and she could receive possible radical surgery in the condition, total right mastectomy + axillary dissection with skin grafting was performed.

Result: Postoperative pathological results revealed neither remained carcinoma in right breast tissue nor axillary lymph node metastasis, considering Grade 3 of neoadjuvant chemotherapy effect. She is alive without any recurrence for 14 months after surgery.

Conclusions: T-DXd treatment led unresectable locally advanced breast cancer to resectable situation and was significantly effective even as fourth-line chemotherapy. T-DXd has dramatic antitumor activity in unresectable locally advanced breast cancer with extensive previous treatment and will change the landscape of current treatment strategy for HER2-positive breast cancer.

BEDSIDE TO BENCH; HOW WE STARTED THE BENCH STUDY TO EVALUATE THE ANTICANCER EFFECT OF ALPHA-VINIFERIN, A CONSTITUENT OF CARAGANA SINICA

Hyun-Ah Kim[1], Chan Sub Park[1], Gyeongmi Kim[2], Min-Ki Seong[1], Yereh Han[1], Jaehyun Yoo[1], Heewon Kim[1], Ji Yea Kim[2], Hyeon-Ok Jin[3], Se-Kyeong Jang[2], Se Hee Ahn[2], In-Chul Park[2]

[1]Korea Cancer Center Hospital, Department of Surgery, Korea, [2]Korea Institute of Radiological & Medical Sciences, Division of Fusion Radiology Research, Korea, [3]Korea Institute of Radiological & Medical Sciences, Department of Kirams Radiation Biobank, Korea

Background: The α-viniferin is known as a key constituent of Caragana sinica, a herbal medicine which have been used traditionally for arthritis. In this presentation, we report the results of a bedside-to-bench study that evaluated the anticancer effect of α-viniferin for breast cancer.

Methods: A 51-year-old woman came to clinic with 1.6 cm sized mass on ultrasonography. The mass was diagnosed as estrogen receptor positive, progesterone receptor positive, and HER2 negative invasive ductal carcinoma (IDC) by core needle biopsy. The curative surgery was done after 35 days since the first visit of patient, and the pathologic examination showed that 0.9 cm sized IDC with extensive coagulation necrosis as if treated by neoadjuvant strategy. In history taking, we know she was taking Caragana sinica to treat arthritis for 2 months before the diagnosis of breast cancer. We did literature review and assumed α-viniferin, constituent of Caragana sinica, might have anticancer effect for the breast cancer of this woman. This is the report of bench study to evaluate the anticancer effect of α-viniferin for breast cancer.

Result: The herbal medicine which she was taken contained α-viniferin 112.98 ± 9.83 μg/g. Cell viability and cell death were assessed by MTT assay and Annexin V-FITC/PI staining. The 5μM of α-viniferin induces cell death in MDA-MB-231 cells. The cell death was induced by α-viniferin also in MCF7 cells, although the effect is not remarkable as in MDA-MB-231 cells. Whereas, a combination of α-viniferin and fulvestrant markedly suppress the cell viability in MDF7 cells.

Conclusions: In breast cancer cells, α-viniferin showed different anticancer effect by subtype. The monotherapy of α-viniferin might be a new developing drug for triple negative breast cancer. In hormone receptor positive breast cancer, the combination with fulvestrant might be a good strategy.

STUDY OF HYPOXIA MIMETICS ON HYPOXIA-INDUCIBLE FACTORS AND GENE TRANSCRIPTIONAL ACTIVITY IN PRIMARY AND METASTATIC BREAST CANCER CELL

Pardeep Kumar, Sagar Lavania

F H M College and Hospital, Department of Biochemistry, India

Background: Hypoxia-inducible factors (HIFs) regulate the transcription of genes that mediate the response to hypoxia. HIFs are constantly expressed and degraded under normoxia, but stabilized under hypoxia. Although HIF-1 is usually considered the principal mediator of hypoxic adaptation, several tissues and different cell types express both HIF-1 and HIF-2 isoforms under hypoxia or when treated with hypoxia mimetic chemicals such as desferrioxamine (DFO).

Methods: However, the similarities or differences between HIF-1 and HIF-2, in terms of their tissue- and inducer-specific activation and function, are not adequately characterized. Aim of present study was to investigated the effects of true hypoxia and hypoxia mimetics on HIF-1 and HIF-2 induction and specific gene transcriptional activity in four breast cancer cell lines, primary sites (HCC1395 and HCC1937) and metastatic sites (MCF-7 and MDA-MB-231).

Result: Both hypoxia and DFO caused rapid induction of both HIF-1α and HIF-2α proteins. Hypoxia induced erythropoietin (EPO) expression and secretion in a HIF-2-dependent way. Surprisingly, however, EPO expression was not induced when cell lines were treated with DFO. In agreement, both HIF-1- and HIF-2-dependent promoters (of PGK and SOD2 genes, respectively) were activated by hypoxia while DFO only activated the HIF-1-dependent PGK promoter.

Conclusions: Furthermore, DFO impaired the hypoxic stimulation of HIF-2, but not HIF-1, activity and DFO-induced HIF-2α interacted poorly with USF-2, a HIF-2-specific co-activator. Conclusions -In conclusion, these data indicate that DFO may be a viable anticancer agent in the treatment of breast cancer.

PROGNOSTIC IMPLICATIONS OF DUCTAL CARCINOMA IN SITU COMPONENTS IN BRCA1/2-POSITIVE BREAST CANCER

Kyung-Hwak Yoon, Eun-Kyu Kim, Hee-Chul Shin

Seoul National Univ. Bundang Hospital, Department of Surgery, Korea

Background: Although the Breast Cancer Susceptibility Gene (BRCA)-associated invasive breast cancer is well studied, there are limited reports on ductal carcinoma in situ (DCIS) in patients with BRCA1/2 mutations. This study aims to evaluate the differential prognostic effect of DCIS in breast cancer patients with pathologic variants of BRCA1/2 genes.

Methods: Breast cancer patients who tested positive for BRCA1/2 mutations between August 2003 and January 2022 at a single tertiary referral center were retrospectively analyzed. Survival outcomes were compared between patients with both invasive ductal carcinoma (IDC) and DCIS (IDC-DCIS group, n = 121) and those with IDC alone (IDC group, n = 36).

Result: Of the 157 patients, 65 (41.4%) exhibited mutations in BRCA1, 90 (57.3%) in BRCA2, and 2 (1.3%) in both BRCA1/2. DCIS components were more frequently found in BRCA2 pathological variants (BRCA1 46 (38.0%) vs. BRCA2 76 (62.4%), $P = 0.030$). No statistically significant difference was found in 10-year recurrence-free survival (IDC-DCIS 89.3% vs. IDC 83.6%, $P = 0.989$). Subgroup analysis indicated that the DCIS component correlated with improved survival outcomes in the BRCA1 subgroup (BRCA1 IDC-DCIS 85.5% vs. BRCA1 IDC 51.0%, $P = 0.024$). Conversely, in the BRCA2 subgroup, IDC-DCIS patients exhibited worse prognosis (BRCA1 IDC-DCIS 85.5% vs. BRCA2 IDC-DCIS 65.8%, $P = 0.045$).

Conclusions: The presence of a DCIS component carries varied prognostic significance in BRCA1 and BRCA2 mutations. A tailored approach may be necessary when determining treatment options for breast cancer patients with BRCA1/2 mutations based on the presence of DCIS.

ADOPTION OF COMPREHENSIVE GERIATRIC ASSESSMENT AND QUALITY OF LIFE MEASURES IN OLDER WOMEN WITH BREAST CANCER

Dacita Suen, Ava Kwong

The Univ. of Hong Kong, Department of Surgery, Hong Kong

Background: The global rise in breast cancer incidence and the ageing population are causing an increase in the number of older women being diagnosed with breast cancer. It is always a challenge to decide the optimal management for the older age group with comorbidities and unique psychosocial needs. The aim of this study was to investigate the application of comprehensive geriatric assessment (CGA) and quality of life (QOL) measures in older Chinese women with primary breast cancer.

Methods: We recruited patients aged 70 or above with newly diagnosed early operable breast cancer who received treatment at our breast center between August 2018 and April 2022. Every study participant was subjected to a CGA and QOL measures at two time points: Time 1 within 6 weeks of diagnosis; and Time 2 in the sixth month after diagnosis.

Result: 145 patients were recruited during the study period. 137 patients (95%) completed the questionnaire at Time 2, with one patient passed away and seven refused to complete the CGA and QOL measures at the sixth month after diagnosis. 90% of the participants required assistance to complete the questionnaires. The mean time to complete the assessments was 32 minutes (range 15-65 minutes) at Time 1, and 29 minutes (range 10-60 minutes) at Time 2. Compared to the status at presentation (Time 1), patients scored worse at Time 2 in the activities of daily living assessment ($p = 0.019$), self-reported performance rating scale ($p = 0.009$), polypharmacy ($p = 0.001$), Karnofsky Performance Status ($p = 0.000$) and timed "up and go" ($p = 0.000$). There was no statistically significant difference in terms of comorbidity, nutritional status, psychological evaluation, social assessment, cognition, or QOL measures.

Conclusions: Older patients declined in functional status significantly after the diagnosis and treatment of breast cancer. This study confirmed the feasibility of using CGA in clinical setting.

PROGNOSTIC EVALUATION OF TRIPLE NEGATIVE BREAST CANCER PATIENTS USING CA 15-3, KI-67, AND NEUTROPHIL-LYMPHOCYTE RATIO

Batmunkh Bilguunzaya, Shirchinjav Tseren-Yudon, Munkhnyam Munkhzul, Altangerel Bold

Intermed Hospital, Department of Surgery, Mongolia

Background: This study aims to investigate the prognostic implications of CA 15-3, neutrophil-lymphocyte ratio (NLR), and Ki-67 in TNBC patients, aiming to enhance risk stratification and guide personalized treatment strategies.

Methods: Patients diagnosed with breast cancer at Intermed Hospital between January 2019 and January 2022 were included in this study. Before treatment initiation, blood samples were collected for the assessment of tumor biomarker CA 15-3 and the peripheral blood neutrophil-lymphocyte ratio. Immunohistochemical parameters were also utilized for tissue analysis.

Result: A total of 24 breast cancer patients participated in the study, with ages ranging from 39 to 82. All patients were diagnosed at stage cT1-2, and 8 cases were identified as triple-negative breast cancer. Among the triple-negative cases, 6 exhibited Ki-67 marker values exceeding 20%, while 1 case demonstrated elevated levels of neutrophils, CA 15-3, and a high neutrophil-lymphocyte ratio. Unfortunately, this latter patient passed away due to lung and bone metastases and tumor recurrence after a 1-year and 6-month pf follow-up period.

Conclusions: This study underscores the possibility of determining triple-negative breast cancer prognosis through the analysis of blood biomarkers and immunohistochemical parameters, including those associated with white blood cells. In TNBC patients, we should aim to enhance risk stratification and guide personalized treatment strategies for each individual, emphasizing the importance of early intervention in high-risk cases.

SHORT-TERM PROGNOSIS PREDICTION IN HORMONE RECEPTOR POSITIVE BREAST CANCER PATIENTS: A COMPREHENSIVE ANALYSIS OF CA15-3, KI-67, AND NEUTROPHIL LYMPHOCYTE RATIO

Khurelbaatar Sainbaatar, Enkhbat Orgilbold, Myagmar Odbaatar, Altangerel Bold

Intermed Hospital of Mongolia, Department of Surgery, Mongolia

Background: This study aims to assess the short-term prognosis of breast cancer patients with a focus on hormone receptor-positive cases. The research explores the predictive value of three key factors: CA15-3 blood tumor biomarker, Ki-67 immunohistochemical marker, and peripheral blood neutrophil lymphocyte cell ratio.

Methods: A cohort of 24 patients diagnosed with breast cancer, specifically hormone receptor-positive cases, at Intermed Hospital between January 2019 and January 2022 was included. Patients meeting the criteria of hormone receptor-positive breast cancer were selected for the study. The assessment involved the measurement of CA15-3 blood tumor biomarker levels, immunohistochemical analysis of Ki-67 markers in tissue samples, and evaluation of the neutrophil-lymphocyte cell ratio in peripheral blood. These analyses were conducted before the initiation of any therapeutic interventions.

Result: The study followed patients up to December 2022, with a median follow-up period of three years. Among the 24 participants, aged between 39 and 82, all were diagnosed at stage cT1-2. Of these, 12 cases were hormone receptor-positive, and 3 cases were HER2 receptor-positive. Among the hormone receptor-positive cases, 11 exhibited Ki-67 marker values exceeding 20%, and one case demonstrated elevated levels of neutrophils and CA15-3. Notably, one patient experienced tumor metastasis in the opposite breast during the two-year follow-up.

Conclusions: This study underscores the potential of CA15-3, Ki-67, and neutrophil-lymphocyte ratio as valuable indicators for determining the short-term prognosis of breast cancer. The inclusion of blood and immunohistochemical analyses of biomarkers, along with the evaluation of white blood cells, demonstrates high clinical significance in predicting outcomes for hormone receptor-positive breast cancer patients. These findings contribute to a more comprehensive understanding of prognostic factors and could inform tailored therapeutic strategies for improved patient management.

EXPLORING NOTCH SIGNALING PATHWAY MUTATIONS IN PRIMARY BREAST CANCER AMONG THE INDIAN POPULATION: A COMPREHENSIVE GENETIC ANALYSIS

Harsh Goel, Rahul Kumar, Pranay Tanwar

All India institute of Medical Sciences, New Delhi, Department of Medical Oncology, India

Background: Breast cancer (BC) is a prevalent global malignancy, accounting for 11.7% of cancer diagnoses worldwide and 13.5% in India. Notch signaling, a canonical oncogenic pathway pivotal for cell growth and apoptosis, exhibits frequent genetic alterations, however, its mutation prevelance remains unknown among Indian BC patients. This study aims to elucidate the mutation profile of Notch pathway-related genes through whole exome sequencing followed by Sanger sequencing.

Methods: Tumor samples and adjacent normal tissues were collected postoperatively from 23 BC patients. Genomic DNA was extracted using salting out method, Library preparation was done as per manufacturer instruction and the Illumina platform was used for whole exome sequencing with an average depth coverage of 100X. Raw reads were analyzed using an in-house pipeline. MAML3 and NOTCH4 deletions were validated via Sanger sequencing. Additionally, mRNA expression of MAML3 and NOTCH4 was assessed using quantitative PCR.

Result: Among the 10 canonical pathways, the NOTCH pathway exhibited the highest mutation frequency, with alterations identified in all 25 patients. A total of 47 mutated genes were identified, comprising 16 tumor suppressors, 3 oncogenes, and 28 passenger genes. MAML3 and NOTCH4 demonstrated somatic mutation rates of 17.5% and 20%, respectively. MAML3 mutations included missense and frameshift deletions, while NOTCH4 exhibited in-frame deletions and missense mutations. Sanger sequencing confirmed these mutations. Both MAML3 and NOTCH4 showed significantly decreased expression compared to normal tissues.

Conclusions: This study provides comprehensive insights into the frequently mutated genes within the NOTCH pathway, with MAML3 and NOTCH4 emerging as predominantly mutated genes in Indian BC cases. These findings hold promise for utilizing these genes in risk assessment, screening, diagnosis, and early prognosis of BC. The study contributes to an enhanced understanding of the genetic landscape of BC among the Indian.

THE CHANGE IN NEUTROPHIL-TO-LYMPHOCYTE RATIO (NLR) IMPACTS TREATMENT EFFICACY AND PROGNOSIS FOR HORMONE RECEPTOR-POSITIVE/HUMAN EPIDERMAL GROWTH FACTOR RECEPTOR 2-NEGATIVE RECURRENT BREAST CANCER

Yuki Hara[1], Ryota Otsubo[1], Yuka Ishida[1], Ayano Inao[1], Ayako Fukushima[1], Eiko Inamasu[1], Momoko Akashi[2], Michi Morita[2], Sayaka Kuba[2], Rin Yamaguchi[3], Susumu Eguchi[2], Keitaro Matsumoto[1]

[1]Department of SURGICAL ONCOLOGY, Nagasaki Univ. Graduate School of Biomedical Sciences, Department of Surgery, Japan, [2]Department of SURGERY, Nagasaki Univ. Graduate School of Biomedical Sciences, Department of Surgery, Japan, [3]Department of PATHOLOGY, Nagasaki Univ. Graduate School of Biomedical Sciences, Department of Pathology, Japan

Background: Recurrent breast cancers are not curable, while some of these with hormone receptor (HR)-positive/human epidermal growth factor receptor 2 (HER2)-negative survive long due to drug therapy. Recently, the association between NLR and prognosis among breast cancer as well as other cancers has been reported. Herein, we report the change from preoperative NLR (preNLR) to NLR at recurrence (recNLR) affects the time to treatment failure (TTF) of endocrine therapy and chemotherapy among HR-positive/HER2-negative recurrent breast cancer.

Methods: 31 patients diagnosed with HR-positive/HER2-negative recurrent breast cancer between January 2009 and December 2020 were included, and the observation period from the date of recurrence diagnosis to December 2023. We defined the cut-off for TTF of drug therapy as 4 years and divided long- and short-term response groups. Uni-and multi-variable analyses were performed among two groups. Survival analysis was performed using the Kaplan-Meier method.

Result: In the long-term response group, TTF of endocrine therapy and chemotherapy were 64 months and 8.5 months, respectively. In the short-term response group, these were 8 months and 2 months, respectively. The index of recNLR/preNLR ≥ 1.2 ($p = 0.007$) and multiple organ metastasis ($p = 0.008$) were significant variables in multivariable analysis. In survival analysis, median overall survivals of short- and long-term response groups were 671 days and 3763 days, respectively. Moreover, the hazard ratios for recNLR/preNLR ≥ 1.2 and multiple organ metastasis were 2.76 ($p = 0.04$, 95% Confidence Interval [CI]: 1.04-7.30) and 3.93 ($p = 0.004$, 95% CI: 1.55-9.96), respectively.

Conclusions: This study had the limitations of a retrospective design and a small number of eligible patients. However, the strength of this study was that it could predict TTF of endocrine therapy and prognosis for HR-positive/HER2-negative recurrent breast cancer to compare preNLR with recNLR in the same patients. This study suggested that HR-positive/HER2-negative recurrent breast cancer could have short TTF of endocrine therapy and poor prognosis if recNLR/preNLR was more than 1.2.

PAN-CANCER ANALYSIS IDENTIFIES CDC20 AS A POTENTIAL IMMUNOMODULATOR AND PROMISING THERAPEUTIC TARGET IN BREAST CANCER

Yingkun Xu, Wenhao Tan, Dongyao Pu, Shengchun Liu

The First Affiliated Hospital of Chongqing Medical Univ., Department of Surgery, China

Background: CDC20 (Cell Division Cycle 20) is a vital protein in the cell cycle, ensuring normal cell division and precise chromosome transmission by regulating mitosis. However, significant questions persist regarding the trends and medical importance of CDC20 in cancer.

Methods: Utilizing multi-omics data from The Cancer Genome Atlas, we conducted a comprehensive examination of CDC20 across diverse cancer types. Additionally, LASSO regression analysis was employed to evaluate the clinical significance of CDC20 and its related molecules in breast cancer.

Result: Our analysis revealed widespread upregulation of CDC20 expression across various cancer types. Survival analysis indicated that elevated CDC20 expression predicts a poor prognosis in individuals diagnosed with different cancers. Further examination uncovered significant associations between CDC20 and TMB (Tumor Mutation Burden), MSI (Microsatellite Instability), and immune cell infiltration in diverse cancers. Analysis of co-expression of immune checkpoint genes revealed a significant link between CDC20 and multiple common immune checkpoint genes. Moreover, we developed an innovative risk assessment model for breast cancer using CDC20-related molecules.

Conclusions: Our findings suggest that CDC20 can serve as a promising prognostic biomarker and a target for immunotherapy in various cancer types, including breast cancer. Additionally, CDC20 appears to regulate the immune response to some extent in different cancer types. These results highlight the need for further investigation into the biological functions and clinical significance of CDC20 in future studies.

DEVELOPMENT AND VALIDATION OF A NOMOGRAM TO PREDICT PATHOLOGICAL COMPLETE RESPONSE IN LUMINAL BREAST CANCER BASED ON CLINICOPATHOLOGICAL FEATURES

Sarah Alsafi[1,2], Hee Jeong Kim[2], Jisun Kim[2], Tae-Kyung Yoo[2], Il Yong Chung[2], Beom Seok Ko[2], Jong Won Lee[2], Byung Ho Son[2], Sae Byul Lee[2]

[1]Al Adan Hospital, Ministry of Health, Kuwait, Department of Surgery, Kuwait, [2]ASAN Medical Center, Department of Surgery, Korea

Background: Luminal breast cancer is the most common subtype of breast cancer with a favorable prognosis. However, it has the lowest response to neoadjuvant chemotherapy (NACT) and most fail to achieve pathological complete response (pCR). Pathological complete response is an important predictor of successful treatment. The aim of this study is to develop a nomogram that predicts pCR following NACT in luminal breast cancer.

Methods: A retrospective study included patients from Asan Medical Center, Seoul, Republic of Korea diagnosed with luminal type breast cancer who received NACT and underwent breast cancer surgery from August 2008 to December 2021. The primary outcome of this study was to develop and validate a nomogram that predicted pCR following NACT in luminal breast cancer.

Result: Data from 1,574 patients were collected, 22.2% achieved complete response whereas 77.8% didn't. The sample was divided into a training group (from years 2008 to 2018, n = 1,244) and validation group (from year 2019 to 2021, n = 330). The baseline features between both groups were similar. Among the 7 clinicopathological features and based on their univariate and multivariate logistic regression analysis, clinical tumor stage, estrogen receptor (ER) allred score, progesterone receptor (PR) allred score and Ki67 index were independent predictors of pCR in the primary cohort. With these variables we developed a nomogram to predict pCR in luminal breast cancer who received NACT. The model showed good discrimination with an area under the receiver operating characteristics curve (AUC) of 0.66. A further model was created using Ki67 index alone and compared to our model showed a similar AUC result.

Conclusions: Our study suggested that this nomogram based on clinical tumor stage, ER allred score, PR allred score and Ki67 index can be applied to tailor NACT in luminal breast cancer.

INTRA-TUMORAL MIR-150 EXPRESSION ATTRACTS AND ACTIVATES IMMUNE CELLS AND IS ASSOCIATED WITH BETTER SURVIVAL IN BREAST CANCER PATIENTS

Masanori Oshi[1,2], Akimitsu Yamada[1], Mahato Sasamoto[1], Kazutaka Narui[3], Takashi Ishikawa[4], Kazuaki Takabe[2], Itaru Endo[1]

[1]Yokohama City Univ. Graduate School of Medicine, Department of Breast Surgery, Japan, [2]Roswell Park Comprehensive Cancer Center, Department of Surgical Oncology, U.S.A., [3]Yokohama City Univ. Medical Center, Department of Breast and Thyroid Surgery, Japan, [4]Tokyo Medical Univ., Department of Breast Surgery, Japan

Background: Tumor-infiltrating lymphocytes (TILs) are known to relate with response to treatments followed by better survival; however, majority of breast cancer (BC) hardly have any TILs. Thus, discovery of targetable novel mechanism of TIL infiltration is expected to have a major clinical implication. The aim of this study is to investigate the role and clinical relevance of tumor miR-150 expression and attraction of TILs in BC patients.

Methods: In silico analyses was conducted on total of 1,961 breast cancer patients from large independent cohorts, TCGA and METABRIC. In Vitro experiments were using MDA-MB231 and BT-549 BC cell lines and Jurkart lymphocyte cell line.

Result: MiR-150 expression correlated with Nottingham grade and was higher in triple negative subtype in both cohorts (all $p < 0.001$). On the other hand, miR-150 expression enriched MTORC1 and KRAS signaling as well as multiple immune-related Hallmark gene sets including IFN-gamma, TNF-α, IL-2, IL-6, allograft rejection and inflammatory response by gene set variant analysis (all Spearman's coefficient $r > 0.50$ and $p < 0.01$). High miR-150 expression significantly correlated with lymphocyte infiltration and TCR-Shannon, and infiltration fraction of CD8+, CD4+ memory T cells and dendritic cells, and was strongly correlated with cytolytic activity consistently in both cohorts ($r = 0.824$ and 0.786, both $p < 0.01$), all suggesting strong relationship with immune cell infiltration and immune response. High MiR-150 expression was associated with improved overall survival ($p < 0.001$, $p = 0.030$), particularly in ER-positive/HER2-negative patients. Mimic overexpression of miR-150 in either MB231 or BT-549 cells significantly increased the migration intensity of Jurkart cells demonstrated by Transwell invasion assay. Furthermore, breast tumor injected miR150 have higher infiltration fraction of CD8+ cells compared to control in vivo.

Conclusions: MiR-150 expression in patients' breast cancer evoke immune response, attracts immune cells to tumor microenvironment and is associated with overall survival.

Poster Presentation

RECURRENCE PATTERNS ANALYSIS IN VERY YOUNG PATIENTS WITH HORMONE RECEPTOR-POSITIVE HER2-NEGATIVE BREAST CANCER

Hsu-Huan Chou, Wen-Ling Kuo, Shih-Che Shen, Chi-Chang Yu, Ruoh-Yun Gau, Shin-Cheh Chen

Linkou Chang Gung Memorial Hospital, Department of Surgery, Taiwan

Background: The incidence of breast cancer among young Taiwanese patients (aged 30-39) has surpassed that of the United States, with younger age at diagnosis correlating with a less favorable prognosis. Our study explores the recurrence patterns of very young (≤ 35 years old) breast cancer patients with hormone receptor-positive (HR+) HER2-negative tumors.

Methods: In a retrospective study from 1990 to 2016, we analyzed a cohort of 4,797 early breast cancer patients under the age of 50 at Chang Gung Memorial Hospital (CGMH). We compared local regional relapse-free survival (LRRFS), distant metastatic-free probability (DMFS), and contralateral breast cancer-free survival (CBFS) within the HR+/HER2- subtype.

Result: The study featured a median follow-up time of 116.1 months (range: 3-363.6 months). Among the 4,797 patients aged below 50, 12.4% were categorized as "very young" (≤ 35 years old), whereas 87.6% were classified as "young" (36-50 years old). By the molecular subtypes, 57.3% (n = 2,750) exhibited HR+/HER2-, 14.1% (n = 675) HR+/HER2+, 11% (n = 528) HR-/HER2+, and 17.6% (n = 844) HR-/HER2-. When stratified by age, 49.8% (n = 297) fell into the "very young ", with 58.4% (n = 2,453) belonging to the HR+/HER2- subtype. Remarkably, very young patients displayed significantly ($p < 0.0001$) worse disease-free survival (DFS) and overall survival (OS) with a 10-year OS rate of 76.1% compared to 83.9% in the "young" age group in the HR+/HER2- subtype. Regarding recurrence patterns, both LRRFS and DMFS significantly varied between the two age groups, whereas there was no significant difference in CBFS ($p = 0.383$).

Conclusions: Breast cancer patients in the "very young" category (≤ 35 years old), especially those with HR+/HER2- subtype, experience inferior outcomes compared to the "young" group (36-50 years old). There are substantial disparities in both local recurrence and distant metastasis rates between these two groups, while the risk of contralateral breast cancer does not significantly increase in the "very young" cohort.

POLYGENIC RISK SCORES AND CHEMOTHERAPY-INDUCED NEUTROPENIA IN BREAST CANCER: A SINGLE-CENTER STUDY

I-Chen Tsai[1], Kuo-Chung Wang[1], Chih-Chiang Hung[1], Tzu-Hung Hsiao[2]

[1]Taichung Veterans General Hospital, Department of Surgery, Taiwan, [2]Taichung Veterans General Hospital, Department of Medical Research, Taiwan

Background: Chemotherapy-induced neutropenia (CIN) or febrile neutropenia contribute significantly to patient morbidity, increasing the susceptibility to severe, potentially fatal infections. Polygenic Risk Scores (PRS) aggregate the effects of multiple genetic variants, known as single nucleotide polymorphisms (SNPs), to generate a single score that reflects an individual's genetic predisposition to specific diseases or phenotypes. The purpose of this study is to investigate the association between PRS and CIN in breast cancer patients, using data from a single medical center, in order to gain a better understanding of the genetic factors influencing CIN.

Methods: Between June 2019 and May 2021, Taichung Veterans General Hospital (TCVGH), a tertiary medical center, conducted patient recruitment for the TPMI project, a nationwide genetic research endeavor led by Academia Sinica in Taiwan. The custom array utilized in this study provides comprehensive coverage of GWAS SNP data from a large-scale Han Chinese population in Taiwan.

Result: A total of 890 patients were enrolled in this study, with a median age of 59 years among the breast cancer patients. The data revealed no significant differences in neutropenia occurrence based on breast cancer subtype (estrogen receptor status, HER2 status) between the neutropenia and non-neutropenia groups. There were no statistically significant differences in neutropenia rates associated with ECOG status, higher BMI, or nodal status. Patients who underwent neoadjuvant chemotherapy exhibited a higher neutropenia rate compared to those who did not (29.5% vs. 17.6%, $p < 0.001$). Primary prevention, involving the use of G-CSF before neutropenia onset, significantly reduced the neutropenia rate (10.9% vs. 24.7%, $p < 0.001$).

Conclusions: Our study demonstrates the potential utility of PRS models in predicting the risk of CIN in breast cancer patients. The findings contribute to a deeper understanding of the genetic factors influencing CIN and offer valuable insights for risk assessment and the development of personalized CIN prophylactic strategies.

THE PREDICTION OF LATE DISTANT METASTASIS RISK FOR HORMONE RECEPTOR-POSITIVE BREAST CANCER PATIENTS BASED ON AN INTEGRATION OF CLINICAL VARIABLES

Chan Sub Park[1], Min Ki Seong[1], Yireh Han[1], Heewon Kim[1], Jaehyun Yoo[1], Sei-Hyun Ahn[5], Jai Min Ryu[6], Seung Il Kim[7], Eun-Gyeong Lee[8], Seock-Ah Im[9], Yongsik Jung[4], Min Ho Park[10], Kyong Hwa Park[11], Su Hwan Kang[12], Joon Jeong[13], Eunhwa Park[14], Sung Yong Kim[15], Min Hyuk Lee[16], Lee Su Kim[17], Woosung Lim[5], Hee Jeong Kim[3], Woo Chul Noh[2], Hyun-Ah Kim[1]

[1]Korea Cancer Center Hospital, Department of Breast Cancer Center, Korea, [2]Konkuk Univ. Medical Center, Department of Surgery, Korea, [3]ASAN Medical Center, Department of Surgery, Korea, [4]Ajou Univ. School of Medicine, Department of Surgery, Korea, [5]Ewha Womans Univ. School of Medicine, Department of Surgery, Korea, [6]Samsung Medical Center, Department of Surgery, Korea, [7]Yonsei Univ. College of Medicine, Department of Surgery, Korea, [8]National Cancer Center Hospital, Department of Surgery, Korea, [9]Seoul National Univ. Hospital, Department of Medical Oncology, Korea, [10]Chonnam National Univ. Hwasun Hospital, Department of Surgery, Korea, [11]Korea Univ. Anam Hospital, Department of Medical Oncology, Korea, [12]Yeungnam Univ. College of Medicine, Department of Surgery, Korea, [13]Gangnam Severance Hospital, Department of Surgery, Korea, [14]Dong-A Univ. College of Medicine, Department of Surgery, Korea, [15]Soonchunhyang Univ. Hospital Cheonan, Department of Surgery, Korea, [16]Soonchunhyang Univ. Hospital Seoul, Department of Surgery, Korea, [17]Chung-Ang Univ. Gwangmyeong Hospital, Department of Surgery, Korea

Background: More than fifty percent of recurrences reported after five years of adjuvant endocrine therapy. There is a simple but useful scoring system called CTS5. However, CTS5 was based on the data of menopausal patients. Therefore, the use of CTS5 in premenopausal women with HR-positive breast cancer might not be appropriate. ASTRRA trial was a randomized controlled trial that compared OFS use for 2 years with tamoxifen versus tamoxifen only in patients who remained premenopausal or regained ovarian function after chemotherapy. Post-trial eight years follow-up result was presented in 2023. We aimed to focus on premenopausal women with HR-positive breast cancer and developed a tool for estimate risk of late distant metastasis using clinicopathologic features collected from patients with breast cancer at diagnosis.

Methods: We obtained data from the ASTRRA II trial. All included patients' data (1048 cases) were randomly selected into the training set and the validation set in 1:1 ratio. Cox-regression test was used to identify risk factors associated with the incidence of distant metastasis. Receiver operating characteristic curves were used to verify the accuracy of the model.

Result: Patients' age, tumor size, metastatic node status, histologic grade was well distributed. The area under curve values for our model established in the training set and validation set were 0.746 and 0.639 suggesting that the model had good predictive power. Our model showed significantly prognostic for late distant metastasis in the training set (HR, 4.783; $p < 0.001$) and validation set (HR, 2.207; $p = 0.033$). Our risk stratification defined in the training set as low or high identified 31.4% of the validation set as high risk.

Conclusions: Our model is easy-to-use calculation, being proven to be with reliable discrimination ability and accuracy. We believe that this model could be a good tool for predicting distant metastasis for premenopausal patients with hormone receptor positive breast cancer.

Poster Presentation

PREDICTIVE VALUE OF CIRCULATING TUMOR DNA (CTDNA) IN PATIENTS WITH METASTATIC BREAST CANCER

Dae-Won Lee[1], Hanbaek Yi[1], Tae-Yong Kim[1], Myung Geun Song[2], Hwang-Phill Kim[3], Tae-You Kim[1,3,4], Jinyong Kim[1], Kyung-Hun Lee[1,4], Seock-Ah Im[1,4]

[1]Seoul National Univ. Hospital, Department of Internal Medicine, Korea, [2]Seoul National Univ. Hospital, Department of Biomedical Research Institute, Korea, [3]IMBdx Inc., Korea, [4]Seoul National Univ. College of Medicine, Department of Cancer Research Institute, Korea

Background: The subtype of metastatic breast cancer (mBC) can be changed during tumor progression, and repeated biopsies are helpful in determining the appropriate systemic treatment. Liquid biopsy using circulating tumor DNA (ctDNA) is suggested as an alternative method to replace conventional biopsy.

Methods: Prospective serial collection of 65 ctDNA samples from 17 patients with mBC at Seoul National University Hospital from October 2020 to March 2022 was performed. The concentration of cfDNA and the sum of variant allele frequency (VAF) was calculated by using the IMBDx AlphaLiquid 100 platform.

Result: The baseline cfDNA concentration ranged from 0.71 to 1386.00 ng/mL, with the median value of 5.61 ng/mL. The sum of VAF ranged from 0% to 223.46%, with the median value of 5.35%. The patients were dichotomized into two groups, according to the amount of ctDNA (either higher or lower than the median value). High concentration of cfDNA was correlated with shorter overall survival (OS) ($p = 0.043$) and progression-free survival (PFS) ($p = 0.064$). Sum of VAF of ctDNA also showed correlation with OS ($p < 0.001$) and PFS ($p < 0.001$). ctDNA was correlated with tumor status. Sum of VAF showed dramatic decrease after initiation of systemic treatment, and its increase preceded clinical progression. Patients with PIK3CA mutation in ctDNA had significantly worse OS ($p = 0.035$) and PFS ($p = 0.006$). Mutations in ctDNA-TP53 was also correlated with worse OS ($p = 0.001$) and PFS ($p = 0.011$). Patients with visceral metastases had higher amount of ctDNA ($p = 0.003$ for concentration and $p = 0.001$ for sum of VAF), and number of metastases was also correlated with higher ctDNA ($p = 0.020$ for concentration and $p = 0.003$ for sum of VAF).

Conclusions: Patients with mBC with higher concentrations of cfDNA or higher VAF of ctDNA had shorter survival. PIK3CA and TP53 mutation, as detected with liquid biopsy, could be used as a poor prognostic biomarker for mBC patients.

CHARACTERISTICS AND PROGNOSIS OF BREAST CANCER PATIENTS WHO HAVE UNDERGONE HORMONE REPLACEMENT THERAPY: FROM THE KOREAN BREAST CANCER SOCIETY REGISTRY DATABASE

Chai-Won Kim[1], Woo Chan Park[2], Chang Ik Yoon[2], Young Joo Lee[2], Dooreh Kim[2], Soo Youn Bae[2]

[1]The Catholic Univ. of Korea, College of Medicine, Department of Surgery, Korea, [2]The Catholic Univ. of Korea, Seoul St. Mary's Hospital, Department of Surgery, Korea

Background: The characteristics and prognosis of hormone replacement therapy (HRT)-related breast cancer (BC) are not well known. This study aimed to evaluate the characteristics and the prognosis of BC who have experienced HRT.

Methods: We analyzed data of 17,355 postmenopausal patients with BC from the Korea Breast Cancer Society database (2000-2014). Among them, 3,585 patients (20.7%, HRT group) underwent HRT before BC diagnosis. Clinicopathologic characteristics and overall survival (OS) rate were compared between the HRT group and non-HRT groups.

Result: The HRT group had a lower pathologic stage, lower histologic grade, and more breast conservation surgery than the non-HRT group. The rate of progesterone receptor-negative and human epidermal growth factor receptor-2 negative was higher in the HRT group than in the non-HRT group. Compared to the non-HRT group, the HRT group had more patients with normal or overweight body mass index (BMI). The rates of screening and hysterectomy were higher in the HRT group than in the non-HRT group. The OS of the HRT group was better than that of the non-HRT group (5-year OS rate: 93.9% vs 91.7%, $P < 0.001$). Regarding screening, the OS rate of HRT group was higher than that of non-HRT group. Patients with normal and over BMI of in the HRT group had better OS than those in the non-HRT group. The HRT group had a better OS for all HRT duration. There was no significant difference between the two groups in terms of hysterectomy, but the OS was better for patients in the HRT group who did not have a hysterectomy.

Conclusions: Patients in the HRT group had favorable clinicopathologic characteristics and a better OS than those in the non-HRT group. HRT group may have a better prognosis depending on BMI subtype, presence or absence of screening and hysterectomy, and duration of HRT.

CLINICAL FACTORS PRONE TO DEVELOP CONTRALATERAL METACHRONOUS BREAST CANCER

Byeongkwan Park[1], Seung Taek Lim[1], Young Jin Suh[1], Young Yi An[2], Hyunjoo Choi[3]

[1]The Catholic Univ. of Korea, St. Vincent's Hospital, Department of Surgery, Korea, [2]The Catholic Univ. of Korea, St. Vincent's Hospital, Department of Radiology, Korea, [3]The Catholic Univ. of Korea, St. Vincent's Hospital, Department of Pathology, Korea

Background: The evolution of diagnostic and therapeutic strategies in breast cancer care has resulted in an increased population of long-term survivors. In the population of breast cancer survivors, the occurrence of contralateral breast cancer (CBC) represents the most frequent form of subsequent cancer incidence.

Methods: Data on 45,469 women diagnosed with stage 1 to 3 initial ipsilateral breast cancer were collected from the Korean Breast Cancer Registry, which is maintained prospectively from 1990 to May of 2023. These patients were categorized into two cohorts: 376 individuals who developed metachronous contralateral breast cancer (MCBC) and 45,093 who did not. The study employed logistic regression to identify potential risk factors at diagnosis possibly leading to MCBC.

Result: A comparative analysis of baseline characteristics at initial diagnosis of unilateral breast cancer revealed marked difference between the groups with MCBC and those without (non-MCBC). Patients diagnosed with an initial breast cancer before the age of 40, possessing a familial history of breast cancer, and exhibiting some histological characteristics such as HER2 amplification or triple-negative subtypes, negative for estrogen receptor (ER) or progesterone receptor (PR), or having a Ki-67 score above 15, were more prevalently found in the MCBC group compared to the non-MCBC group with statistical significance. The predictive factors for MCBC included being younger than 40 at the time of initial diagnosis, having a positive family history of breast cancer, HER2 amplification or triple-negative subtypes and testing negative for ER or PR on multivariate analysis.

Conclusions: The findings highlight the importance of certain demographic and pathological variables, such as age at first diagnosis below 40, a family history of breast cancer, and negative hormone receptor status, in increasing the risk of developing metachronous contralateral breast cancer. These results suggest the need for personalized follow-up and treatment plans for these patients with meaningful risk factors.

CIRCULATING TUMOR CELL COUNT FOR ASSESSING THE EFFICACY OF NEOADJUVANT ALBUMIN-BOUND PACLITAXEL PLUS TRASTUZUMAB (HLX02) AND PYROTINIB MALEATE IN HER2-POSITIVE, STAGE II-III BREAST CANCER

Chunying Zhuang[1], Kunnrui Zhu[1], Dan Zheng[1], Xiangju Kong[2], Ping He[1], Xingde Zheng[2], Ting Luo[1]

[1]West China Hospital, Sichuan Univ., Department of Medical Oncology, China, [2]Hangzhou Mairuikang Biotechnology Co., Ltd., Department of Medical Oncology, China

Background: The anti-HER2 targeted therapies have dramatically increased the pathological complete response (pCR) of HER2-positive breast cancer which subsequently improved patients' outcomes. The biosimilar of trastuzumab HLX02 holds great potential to expand the options for anti-HER2 targeted therapies. However, existing neoadjuvant efficacy monitoring methods are limited in terms of convenience, repeatability, and accuracy of detection. As a non-invasive examination, circulating tumor cell (CTC) count show promise in treatment assessment for neoadjuvant setting.

Methods: We conducted a prospective clinical trial adopting patients diagnosed with HER2-positive stage II-III breast cancer from January 2021 to July 2023. The participants were administered albumin-bound paclitaxel (Nab-P), HLX02, and pyrotinib for six cycles in a neoadjuvant setting followed by surgery. The primary endpoint was pCR (ypT0/isN0). CTCs was captured and counted at baseline, post-neoadjuvant therapy, and post-surgery using Metafer-SE-iFish.

Result: A total of 95 patients were included in this analysis with a median follow-up time of 22.18 months. The number of CTCs was significantly reduced after neoadjuvant therapy compared to that of the baseline levels (3.06 ± 3.38 vs. 0.84 ± 1.53 FU/5 ml, $p < 0.001$). The reduction of CTC cout was more visible when compared patients with grade III tumor to those with grade II tumor (2.51 ± 3.75 vs. 1.99 ± 3.58 FU/5 ml, $p = 0.043$), and Ki67 ≤ 20% to those with Ki67 > 20%(3.27 ± 3.75 vs. 1.82 ± 3.55 FU/5 ml, $p = 0.042$). A total of 66.32% patients achieved pCR, and those with ≥ 2 CTCs reduction after neoadjuvant therapy are more inclined to achieve pCR (95% CI, 0.174 to 0.893; $p = 0.040$).

Conclusions: CTC count enables the evaluation of the neoadjuvant therapeutic efficacy of albumin-bound Paclitaxel plus Trastuzumab (HLX02) and Pyrotinib Maleate in HER2-positive, stage II-III breast cancer. Variations in CTC count across different clinical stages and Ki67 levels may reveal the effect of different clinical parameter and biomarkers on neoadjuvant therapy response. The value of CTCs in predicting the long-term survival of these patients needs further analysis.

THE OCCURRENCE OF CHEMOTHERAPY-INDUCED PERIPHERAL NEUROPATHY ASSESSED USING ELECTRONEUROMYOGRAPHY AND ITS ASSOCIATION WITH C-REACTIVE PROTEIN (CRP) LEVEL IN PATIENTS WITH BREAST CANCER

Susanna H. Hutajulu[1], Yufi K. Astari[2], Meita Ucche[3], Ridha Niradita[3], Dian C. Sulistyoningrum[4], Mardiah S. Hardianti[1], Kartika W. Taroeno-Hariadi[1], Ibnu Purwanto[1], Johan Kurnianda[1], Yudiyanta Yudiyanta[5]

[1]Universitas Gadjah Mada/Dr. Sardjito General Hospital, Division of Hematology and Medical Oncology, Department of Internal Medicine, Indonesia, [2]Dr. Sardjito General Hospital, Division of Hematology and Medical Oncology, Department of Internal Medicine, Indonesia, [3]Universitas Gadjah Mada, Department of Study Program of Subspecialty In Hematology and Medical Oncology, Department of Internal Medicine, Faculty of Medicine, Public Health and Nursing, Indonesia, [4]Universitas Gadjah Mada, Department of Nutrition and Health, Faculty of Medicine, Public Health and Nursing, Indonesia, [5]Universitas Gadjah Mada/Dr. Sardjito General Hospital, Department of Neurology, Indonesia

Background: Chemotherapy-induced peripheral neuropathy (CIPN) is a long-term and distressing symptom among patients with breast cancer (BC), which is mediated through inflammatory process. There is a lack of studies that measured CIPN using objective measurement with electroneuromyography (ENMG). This study aimed to assess the occurrence of CIPN and its predicting factors including inflammatory biomarkers.

Methods: This study recruited 44 patients with stage I-IV BC receiving anthracycline-taxane chemotherapy from 2018 to 2022. Peripheral neuropathy was assessed before and after chemotherapy completion (CIPN) using objective (ENMG) and subjective (CTACE) measurements and defined positive based on ENMG and/or CTCAE results. An increased intensity of pre-existing neuropathy or a new-onset CIPN was classified as progressive CIPN. Completed blood count data was collected before chemotherapy to calculate neutrophil-to-lymphocyte ratio (NLR) and platelet-to-lymphocyte ratio (PLR). CRP, IL-6, and vitamin D levels were analyzed using ELISA method. Predicting factors of progressive CIPN, including clinicopathological, treatment, and inflammatory biomarkers, were analyzed using logistic regression. A p-value < 0.100 was considered significant.

Result: The mean age was 54 ± 7.85 years and only 6 patients (13.6%) had diabetes mellitus comorbidity. Before chemotherapy, peripheral neuropathy was already found in 30 patients (68.2%), based on objective measurement (29/44, 65.9%) and subjective evaluation (1/44, 2.3%). After chemotherapy completion, 43 patients (97.7%) demonstrated CIPN, including stable pre-existing neuropathy in 12 patients (12/44, 27.3%), increased intensity of pre-existing neuropathy in 18 patients (18/44, 40.9%) and new-onset CIPN in 13 patients (13/44, 29.5%). CRP > 5 mg/L was significantly associated with a lower progressive CIPN risk (OR 0.23, 90%CI 0.06-0.86, $p = 0.066$). Older age, higher BMI, pre-menopausal status, NLR > 2.6, and PLR > 124 showed higher progressive CIPN occurrence ($p > 0.100$).

Conclusions: The occurrence of CIPN in local BC patients was very high with a high occurrence of pre-existing neuropathy before chemotherapy. CRP level > 5 mg/L was associated with lower progressive CIPN risk.

THE CORRELATION OF HIGH SENSITIVITY C-REACTIVE PROTEIN AND INTERLUKIN-6 LEVELS TO PROGRESSION-FREE SURVIVAL AND DISEASE-FREE SURVIVAL OF BREAST CANCER PATIENTS IN YOGYAKARTA, INDONESIA

Meita Ucche[1], Yufi Kartika Astari[2], Mardiah Suci Hardianti[2], Kartika Widayati Taroeno-Hariadi[2], Johan Kurnianda[2], Ibnu Purwanto[2], Dewi Kartikawati Paramita[3], Irianiwati Irianiwati[4], Susanna Hilda Hutajulu[2]

[1]Universitas Gadjah Mada, Department of Medical Oncology, Indonesia, [2]Universitas Gadjah Mada/Dr. Sardjito Hospital, Department of Medical Oncology, Indonesia, [3]Universitas Gadjah Mada, Department of Histology and Cell Biology, Indonesia, [4]Universitas Gadjah Mada/Dr. Sardjito Hospital, Department of Pathology, Indonesia

Background: Some studies have shown the role of inflammation in process of initiation, development, and behavior of breast cancer. It has been acknowledged that C-reactive protein (hsCRP) and Interleukin-6 (IL-6) are the mediators and indicators of inflammation response. However, their role as prognostic factors in breast cancer is still inconsistent.

Methods: We recruited 123 patients with newly diagnosed breast cancer from July 2018 to June 2020. We examined the pre-treatment hsCRP and IL-6 levels using ELISA method. The cut-off for hsCRP and IL-6 levels was determined using receiver operating characteristic curve analysis. We analyzed the association of hsCRP and IL-6 with 3 years progression-free survival (PFS) and disease-free survival (DFS) using Kaplan-Meier method.

Result: Patients with serum IL-6 level > = 0.85 pg/mL and CRP level > = 4.48 mg/L had poorer prognosis both in PFS ($p = 0.009$) and DFS ($p = 0.003$). CRP level > = 4.48 mg/L ($p = 0.011$, HR = 2.28, 95% CI 1.20-4.33), N > = 1 ($p = 0.003$, HR = 2.63, 95% CI 1.39-4.97), and metastatic breast cancer ($p = 0.001$, HR = 3.31, 95% CI 1.82-6.01) were independent prognostic factors for DFS while CRP level > = 4.48 mg/L ($p = 0.007$, HR = 2.35, 95% CI 1.26-4.36), cerebrovascular diseases ($p = 0.012$, HR = 43.63, 95% CI 2.33-816.11), HER2-positive breast cancer ($p = 0.018$, HR = 2.77, 95% CI 1.19-6.44), N > = 1 ($p = 0.008$, HR = 2.28, 95% CI 1.24-4.36), and metastatic breast cancer ($p = 0.001$, HR = 3.17, 95% CI 1.73-5.80) were independent prognostic factors for PFS.

Conclusions: Higher levels of hsCRP and IL-6 were associated with poorer prognosis in breast cancer. However, hsCRP levels alone could become the independent prognostic factors for breast cancer.

NEUTROPHIL TO LYMPHOCYTE RATIO AFTER TREATMENT COMPLETION AS A POTENTIAL PROGNOSIS MARKER OF SURVIVAL IN PATIENTS WITH BREAST CANCER IN DIFFERENT SUBTYPE

Chanchai Charonpongsuntorn, Supagone Wangsubtawee

Srinakhariwirot Univ., Department of Medical Oncology, Thailand

Background: Neutrophil to lymphocyte ratio (NLR) has been used as inflammatory and immune responses. A higher NLR has poor survival outcomes. NLR may also used as predictor for survival in patients with solid malignancies and also with breast cancer for predict recurrence. It has been demonstrated in recurrence breast cancer but addition, this study explores in different subtype of breast cancer.

Methods: Retrospective analysis involving 564 patients who diagnosed early breast cancer between 2012-2022. Clinical pathological data, subtype of breast cancer, treatment, including those on peripheral complete blood cell count were collected and calculated for NLR. Correlation of NLR as prognosis value in terms of recurrent survival was analysis.

Result: 564 patients with curative breast cancer were included in the present study. Mostly of subtype were luminal A and B (64.54%). ROC curves determine the same values of these inflammatory markers as prediction prognosis and cut point for 4.5 for sensitivity 73.1% and specificity 64.2%. A high NLR was correlated with poor prognosis for recurrence (HR = 4.19, p-value < 0.001). High NLR was useful in all subtypes of breast cancer (luminal disease, HER-2-overexpression and triple negative breast cancer) with statistically significant. Multivariate analysis shown that N2, grading, Lymphatic invasion, NAC involvement, HER-2 positive and higher NLR was statistically significant factors for predict recurrence.

Conclusions: Elevated NLR was significantly associated with worse survival in terms of recurrent breast cancer after curative surgery in all subtypes of breast cancer. NLR might be a useful surrogate marker for predict recurrence after surgery.

PROGNOSTIC IMPLICATIONS OF HER2 CHANGES AFTER NEOADJUVANT CHEMOTHERAPY IN PATIENTS WITH HER2-ZERO AND HER2-LOW BREAST CANCER

Sora Kang[1], So Heun Lee[2], Hee Jin Lee[3], Hyehyun Jeong[2], Jae Ho Jeong[2], Jeong Eun Kim[2], Jin-Hee Ahn[2], Kyung Hae Jung[2], Gyungyub Gong[3], Hak Hee Kim[4], Saebyeol Lee[5], Jongwon Lee[5], Sung-Bae Kim[2]

[1]Chungnam National Univ. Hospital, Department of Medical Oncology, Korea, [2]ASAN Medical Center, Department of Medical Oncology, Korea, [3]ASAN Medical Center, Department of Pathology, Korea, [4]ASAN Medical Center, Department of Radiology, Korea, [5]ASAN Medical Center, Department of Surgery, Korea

Background: Transition of HER2 status after neoadjuvant chemotherapy (NAC) has frequently been reported previously; however. Few study has focused on HER2-low breast cancer. Here, we evaluated the HER2 transition proportion among HER2-zero and HER2-low breast cancer cases post-NAC and the impact of clinical outcome.

Methods: We included 1288 patients who had paired pre- and post-therapeutic HER2 status results. HER2-zero was defined as immunohistochemistry (IHC) 0, and HER2-low was defined as IHC 1+ or IHC 2+, with in situ hybridization-negativity.

Result: Of patients who were HER2-zero pre-NAC, 68% (445/650) and 29% (189/650) of patients were HER2-zero and HER2-low, respectively, post-NAC. Among patients who were HER2-low pre-NAC, 32% (201/638) of patients showed HER2 changes, and 59% (374/638) of patients had a constant HER2-low status post-NAC. Among the post-NAC HER2-low patients, those with constant HER2-low tumors were more frequently hormone-receptor-positive (84% vs. 77% in pre-therapeutic samples) than were patients with post-NAC HER2 changes. Among patients with post-therapeutic HER2-zero tumor, those with HER2 transition (low- > zero) had better overall (OS) and disease-free survival (DFS) than did those with constant HER2-zero tumor ($p = 0.0009$ for OS, $p = 0.00028$ for DFS). However, when separately analyzing HR status, no differences were observed in OS and DFS according to HER2 changes among both the HR-positive and -negative subsets. Among patients with HER2-low residual tumors, no significant differences in OS and DFS according to HER2 transition were observed in the overall cohort or HR-positive subset. However, in HR-negative patients, those with HER2 transition (zero- > low) showed significantly worse OS ($p = 0.005$) and DFS ($p = 0.0041$) than those with constant HER2-low.

Conclusions: Temporal heterogeneity of HER2-low expression is observed in substantial portions of post-NAC breast cancer patients. Clinical outcomes show no significant associations, except in the post-therapeutic HER2-low, HR-negative subset.

PROGNOSTIC SIGNIFICANCE OF CTDNA MUTATION ANALYSIS IN HER2-POSITIVE BREAST CANCER PATIENTS UNDERGOING NEOADJUVANT CHEMOTHERAPY

Soo Jung Lee[1], Jeeyeon Lee[2], In Hee Lee[1], Byeongju Kang[2], Ho Yong Park[2], Jee-Young Nora Park[3], Tiantian Zheng[5], Lu Tan[5], Shidong Jia[5], Pan Du[5], Liam Il-Young Chung[4], Yee Soo Chae[1], Young Kwang Chae[4]

[1]Kyungpook National Univ. Chilgok Hospital, Department of Medical Oncology, Korea, [2]Kyungpook National Univ. Chilgok Hospital, Department of Surgery, Korea, [3]Kyungpook National Univ. Chilgok Hospital, Department of Pathology, Korea, [4]Northwestern Univ., Department of Medical Oncology, U.S.A., [5]Predicine Inc., Department of Predicine Inc., U.S.A.

Background: Neoadjuvant chemotherapy (NACT) combined with dual anti-HER2 agents followed by surgical resection is the standard treatment for stage II-III HER2- positive breast cancer (BC). Despite the availability of effective therapies, identifying patients at high risk of disease recurrence remains challenging. To evaluate whether circulating tumor DNA (ctDNA) can be used as a biomarker to assess treatment response in patients with HER2-positive EBC.

Methods: A total of 46 HER2-positive BC patients who underwent NACT combined with dual anti-HER2 agents and surgical resection were enrolled, including 28 clinical stage II and 17 III patients. Plasma samples were collected at four time points: before NACT, after 3 cycles, at the completion of NACT, and after surgery. lpWGS was utilized to assess bCNB, while WES was performed to evaluate genomic alterations, mutational signatures, and bTMB. Mutations selected from the baseline sample were monitored for MRD. Somatic mutations are identified by WES across 20,000 genes (with boosted sequencing coverage for 600 cancer-related genes). Between 4-50 personalized somatic mutations or fusions are selected for each patient. This personalized panel together with a fixed MRD core panel is utilized for MRD detection and monitoring.

Result: Nodal metastasis was observed in 29 patients and 29 were hormone receptor-positive, and 36 achieved pCR (78.2%). Positive ctDNA was detected 58.8% of patients. Higher nodal stage was associated with ctDNA positivity at baseline. MRD positivity after chemotherapy was observed in 4 patients and 2 patient achieved pCR TP53 was the most frequently altered gene. Non-PCR patients commonly exhibit MAP3K1 and MAP2K4 alteration is their ctDNA.

Conclusions: The identification of MRD, regardless of pCR status, can be valuable for risk stratification and personalized treatment decision-making. Further studies are warranted to validate these findings and explore the clinical implications of ctDNA mutation analysis in HER2-positive BC management.

UNMET NEED FOR ESCALATING TREATMENTS BEYOND ENDOCRINE THERAPY: REAL-WORLD EVIDENCE FROM CDK4/6 INHIBITORS-UNTREATED NON-METASTATIC HR+HER2- BREAST CANCER PATIENTS WHO RECEIVED NEOADJUVANT CHEMOTHERAPY

Seung Ho Baek[1,2], Soong June Bae[1,2], Yoonwon Kook[1,2], Sohyun Moon[1,2], Min Ji Lee[1,2], Joon Jeong[1,2], Sae Byul Lee[3], Sung Gwe Ahn[1,2]

[1]Gangnam Severance Hospital, Department of Surgery, Korea, [2]Gangnam Severance Hospital, Department of Institute for Breast Cancer Precision Medicine, Korea, [3]ASAN Medical Center, Department of Surgery, Korea

Background: Abemaciclib, a CDK4/6 inhibitor, has been incorporated into clinical practice as an adjuvant treatment for high-risk early-stage luminal-like breast cancer. To address the clinical unmet need for CDK4/6 inhibitors, we investigated the treatment outcomes of patients with hormone receptor(HR)-positive, HER2-negative, node-positive breast cancer who received neoadjuvant chemotherapy.

Methods: We retrospectively identified 1,100 patients with HR+HER2- breast cancer who underwent NAC at Gangnam Severance Hospital and Asan Medical Center between January 2007 and June 2021. Ki67 value was confirmed in either biopsy sample or surgical specimen. The patients were classified according to the Monarch E (ME) trial; (a) clinically N2-3 or (b) clinically N1 with at least one of the followings is met: Ki67 value ≥ 20%, grade 3, tumor size ≥ 5 cm. We investigated the recurrence-free survival (RFS).

Result: The distribution of N stage was 391 (36.0%) for N2-3 and 686 (63.1%) for N1, respectively. In the N2-3 cohort, the RFS differed significantly by Ki67; the 10-year RFS of the high Ki67 group was 51.8% (95% CI, 39.5%-68.0%), whereas that of the low Ki67 group was 75.2% (95% CI, 69.1%-81.7%). In the N1 cohort, multivariable analysis indicated that high Ki67 was an independent predictor of recurrence (HR, 2.11; 95% CI, 1.37-3.25). Additionally, eligibility for the ME criteria was marginally associated with the risk of recurrence (HR, 1.45; 95% CI, 0.98-2.17).

Conclusions: Our NAC cohort, comprising patients with high-risk, HR-positive, HER2-negative breast cancer, offers real-world evidence highlighting the clinical unmet need for adjuvant CDK4/6 inhibitors and underscores the significance of Ki67 as a prognostic marker.

PROGNOSTIC IMPLICATIONS OF TUMOR-INFILTRATING LYMPHOCYTES IN INVASIVE RESIDUAL DISEASE FOLLOWING NEOADJUVANT CHEMOTHERAPY IN BREAST CANCER

Soong June Bae, Min Ji Lee, Sohyun Moon, Seung Ho Baek, Yoonwon Kook, Sung Gwe Ahn, Joon Jeong

Gangnam Severance Hospital, Department of Surgery, Korea

Background: While tumor-infiltrating lymphocytes (TILs) is indeed a recognized predictive factor for treatment response and prognosis in patients with breast cancer, the clinical significance of TILs on invasive residual disease after neoadjuvant chemotherapy (NAC) have not been clearly defined. This study aimed to explore the prognostic value of TILs evaluated in invasive residual tumor in patients with breast cancer undergoing NAC.

Methods: We evaluated stromal TIL levels in patients with invasive residual disease after NAC. Using a 10% cut-off value, patients were categorized into low TIL (< 10%) and high TIL (≥ 10%) groups for statistical analysis. We performed a Cox-regression model to determine the association between TILs in invasive residual disease and recurrence-free survival (RFS).

Result: Among 1,459 patients with breast cancer who underwent NAC, 862 had invasive residual disease in the breast, with TILs data available for 658 patients. Of these, 206 (31.5%) had high TILs, while 469 (68.5%) had low TILs. The low TILs group exhibited a higher frequency of young age, HR+HER2- breast cancer, and high residual tumor burden compared to the high TILs group. During the median follow-up of 38 months, high TILs group showed worse RFS compared to low TILs group (3-year RFS: 83.6% vs. 93.4%, log-rank $p = 0.003$). Furthermore, the multivariable analysis identified high TILs in invasive residual disease as a significantly independent factor for poor RFS (adjusted HR 1.80; 95% CI, 1.05-3.06; $p = 0.032$).

Conclusions: Our findings suggest that assessment of TILs in invasive residual disease after NAC may provide valuable prognostic insights for patients with breast cancer.

LOW PR EXPRESSION MAY BE PROGNOSTIC OF WORSE ONCOLOGIC OUTCOMES IN HER2 POSITIVE BREAST CANCER

Ji Hye Kim, Jai Hyun Chung, Woo Young Kim, Yong Yeup Kim, Mi Young Jang, Jae Bok Lee, Sang Uk Woo

Korea Univ. Guro Hospital, Department of Breast and Endocrine Surgery, Korea

Background: HER2 positive (HER2+) breast cancer is a heterogeneous disease with different molecular features, one of its marked heterogeneity lying on the expression of hormone receptors. Negative progesterone receptor (PR) in luminal breast cancer has often been reported to be associated with worse oncologic outcomes. The aim of this study was to identify whether strong progesterone expression levels may act as prognostic factors in HER2-positive tumors.

Methods: We enrolled patients with newly diagnosed stage 1-3 HER2-positive breast cancer who had undergone curative surgery at Korea University Guro Hospital from January 2009 to December 2019. Patients were classified into two groups according to PR expression status - those with strong PR (Allred score 7-8) and those with low or negative PR (Allred score 0-6). Clinicopathologic characteristics, disease-free survival, and breast cancer-specific survival were analyzed between the two groups.

Result: A total of 474 patients were enrolled. Among them, 362 patients (76.4%) had tumors expressing low PR while 112 patients (23.6%) were diagnosed with cancers having strong PR expression. The mean follow-up period was 67.4 months (± 28.3). Patients with cancers that have strong PR expression turned out with better recurrence-free ($p = 0.013$), distant-recurrence-free ($p = 0.039$), and breast cancer-specific survival than those with low PR expression tumors ($p = 0.037$). On multivariate analysis, strong PR expression was associated with better recurrence-free (HR 0.22, 95% CI 0.08-0.59, $p = 0.003$) and distant recurrence-free survival (HR 0.10, 95% CI 0.01-0.74, $p = 0.024$), but not with breast cancer-specific survival.

Conclusions: In HER2-positive tumors, PR status may be an independent prognostic factor to be considered, having tumors with low PR expression indicating worse oncologic outcomes.

UNCOVERING OF NRAGE/JNK AND PI3K/AKT PATHWAYS THROUGH SERIAL WGS OF BREAST CANCER PATIENTS

In Hee Lee[1], Soo Jung Lee[1], Byeongju Kang[2], Jeeyeon Lee[2], Ho Yong Park[2], Ji-Young Park[3], Nora Jee-Young Park[3], Eun Ae Kim[4], Seolhwa Jeong[5], Jeong Kang[5], Yee Soo Chae[1]

[1]Kyungpook National Univ. Chilgok Hospital, Department of Medical Oncology, Korea, [2]Kyungpook National Univ. Chilgok Hospital, Department of Surgery, Korea, [3]Kyungpook National Univ. Chilgok Hospital, Department of Pathology, Korea, [4]Kyungpook National Univ. School of Medicine, Department of Cell & Matrix Research Institute, Korea, [5]Kyungpook National Univ. Chilgok Hospital, Department of Breast Cancer Research Center, Korea

Background: Cancer genomic sequencing has fundamentally advanced our understanding of the basic biology of this disease, and more recently, has offered method to guide and evaluate treatment in clinic. We performed whole-genome sequencing (WGS) on three consecutive tissue and blood samples from breast cancer patients: diagnosis, post-neoadjuvant chemotherapy, recurrence after curative resection

Methods: We performed WGS to compare the genetic profiles of the primary, surgical and recurrent samples (tissue and blood) to determine: (1) how closely related the genetics are among the primary, post- neoadjuvant chemotherapy, and the recurrent tumors, (2) whether there are variations in mutational processes among the primary, post- neoadjuvant chemotherapy, and recurrent tumor. WGS was performed on three patients for whom both tissue and blood were available at diagnosis, at surgery after neoadjuvant chemotherapy and at a recurrence.

Result: As a result of somatic protein coding variant analysis, PIK3CA mutation was confirmed at the time of diagnosis tissue in all cases. Mutations were found at p.E545K in patient 14, p.R916C in patient 18, and p.R916C in patient 3. Among these, patients 14 and 18 had PIK3CA mutations even at the time of recurrence. In patient 14, the same PIK3CA mutation was found in 3 consecutive samples, but in patient 18, it changed from p.R916C at diagnosis to p.G480E at relapse. Furthermore, functional enrichment analysis identified a common NRAGE signaling system in the cfDNA. The NRAG pathway was found in the blood at diagnosis, surgery, and recurrence in all three patients

Conclusions: This study was a proof-of-concept study, in which we hypothesized that NRAGE/JNK and PI3K/AKT signaling pathways are involved in breast cancer recurrence and treatment response through WGS of consecutive samples. Further research is ongoing with larger numbers of patients.

CLINICAL PRESENTATIONS AND PROGNOSTICATION OF HER2-LOW BREAST CANCER IN TAIWAN

Yen-Jen Chen[1,3], Pei-Ju Lien[2], Ling-Ming Tseng[1,3], Chi-Cheng Huang[1,4]

[1]Taipei Veterans General Hospital, Department of Surgery, Taiwan, [2]Taipei Veterans General Hospital, Department of Nursing, Taiwan, [3]National Yang Ming Chiao Tung Univ., Department of School of Medicine, Taiwan, [4]National Taiwan Univ., Institute of Epidemiology and Preventive Medicine, Taiwan

Background: With the advent of the novel ADC agents, an emerging subgroup of HER2-low breast cancer has been recognized. We use the Taiwan Cancer Registry (TCR) database and Taipei Veterans General Hospital (TPE-VGH) database to evaluate the clinical presentations and prognostic outcomes for this new spectrum.

Methods: HER2-low was defined as IHC 1+ or 2+ with ISH-negative while HER2-zero was defined as IHC 0. Breast cancer index cases (n = 189,465) from TCR between 2007 and 2017 were extracted, resulting in 133,546 instances of breast cancer per subject. Additionally, breast cancer patients from TPE-VGH between 2000~2018 were collected, with 4200 patients enrolled for final analysis. Propensity matching was applied. Analyses were conducted on PFS, OS, pCR-related outcomes, and metastatic features between HER2-low and HER2-zero, along with subtle subgroup analyses.

Result: The safety analysis group comprised 37,195 HER2-negative breast cancers in TCR database and 4200 in TPE-VGH database, and the proportion of HER2-low and HER2-zero was 73.6% and 26.4%(TCR), with 73.9% and 26.1%(TPE-VGH). HER2-low status was associated a slightly younger age of disease onset, less than half diagnosed with stage 0 or I, more ER and PR positivity and fewer grade III disease compared with HER2-zero breast cancer. The OS and PFS were strongly related to HR status and pCR or not. While there was no survival difference between HER2-low and HER2-zero in overall population, by stage, by grade, before or after propensity matching.

Conclusions: HER2-low status is not a prognostic marker for Taiwanese breast cancer with trivial clinical and pathological differences compared to HER2-zero phenotype. Future studies are warranted to understand the biological and therapeutic relevance of this newly established taxonomy.

THE N-GLYCAN AS A PREDICTIVE BIOMARKER FOR PATHOLOGIC COMPLETE RESPONSE IN HER2-POSITIVE EARLY BREAST CANCER

Hyehyun Jeong[1], Donggun Seo[2], Hyeongjin Kweon[2], Jae Ho Jeong[1], Jin-Hee Ahn[1], Kyung Hae Jung[1], Sae Byul Lee[3], Jong Won Lee[3], Dong-Chan Kim[2], Sung-Bae Kim[1]

[1]ASAN Medical Center, Department of Oncology, Korea, [2]NQ-Lab Co.,Ltd., Department of Medical Device R&D Center, Korea, [3]ASAN Medical Center, Department of Surgery, Korea

Background: Alterations in glycosylation are known to have an important role in cancer progression and metastasis, and glycans are emerging as potential biomarkers and therapeutic targets. In this study, we sought to identify the predictive potential of N-glycan in early HER2-positive breast cancer.

Methods: Between June 2019 and December 2020, patients with early HER2-positive breast cancer who were candidates for neoadjuvant TCHP (docetaxel 60 mg/m^2, carboplatin area under the curve [AUC] 5, trastuzumab 8 mg/m2 in the first cycle then 6 mg/m2, pertuzumab 840 mg in the first cycle then 420 mg every 3 weeks) were prospectively enrolled for this biomarker study. Blood samples were collected before and after 6 cycles of neoadjuvant TCHP. Plasma samples underwent analysis using MALDI-TOF mass spectrometry, and NosIDSys software was employed to identify serum N-glycans.

Result: A total of 60 female patients were included in the analysis. The median age was 52 years (range, 31-78). Estrogen receptor was positive in 27 patients (45%). All patients received 6 cycles of neoadjuvant TCHP, and 34 patients (57%) achieved pathologic complete response (pCR). Principal component analysis of the glycans suggested the formation of two different clusters for pCR vs. non-pCR groups in post-chemotherapy, but not in pre-chemotherapy samples. Significant differences in peak levels were observed in 10 individual glycans between pCR and non-pCR patient groups in post-chemotherapy samples. We further developed a machine-learning model using the full MALDI-TOF spectrum, and the model performance for predicting pCR vs. non-pCR in the post-chemotherapy samples was high with an AUC of 0.975.

Conclusions: Glycomics analysis suggests that plasma N-glycans might be predictive for pCR in neoadjuvant TCHP-treated HER2-positive early breast cancer.

SYNCHRONOUS AND METACHRONOUS BILATERAL BREAST CANCER; *BRCA* WOULD BE A CLUE?

Yong-Yeup Kim, Woo Young Kim, Jai Chung, Ji Hye Kim, Miyoung Jang, Sang Uk Woo

Korea Univ. Guro Hospital, Department of Breast and Endocrine Surgery, Korea

Background: The risk of developing breast cancer in both breasts is increases, it is important to identify the factors that can affect the prognosis of bilateral breast cancer (BBC). However, it is not yet clear which clinicopathological factors should be considered when deciding on the best course of treatment.

Methods: We retrospectively reviewed the medical records at Korea University Guro Hospital for patients with breast cancer between March 2008 and February 2020. Patient demographic characteristics, clinicopathologic features, molecular subtype status concordance, and prognosis were recorded. BBC can be classified into two types: synchronous BBC (SBBC), where contralateral breast cancer is diagnosed within one year of the initial diagnosis, and metachronous BBC (MBBC), where the second diagnosis occurs over one year after the first. This study aimed to analyze the association of hormone receptors and invasiveness concordance in patients with SBBC and MBBC.

Result: During the study period, a total of 2,805 female patients were diagnosed with breast cancer at Korea University Guro Hospital. Out of these, 59 patients had SBBC and 56 patients had MBBC. There was no statistical difference in the proportion of patients aged 40 years or older between the two groups. Pathologically, SBBC had a higher incidence of ductal carcinoma in situ (DCIS)-DCIS and DCIS-invasive types, while MBBC had a higher incidence of invasive-invasive types. Moreover, SBBC was more homogeneous in subtypes defined by joint hormone receptor and HER2 status, while MBBC was more heterogeneous in this regard. Of *BRCA* testing, 1 out of 32 SBBC patients and 10 out of 43 MBBC patients were *BRCA* positive, indicating statistical significance. There was no significant difference in overall survival between SBBC and MBBC patients or between *BRCA*-positive and negative patients.

Conclusions: If a patient tests *BRCA* positive, even if it doesn't affect overall survival, the oncologist may recommend a bilateral prophylactic mastectomy as the preferred option.

HER2-LOW IN TRIPLE NEGATIVE BREAST CANCER: IMPACT ON ONCOLOGIC OUTCOMES AND TREATMENT RESPONSE

Woong Ki Park, Seok Jin Nam, Seok Won Kim, Jeong Eon Lee, Jonghan Yu, Se Kyung Lee, Jai Min Ryu, Byung Joo Chae

Samsung Medical Center, Department of Surgery, Korea

Background: Human epithelial growth factor receptor 2 (HER2) targeting drugs have significantly improved oncologic outcomes in HER2-positive breast cancer. With the introduction of antibody-drug conjugates, investigating the efficacy of these treatments in HER2-low breast cancer has become a focal point of interest in recent research. Our study aimed to examine the impact of HER2-low expression on oncologic outcomes and treatment responses in hormone receptor (HR)-negative breast cancer.

Methods: We conducted a retrospective analysis of non-metastatic HR-negative breast cancer patients treated at Samsung Medical Center from January 2008 to December 2020. The analysis compared oncologic outcomes between HER2-0 and HER2-low groups. Additionally, a subgroup analysis was conducted on patients who received neo-adjuvant chemotherapy and pathologic complete response (pCR) rates were compared.

Result: Among 2,551 patients analyzed, 1,889 patients (74%) were HER2-0 and 662 patients (26%) were HER2-low. The median follow-up period was 62 months (range, 0-184). Significant differences between HER2-0 and HER2-low groups were noted in overall survival ($p = 0.017$), recurrence-free survival ($p = 0.002$), distant metastasis-free survival ($p = 0.025$), and breast cancer-specific survival ($p < 0.001$) favoring HER2-low. However, there was no significant difference in pCR rates between the two groups (29.1% for HER2-0 and 26.9% for HER2-low, $p = 0.523$).

Conclusions: Our study revealed that favorable prognosis is associated with HER2-low expression in HR-negative breast cancer. However, HER2-low status does not influence the pCR rate, necessitating further research into the underlying tumor biology of HER2-low expression.

CLINICOPATHOLOGICAL CORRELATES OF IMMUNOHISTOCHEMISTRY SUBTYPES IN DUCTAL CARCINOMA IN SITU: A RETROSPECTIVE ANALYSIS

Jin Ah Lee, Je Hyun Chin, Doo Reh Kim, Young Joo Lee, Chang Ik Yoon, Woo Chan Park, Soo Youn Bae

The Catholic Univ. of Korea, Seoul St. Mary's Hospital, Department of Surgery, Korea

Background: Ductal carcinoma in situ (DCIS), an early neoplastic lesion confined within the mammary ductal system, exhibits considerable molecular heterogeneity, reflected in distinct immunohistochemistry (IHC) subtypes such as hormone receptor (HR) and human epidermal growth factor receptor2 (HER2) status. It's well-established that DCIS represents a non-obligate precursor to invasive breast cancer (BC), but a subset of cases harbors the potential for progression to invasive disease. Understanding the intricate molecular landscape of DCIS, particularly the interplay between IHC subtypes and the propensity for invasive progression, holds paramount importance in clinical decision-making. This study explores how IHC subtypes in DCIS correlate with the tumor's clinicopathological characteristics.

Methods: We analyzed data from the Korean Breast Cancer Society registration database, focusing on patients who underwent surgery for DCIS between 2000 and 2019. Patients with confirmed lymph node metastasis or distant metastasis were excluded.

Result: A total of 11,812 patients were analyzed. Among them, 7,427 (62.9%) had HR+/HER2- BC, 611 (5.2%) had TNBC, 1,904 (16.1%) had HR-/HER2+ BC, and 1,870 (15.8%) had HR+/HER2+ BC. The median age at diagnosis was higher in HR-BC compared to HR+ BC (HR+/HER2-: 48years, HR+/HER2+: 49years, TNBC: 53years, HR-/HER2+: 53 years). Family history was more prevalent in HR+ BC (10.5%) compared to HR-BC (8%). Asymptomatic cases were more common in HR+ BC (HR+/HER2-: 39.9%, HR+/HER2+: 45.1%) compared to HR-BC (TNBC: 34.2%, HR-/HER2+: 35.5%). Bilateral BC was more common in HR+ BC (0.5%). Tumor size was larger in HER2+ BC (HR+/HER2-: 1.1 cm, TNBC: 1.2 cm, HR+/HER2+: 1.5 cm, HR-/HER2+: 1.9 cm). Mastectomy was more frequent in HER2+ BC (HR+HER2+ 40.4%, HR-/HER2+: 51.6%). Regarding nuclear grade, HR+/HER2- BC had the lowest proportion of high-grade tumors (12.5%), while HR-/HER2+ BC had the highest (73.6%).

Conclusions: This study reveals the diverse clinicopathological features of DCIS based on IHC subtypes, emphasizing the importance of molecular characterization in guiding clinical management decisions. Understanding these distinct profiles can enhance prognostication and facilitate tailored treatment approaches for patients with DCIS.

PERIPHERAL NATURAL KILLER CELL ACTIVITY IN INVASIVE BREAST CANCER AT DIAGNOSIS

Jung Im Yi[1], Jean Schneider[2], Seung Taek Lim[1], Byeongkwan Park[1], Young Jin Suh[1]

[1]The Catholic Univ. of Korea, St. Vincent's Hospital, Department of Surgery, Korea, [2]The Univ. of Texas at Austin, Department of Natural Sciences, U.S.A.

Background: Even though some studies have shown possible clinical relation between molecular subtypes and tumor infiltrating natural killer (NK) cells, there are few studies to show clinical relevance of peripheral NK cell activity at diagnosis in female patient with invasive breast cancer.

Methods: A total of 396 female invasive breast cancer patients who received curative surgical treatment from March 2017 to July 2021 were retrospectively analyzed. NK cell activation-induced interferon-gamma secretion measured by enzyme-linked immunosorbent assay was used to measure the activity of peripheral NK cells. Statistical analyses were done to determine clinical relations with major clinicopathologic parameters.

Result: Quadripartite NK cell activity measured by induced interferon-gamma showed significant relevance with staging, body mass index and some of systemic inflammatory markers such as neutrophil/lymphocyte (N/L), platelet/neutrophil (P/N), platelet/lymphocyte (P/L), lymphocyte/monocyte (L/M), monocyte/lymphocyte (M/L), eosinophil/neutrophil (E/N) and neutrophil/eosinophil (E/N) ratio initially. There was no significant relation between Ki-67, body mass index and molecular subtype with peripheral NK cell activity. After subgroup analysis by stage, the IFN-γ $<$ 100 (pg/ml) group was significantly larger than the 250 $\leq$ IFN-γ $<$ 500 and IFN-γ $\geq$ 500 groups in stage 3.

Conclusions: According to this study, stage III was significantly related with lowest NK cell activity. Compared to a higher level of NK cell activity, lower NK cell activity seemed to be related with increased body mass index. Lower NK cell activity was related with increased N/L, P/N and P/L ratio, which are suggested poor prognostic factors. We think peripheral NK cell activity test might be convenient and useful tool for pretreatment risk assessment in some curable invasive breast cancer patients, compared to the challenging tissue assay to measure NK cell activity before treatment.

MALDI-TOF-BASED SERUM N-GLYCAN ANALYSIS AS A POTENTIAL BIOMARKER FOR PREDICTING BREAST CANCER RECURRENCE

Hakyoung Kim[1], Tae-Kyung Yoo[2], Jisun Kim[2], Il Yong Chung[2], Beom Seok Ko[2], Hee Jeong Kim[2], Jong Won Lee[2], Byung Ho Son[2], Sae Byul Lee[2]

[1]Dongguk Univ. Ilsan Hospital, Department of Surgery, Korea, [2]ASAN Medical Center, Department of Surgery, Korea

Background: In recent years serum N-glycan has been acknowledged as a marker for breast cancer diagnosis and progression. In this study, we aimed to develop a tool for predicting breast cancer recurrence using matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS)-based serum N-glycan analysis.

Methods: In this study, we analyzed patients diagnosed with stage I-III breast cancer between Jan 2019 to Aug 2021 and presented with loco-regional or systemic recurrence during follow-up. Blood samples were collected before first treatment, including surgery and neoadjuvant systemic therapy, and every 3-6 months afterwards until the recurrence. For principal component analysis, initially acquired N-glycan peaks from each patient's blood serum were filtered in range of 900-2900 mass-to-charge ratio (m/z). Four replicates were made in each sample and the average value was calculated in each m/z. Then, the second filtering step was done retaining m/z features with frequency cut-off over 90% among samples. The filtered m/z features were then subjected to multi-sample ANOVA analysis with p-value cut-off of 0.05.

Result: We compared m/z features of N-glycan in 17 patients' blood serum which was drawn serially: before treatment, during treatment and after recurrence. Most frequent m/z features that showed a significant increase after the recurrence were as follow; 1298 m/z with 12 out of 17 patients (70.59%), 2028 m/z with 13/17(76.47%), 1976 m/z and 1663 m/z with 14/17(82.35%), 1850 m/z with 10/17(58.82%) and 1339 m/z with 13/17(76.47%).

Conclusions: These results suggest the feasibility of N-glycan analysis using MALDI-TOF MS as a tool for predicting recurrence.

NONVISIBLE SCAR, PHYSICAL AND EMOTIONAL STRESSFUL AFTER MASTECTOMY

Aditya Manna

MAS Clinic & Hospital, Department of Medical Oncology, India

Background: Most women go through a mixture of emotions after their mastectomy. They may be relieved that the cancer is gone but may also feel self-conscious about their appearance. Most of the patients failed to reconstructive surgery due to financial problem in rural India. If you are a woman in this situation, it's important to remember that you are not alone in this. There are many other women who have been through the same thing.

Methods: This study was conducted for a period of 1 year in MAS Clinic and Hospital. This was a qualitative exploratory study design via randomized way of selected post MRM patients. Data were collected through focus group discussion and data were analysed by content analysis.

Result: Approximate 90% women are depressed about their single breast, mostly 25 to 45 years of age group. 20% women didn't go relative's home due to same reason single breast. outside home because their single breast. Only 2-3% women are used mastectomy pad bra for making a false breast shape.

Conclusions: Breast cancer is one of the most common cancers among women worldwide. However, with the advanced healthcare sector, gathering with single breast women are feel non-embarrassing during and after their treatment and may patients will go on to live long and healthy lives. We hope with other survivor's tips you will be able to gain some confidence to get back to your normal life.

DRESSED TO HEAL: BREAST CANCER PATIENT'S GARMENT NEEDS AND FUTURE DIRECTION

Kristina Shin

Univ. of Cincinnati, Department of College of Design, Architecture, Art and Planning, U.S.A.

Background: The existing research emphasizes the mastectomy patients' unmet needs for post-mastectomy garments, and subsequent negative impact on quality of life. However, post-mastectomy garment development has been rather slow despite advancement in the material science and the production technology. The poor thermal and moisture comfort, aesthetically unappealing utilitarian design, and poor fit have been the constant drawbacks of the mastectomy products. Therefore, this study aims to identify the research gap, and future direction.

Methods: Qualitative content analysis of the peer-reviewed research papers concerning the post mastectomy products was conducted to identify the research gap. Key word search was conducted with 5 keywords including 'mastectomy', 'breast cancer', 'patient needs', 'garment' and 'comfort' to locate the research papers in the breast cancer patient's garment needs. Twelve key research papers were identified among a total of 437 papers associated with these keywords. Then, these findings were synthesized in search of future direction.

Result: Despite the attention given to breast cancer prevention and treatment, the solutions to the mastectomy patients' needs for post-mastectomy products have not been fully explored. Fit and appearance of both prosthesis (Livingston et al., 2005; Gallagher et al., 2009) and mastectomy bras (LaBat et al., 2016) have been deemed to be inadequate while heat and perspiration build-up between the skin and the prosthesis have been recognized as a major discomfort (Crompvoets, 2006; Glaus and Carlson, 2009; Gallagher et al., 2009; LaBat et al., 2016; Nicklaus et al., 2020). Despite these recognitions, there has been only one research project suggested a practical solution to heat and moisture build-up problem (Leung et al., 2021; Shin et al., 2021).

Conclusions: This study found a research gap in design innovation that could only be accomplished by a collective effort between breast cancer survivors, healthcare providers, and design practitioners.

IN SILICO PREDICTION OF PROSPECTIVE TRIALS FOR (Y)PN1 BREAST CANCER USING BAYESIAN NETWORK MODEL FOR OVERALL DISEASE BURDEN

Bum-Sup Jang[1], Seok-Joo Chun[1], Hyeon Seok Choi[1], Ji Hyun Chang[1], Kyung Hwan Shin[1], Division For Breast Cancer Korean Radiation Oncology Group[2]

[1]Seoul National Univ. Hospital, Department of Radiation Oncology, Korea, [2]Korean Radiation Oncology Group, Department of Radiation Oncology, Korea

Background: We aimed to develop a Bayesian network (BN) model to assess the overall disease burden (ODB) in patients with (y)pN1 breast cancer. We then compared the ODB between arms of ongoing prospective trials to evaluate their outcomes.

Methods: We developed a BN model using institutional data and expert surveys to assess the ODB in patients with (y)pN1 breast cancer. Probabilities and disability weights for radiotherapy-related risks were obtained through expert surveys. The ODB was defined as the sum of disability weights multiplied by probabilities. Using the BN model, we conducted in silico prediction for four trials (Alliance A011202, PORT-N1, RAPCHEM, and RT-CHARM) to compare the ODB, 7-year disease-free survival (DFS), and side effects.

Result: In the Alliance A011202 trial, the 7-year DFS was 80.1% in both arms. However, clinical lymphedema and the ODB were greater in patients who underwent axillary lymph node dissection than in those who underwent sentinel lymph node biopsy followed by full regional nodal irradiation (RNI). In the PORT-N1 trial, the control arm (post-mastectomy radiotherapy [PMRT] or whole-breast irradiation [WBI] with RNI) had an ODB of 0.254, while the experimental arm (no PMRT or WBI alone) had a comparable ODB of 0.255. In the RAPCHEM trial, the radiotherapy field did not impact the 7-year DFS in intermediate or high-risk patients. However, there was a mild increase in ODB with a larger irradiation field. In the RT-CHARM trial, we identified factors associated with the major complication rate, which ranged from 18.3% to 22.1%.

Conclusions: Our BN model was able to predict the outcomes of ongoing prospective trials, supporting the reported outcomes and assumptions of these trials. In addition, the model demonstrated the ODB in different arms, with an emphasis on quality of life.

CANCER TREATMENT INDUCED BONE LOSS IN PREMENOPAUSAL EARLY BREAST CANCER PATIENTS

Kazutaka Narui[1], Yoshie Fujiwara[1], Hiromi Yoshikata[2], Taku Tsuburai[2], Akimitsu Yamada[3], Masanori Oshi[3], Hideya Sakakibara[1], Takashi Ishikawa[4], Itaru Endo[3]

[1]Yokohama City Univ. Medical Center, Department of Surgical Oncology, Japan, [2]Yoshikata Clinic, Department of Gynecology, Japan, [3]Yokohama City Univ. Graduate School of Medicine, Department of Surgical Oncology, Japan, [4]Tokyo Medical Univ., Department of Surgical Oncology, Japan

Background: Systemic therapy for breast cancer (BC) causes cancer treatment induced bone loss (CTIBL). Bone fractures impair quality of life and worsen life prognosis. Although prevention of CTIBL is recommended based on data from postmenopausal patients with BC, there are few reports on bone loss in premenopausal patients. A prospective cohort study of CTIBL in premenopausal BC patients was, accordingly, conducted.

Methods: Forty-one premenopausal women diagnosed with early BC were enrolled. Fifteen were treated with tamoxifen alone (group T), and 19 underwent chemotherapy followed by tamoxifen (group C). The bone mineral density (BMD) of their lumbar vertebra and femoral necks were measured before treatment (baseline), after chemotherapy (chemotherapy case), and at 6, 12, 18, and 24 months after starting tamoxifen. Markers of bone turnover and other hormonal levels were measured.

Result: The rate of change in lumbar BMD in group T was 0.00 ± 0.03 at 6; 0.01 ± 0.03 at 12; -0.02 ± 0.05 at 18; and -0.03 ± 0.05 at 24 months. In group C, it was -0.02 ± 0.03 after chemotherapy; -0.03 ± 0.02 at 6; -0.02 ± 0.02 at 12; -0.03 ± 0.04 at 18; and -0.04 ± 0.01 at 24 months; after starting tamoxifen. The rate of change in the femoral neck BMD in group T was 0.01 ± 0.03 at 6; 0.02 ± 0.05 at 12; 0.02 ± 0.04 at 18; and 0.03 ± 0.05 at 24 months. In group C, it was -0.01 ± 0.05 after chemotherapy; -0.02 ± 0.06 at 6; -0.02 ± 0.05 at 12; -0.04 ± 0.03 at 18; and -0.07 ± 0.01 at 24 months after starting tamoxifen. A significant decrease was observed in group C; lumbar BMD (after chemotherapy: $p = 0.045$; 6 months, $p = 0.008$; 12 months, $p = 0.006$; and 18 months, $p = 0.026$) and femoral neck BMD (18 months: $p = 0.002$), whereas no significant change was observed in group T.

Conclusions: In premenopausal early BC patients, tamoxifen alone did not decrease BMD, whereas chemotherapy significantly decreased it. Preventing CTIBL through BMD control is necessary for premenopausal BC patients.

EVALUATING THE QUALITY OF JAPANESE INTERNET INFORMATION ON BREAST CANCER TREATMENT USING THE DISCERN INSTRUMENT ASSISTED BY CHATGPT

Atsushi Fushimi

The Jikei Univ., Department of Surgery, Japan

Background: As the internet becomes a primary source for health-related information, the quality of these resources, particularly those in Japanese about breast cancer treatments, exhibits considerable variability. This study employs the DISCERN instrument alongside ChatGPT, an advanced language model by OpenAI, to evaluate the quality of Japanese online information on breast cancer treatments systematically.

Methods: This study involved an in-depth assessment of the top 20 Google search results in Japanese for three principal breast cancer treatment modalities: surgery, chemotherapy, and immunotherapy. Utilizing the DISCERN instrument, facilitated by ChatGPT, each source was evaluated twice. The instrument consists of 16 questions, each with a 1 to 5 scoring system, aimed at assessing the clarity, relevance, impartiality, and overall integrity of the health information.

Result: The correlation coefficient of the total score between the two measurements was 0.724, indicating a strong correlation and suggesting that the DISCERN instrument evaluation using ChatGPT is highly reproducible. The analysis unveiled a significant range in the quality of Japanese internet information, with noticeable disparities among different sources and types of treatments. For surgery-related content, average scores varied from 38 to 80, indicating a range from inadequate to high-quality information. Similarly, scores for chemotherapy and immunotherapy-related content ranged from 30 to 80 and 21 to 80, respectively. For surgery-related content, there was a negative correlation (correlation coefficient -0.636) between search order and average total scores, indicating that higher-ranked search results tended to be of higher quality.

Conclusions: Utilizing ChatGPT in conjunction with the DISCERN instrument to evaluate Japanese online resources revealed notable variations in the quality of information about breast cancer treatments. These findings highlight the urgent need for a thorough evaluation of online health resources in the Japanese context. The study demonstrates the potential of AI tools in guiding patients and healthcare providers in Japan to reliable and high-quality health information.

EXTRACRANIAL METASTASIS IS A STRONG RISK FACTOR FOR BREAST CANCER BRAIN METASTASIS

Jung Ho Park[1], Eunbin Park[2], Sanghwa Kim[1], Taeryool Koo[3], Ho Young Kim[4], Doyil Kim[1]

[1]Hallym Univ. Sacred Heart Hospital, Department of Surgery, Korea, [2]Hallym Univ. College of Medicine, Department of Medicine, Korea, [3]Hallym Univ. Sacred Heart Hospital, Department of Radiation Oncology, Korea, [4]Hallym Univ. Sacred Heart Hospital, Department of Medical Oncology, Korea

Background: Survival of patients with breast cancer has been improved in the last decades. However, brain metastasis is still a devastating event among patients with breast cancer. We aimed to describe factors associated with brain metastasis and the survival of the patients.

Methods: From a retrospective database, patients who underwent breast cancer surgery between 2002 and 2020 at a single institution were included. Multivariable Cox regression was performed to identify factors associated with brain metastasis-free survival. We assumed extracranial metastasis as a time-dependent variable.

Result: Among 2,459 patients included in the study, 58 (2.4%) developed brain metastasis. Total mastectomy, advanced stage, negative hormonal receptor status, and human epithelial growth factor receptor 2 (HER2) amplification were associated with brain metastasis. On multivariable analysis, patients with extracranial metastasis were 30.7 times more likely to develop brain metastasis. Patients with bone metastasis were less likely to develop brain metastasis, whereas those with soft tissue metastasis were more likely to develop brain metastasis.

Conclusions: Brain imaging should be considered for those with metastatic breast cancer, other than stable bone metastasis. Current treatments are not effective for brain metastasis. However, newly developed anti-HER2 agents are expected to improve the incidence and survival of brain metastasis.

THEN AND NOW: WOMEN LIVING WITH A BREAST CANCER DIAGNOSIS IN GHANA

Abena Addai[1,2,3], Beatrice Wife-Addai[1,2]

[1]Breast Care International, Department of Surgery, Ghana, [2]Peace and Love Hospitals, Department of Surgery, Ghana, [3]First Moscow State Medical Univ. im Sechenova, Department of Medical Oncology, Russian Federation

Background: According to Globocan 2020, breast cancer is the most frequently diagnosed cancer among females in Ghana with 4,482 (31.8%) new cases. With a population of over 31 million, there is no national cancer registry yet and some regions in Ghana have no access to some parts of holistic cancer care. Lack of education and screening, financial toxicity and low survival rates fuelled a silence culture about the disease, causing more myths and misconceptions, treatment refusals especially mastectomies.

Methods: The resources and programs available to women living with a breast cancer diagnosis in Ghana at the Peace and Love Hospitals were reviewed.

Result: Written information for patients, survivors and their families; outside of informed consent documents were scarce. There are no social meetings for families of patients and caregivers. There is a lack of tailored programs like a dedicated locally advanced and metastatic/advanced breast cancer programs. There is a vibrant Peace and Love Survivors' Association (PALSA) that showcases survivorship at the Breast Care International (BCI) Ghana walk for the cure annually. Some members of PALSA have been trained as peer counsellors and navigators for newly diagnosed patients and survivors. These members have been permanently employed at the Peace and Love hospitals and travel with BCI for outreach programs where they share their stories. Survivors meet at least twice yearly. Patients and survivors have the opportunity to participate in research, travel and present abstracts at conferences.

Conclusions: Women living with breast cancer now are a lot more vocal about their diagnosis and play an active role in advocating and improving cancer care in Ghana. This can be attributed in part to the increase in awareness creation as well as the trainings and programs that empower survivors to speak up and share their stories. PALSA demystifies breast cancer and provides supportive cancer care.

TRANSITING BREAST CANCER SURVIVORS TO THE COMMUNITY: THE NCIS BREAST CANCER SURVIVORSHIP PROGRAMME

Mei Chein Low[1], Litang Chen[2], Ednajoy Lay Poh Ngo[2], Samuel Guan Wei Ow[3]

[1]National Univ. Cancer Institute, Singapore, Department of Operations and Administration, Singapore, [2]National Univ. Cancer Institute, Singapore, Division of Oncology Nursing, Singapore, [3]National Univ. Cancer Institute, Singapore, Department of Medical Oncology, Singapore

Background: Breast Cancer Survivors (BCS) have excellent prognosis. The NCIS Breast Cancer Survivorship Programme (BCSP) was developed to streamline care by transiting low risk BCS to the community for survivorship care.

Methods: BCS in remission after 5 years of active surveillance were referred to primary care providers (PCP) with a Survivorship Care Plan (SCP) including mammogram and preventative health recommendations. Patients were surveyed for their satisfaction on a 5-point Likert Scale (1 = Very Dissatisfied, 5 = Very Satisfied), compliance with PCP visits and re-referral rates to the hospital.

Result: From 7/2018-3/2023, 356 female BCS were referred for BCSP. Majority were Chinese (82%), median age 66y (range 44-92). Most BCS had early-stage cancer (Stage 0 34.6%, Stage 1 34.6%, Stage 2 23.3%) of various subtypes (74.3% hormone receptor-positive, 7.7% HER2-positive, 9.0% triple negative). Median disease-free survival was 10.8y (range 5-33). 63.2% completed their first PCP visit, of which 75.1% completed the mammogram. 32/356 (9.0%) were re-referred to the hospital for evaluation of symptoms 8/356 (2.2%), abnormal mammogram 5/356 (1.4%), and patient preference 8/356 (2.2%). 8/356 (2.2%) were subsequently diagnosed with cancer relapse (n = 6 breast cancer, n = 2 non-breast cancer) and were started on treatment. Of 52 BCS surveyed, majority reported savings in travelling time (80.8%), consult waiting time (57.7%) and associated costs (71.2%) by enrolling in BCSP. 67.3% rated Satisfaction Score 3-5 for their PCP visit, with 98.1% feeling the SCP was explained clearly, and 78.8% receptive to being transited to the community.

Conclusions: Transition of BCS to the community with a SCP is feasible with tangible time and cost savings to the patient, low re-referral rates, and can increase capacity for patient care in the hospital. However, patient education and improvement in coordination is required to improve compliance rates with PCP visits to ensure sustainability.

A FOLLOW-UP STUDY OF THE PROGNOSIS FOR PATIENTS WITH BREAST CANCER WHO DELAYED DIAGNOSIS DUE TO COVID-19

Jaepak Yi[1], Jong Min Baek[2], Yong-Seok Kim[3], Ye Won Jeon[4], Chang Ik Yoon[5], Jiyoung Rhu[6], Young-Joon Kang[1]

[1]The Catholic Univ. of Korea, Incheon St. Mary's Hospital, Department of Surgery, Korea, [2]The Catholic Univ. of Korea, Yeouido St. Mary's Hospital, Department of Surgery, Korea, [3]The Catholic Univ. of Korea, Uijeongbu St. Mary's Hospital, Department of Surgery, Korea, [4]The Catholic Univ. of Korea, St. Vincent's Hospital, Department of Surgery, Korea, [5]The Catholic Univ. of Korea, Seoul St. Mary's Hospital, Department of Surgery, Korea, [6]The Catholic Univ. of Korea, Bucheon St. Mary's Hospital, Department of Surgery, Korea

Background: During the COVID-19 pandemic, previous studies has shown a decrease in breast cancer screenings, diagnoses, and operations compared to the pre-pandemic period. This study aims to determine whether differences in outcomes between the cohorts analyzed in the previous study led to differences in prognosis.

Methods: This study conducted a retrospective analysis of 709 patients diagnosed with breast cancer between the pre-pandemic period (May and July 2019) and the pandemic period (May and July 2020) in six academic hospitals. Patients were divided into two groups based on these periods, and differences in breast cancer recurrence were analyzed using the chi-square test, Fisher's exact test, and Kaplan-Meier method. The analysis was divided based on age 65, which is a risk factor for severe COVID-19.

Result: The recurrence was found in thirteen and twenty-three people during the pre-pandemic and pandemic periods, respectively, with this difference being statistically significant (3.49% vs. 6.74%, *p*-value 0.049). In survival analysis, the difference in recurrence between the two groups was also significant (*p*-value 0.0067). In patients under 65 years of age, there was a significant difference in recurrence between the two groups with a *p*-value of 0.001, whereas in patients over 65 years of age, there was no statistical significance (*p*-value: 0.491). The two groups had no significant differences in pathologic stage (*p*-value 0.471) and surgical methods (Breast surgery: *p*-value of 0.11, Axilla surgery: *p*-value of 0.64).

Conclusions: This study showed that there were more recurrences in patients diagnosed after hospital visits decreased due to the outbreak of COVID-19. This was not significant in those over 65 years of age but was noticeable in the younger age group. Therefore, young patients, who generally have a relatively low risk of complications from infectious diseases, should not delay visiting the hospital.

ROLE OF EARLY DETECTION OF SUBCLINICAL LYMPHEDEMA IN EMPOWERING BREAST CANCER SURVIVORS TO IMPROVE QUALITY OF LIFE

Ching-Sheung Chan, Ching-Han Leung, Tin-Yuet Lee, Wai-Kin Ching

North District Hospital, Department of Occupational Therapy, Hong Kong

Background: Breast cancer-related lymphedema (BCRL) remains a significant clinical issue as it affects daily function, emotion and quality of life (QoL) of breast cancer survivors. Implementation of risks prediction models in prevention and management of BCRL is evolving. However, there is limited study on the impact of early detection of subclinical lymphedema on survivorship empowerment.

Methods: This prospective cohort study followed patients who participated in an occupational therapist led Breast Cancer Survivor Empowerment Program to ascertain the long-term outcomes with respect to (1) incidence of BCRL; (2) shoulder range of motion (ROM); (3) self-reported activity participation; (4) disease-specific QoL; and (5) patient satisfaction, at 1st, 4th, 10th, 16th and 22nd-month post-surgery.

Result: 1449 patients received breast cancer surgeries and empowerment program during 2018 to 2022 in North District Hospital, Hong Kong. 342 patients completed surveillance at 22nd-month at time of review. Significant improvement in shoulder ROM was seen at 4th, 10th and 16th-month ($p < 0.001$). 84% of patients regained full participation in daily activities at 16th-month. Subclinical lymphedema was detected and successfully reversed with early decongestive therapy in 50 patients. Overall incidence of BCRL was 10.2% (n = 35) at 22nd-month. Significant reduction of distressing symptoms ($p < 0.001$) and health-related apprehensions ($p < 0.001$) were reported. Survey showed patients were highly satisfied with the program.

Conclusions: Improvements in symptoms management, activity participation and QoL were observed upon the completion of the program. Patients valued the routine lymphedema detection with perometry and tissue dielectric constant measurement. These low-cost, non-invasive detection instruments provided fast and easy-to-understand results. The processes and outcomes of the program include better communication with clinicians, improved sense of shared decision making, improved adherence to therapy and lower the utilization of unnecessary healthcare services. Early detection of subclinical lymphedema throughout the care continuum is warranted to augment self-management, prevent illness chronicity and maximize activity participation of breast cancer survivors.

ROLE OF WEARABLE TECHNOLOGY AND GEO-FENCING DEVICE FOR ANALYZES AND MONITOR OF HEALTH DATA IN RELATION TO BREAST CANCER SURVIVORS PATIENTS IN GURUGRAM CITY, INDIA

Vikas Sharma, P Kumar, Madhu Gautam

IDC Research center, Department of Applied Sciences, India

Background: To study effects of daily life routine activities on depression, anxiety, and weak immunity and CD 4 counts data by wearable devices (fire-bolt quantum watch) and geo-fencing technology that can obtain real-time data, processes them and provides assistance based on pre-determined specifications in breast cancer survivors patients.

Methods: Total of 46 breast cancer survivors patients were taken as subject with an equal ratio of male and female. Wearable monitoring devices like fire-bolt quantum watch and geo-fencing device were put on the wrist of celiac disease patients for 30 days and a questionnaire was filled out by each patient. In all subjects, blood pressure, blood glucose was measured on daily basis with day to day data of their monitoring of step count, calorie burnt, motion time, sleep monitoring, calorie consumption, monitoring heart rate to know daily routines and recording them for health purpose. Wearable bands, automatically provides a cueing sound with sensing alert when celiac disease patients move out of the geo-fenced area and which stays until the subject resumes walking in virtual boundary.

Result: Wearable device reading showed that there was a significant normal heart rate ($p < 0.05$), increase calorie burnt with a significant decrease of blood glucose and blood pressure levels ($p < 0.01$), and increased significantly ($p < 0.05$) sleep duration in active physically workout, include walking in breast cancer survivors patients compared to less physically workout celiac disease patients, identified by professional physiotherapists. There is significantly normalize in memory loss , wandering events and their CD 4 counts increase events normalize after one month with changing lifestyle routine among breast cancer survivors patients

Conclusions: With this study, we show that online assistive feedback for breast cancer survivor patients is possible and demonstrate the benefit of such a context-aware system and motivate further studies.

ASSESSMENT OF 6-MINUTE WALK TEST IN BREAST CANCER PATIENTS RECEIVING CHEMOTHERAPY AND ITS CORRELATION WITH THE QUALITY OF LIFE AND CLINICOPATHOLOGICAL FACTORS

Yufi Kartika Astari[1], Anggoro Budi Hartopo[2], Yayi Suryo Prabandari[3], Mardiah Suci Hardianti[4], Kartika Widayati Taroeno-Hariadi[4], Ibnu Purwanto[4], Johan Kurnianda[4], Susanna Hilda Hutajulu[4]

[1]Dr. Sardjito General Hospital, Division of Hematology and Medical Oncology, Department of Internal Medicine, Indonesia, [2]Universitas Gadjah Mada/Dr. Sardjito General Hospital, Department of Cardiology and Vascular Medicine, Faculty of Medicine, Public Health and Nursing, Indonesia, [3]Universitas Gadjah Mada, Department of Health Behavior, Environment, and Social Medicine, Faculty of Medicine, Public Health and Nursing, Indonesia, [4]Universitas Gadjah Mada/Dr. Sardjito General Hospital, Division of Hematology and Medical Oncology, Department of Internal Medicine, Faculty of Medicine, Public Health and Nursing, Indonesia

Background: Physical fitness was positively associated with quality of life (QoL) and survival in breast cancer (BC) but often diminished throughout treatment period. This study aimed to assess physical fitness using 6-minute walk test (6MWT) in BC patients and its correlation with QoL and clinicopathologic factors.

Methods: This study included 85 stage I-IV BC patients from a prospective cohort assessing BC chemotherapy side effects from 2018-2022. The 6MWT was used to evaluate physical fitness before chemotherapy (T1), after the last chemotherapy cycle (T2), and 12 months after chemotherapy (T3). We recorded their actual distance (meters), rest and peak heart rate (bpm), and calculated the estimated distance using standardized equation. Patients' QoL at T1 was assessed with EORTC QLQ-C30 including physical function, fatigue, and global QoL domains. The correlation of actual distance with QoL and clinicopathologic factors were analyzed using Pearson's correlation and linear regression. The difference among 6MWT parameters throughout treatment period was analyzed using paired t-test or Wilcoxon test.

Result: The average actual 6MWT distance at T1 was 354.6 ± 78.7 m, which was significantly below the estimated distance (507 m, $p < 0.001$). Physical function, fatigue, and global QoL domains were found to be correlated with actual distance at T1 ($r = 0.422$, $p = 0.0004$; $r = -0.416$, $p = 0.0005$; $r = 0.417$, $p = 0.0001$). A lower actual distance was significantly associated with diabetes mellitus ($p = 0.011$) and stage IV disease ($p = 0.009$). The actual distance slightly declined at T2 and T3 (354.6 vs 354.2 vs 350.8 m, $p > 0.05$). Meanwhile, rest and peak heart rate significantly increased at T2 and decreased at T3 (89.4 vs 96.3 vs 87.2 bpm; 97.8 vs 104.1 vs 95.6 bpm; $p < 0.001$).

Conclusions: A low actual distance throughout treatment period and its correlation with QoL highlight the importance of 6MWT testing to assess BC patients' physical fitness. Compared to actual distance, rest and peak heart rate were more affected by BC chemotherapy.

COMPARATIVE ANALYSIS OF OVERALL SURVIVAL ACCORDING TO TNM STAGE OF INVASIVE LOBULAR CARCINOMA AND INVASIVE DUCTAL CARCINOMA

Hyunyou Kim, Frances Jeannifer R. Tongcos, Alaa Alsalman, Jung Whan Chun, Ji Young You, Seung Pil Jung, Eun-Shin Lee

Korea Univ. Anam Hospital, Department of Surgery, Korea

Background: Invasive lobular carcinoma (ILC) is the second most common type of cancer and has many differences compared to invasive ductal cancer (IDC) in epidemiology and clinicopathology. This study aims to investigate the clinicopathological characteristics of ILC and IDC in Korea, and to evaluate overall survival (OS) in each TNM stage of ILC and IDC.

Methods: We retrospectively compared overall survival among cases included in the Korean Breast Cancer Society (KBCS). Clinicopathological variables and OS according to the TNM stage groups were analyzed using Kaplan-Meier curves and Cox regression model.

Result: From 1981 to 2011, 81,225 (97.3%) and 2,265 (2.7%) patients were diagnosed with IDC and ILC, respectively. Median follow-up period was 18 (3-33) years. As of December 2014, 69,815 (86.0%) of IDC patients and 1,992 (87.9%) of ILC patients were surviving (HR = 0.90, 95% CI = 0.80-1.02; $P = 0.007$). Additionally, the OS of ILC and IDC according to TNM stage was 38.7% and 71.3% in stage I ($p = 0.997$), 74.8% and 64.3% in stage II ($p = 0.006$), 50.4% and 41.7% in stage III ($p = 0.200$) and 34.7% vs 21.8% in stage IV ($p = 0.475$), respectively. When limiting the analyses to with ER-positive tumors of 1,849 patients with ILC and 47,762 patients with IDC, the OS of ILC and IDC was 72.7% and 65% (HR = 1.02, 95% CI = 0.88-1.18; $P = 0.801$). The OS of ILC was also better than that of IDC in TNM stage I (79.6% vs 77.7%, HR = 1.13, 95% CI = 0.77-1.67; $P = 0.532$), II (77.6% vs 67.0%, HR = 0.84, 95% CI = 0.66-1.07; $P = 0.149$), III (50.3% vs 31.6%, HR = 0.98, 95% CI = 0.77-1.26; $P = 0.889$) and IV (33.5% vs 17.5%, HR = 1.07, 95% CI = 0.64-1.80; $P = 0.792$) with ER-positive tumors.

Conclusions: This retrospective analysis based on the large nation registry data identified better outcome in ILC compared to IDC, providing different result from American large data. Further analysis is requiring getting better understanding of the ILC according to the ethnicity and region.

ROLE OF SURGERY FOR METASTATIC LESIONS IN PATIENTS WITH METASTATIC BREAST CANCER: A SINGLE-CENTER, RETROSPECTIVE STUDY

Hae Na Lee[1], Joohyun Woo[1], Ahrong Ham[2], Se Won Lee[2], Jeong Min Jo[2], Soo Ji Hong[1], Ji Eun Lee[1], Sung Chan Gwark[1], Hyun Goo Kim[1], Jun Woo Lee[1], Woosung Lim[1], Byung In Moon[1], Sei Hyun Ahn[1], Hye Ah Lee[3], Kyoung Eun Lee[2]

[1]Ewha Womans Univ. Cancer Center for Women, Department of Surgery, Korea, [2]Ewha Womans Univ. Mokdong Hospital, Department of Medical Oncology, Korea, [3]Ewha Womans Univ. Mokdong Hospital, Department of Clinical Trial Center, Korea

Background: Surgical resection of distant metastasis is not the standard treatment of metastatic breast cancer (MBC). However, as systemic therapies have improved immensely over the last years, surgery for distant metastatic lesions with curative intent can be considered in some cases, especially for patients with oligometastatic disease. The authors tried to evaluate the impact of surgical resection for metastatic lesions on overall survival in MBC patients.

Methods: We collected individual patient data from January 2000 to December 2022 from the Ewha Womans University Mokdong Hospital. Total 132 de novo metastatic breast cancer and 501 recurrent metastatic breast cancer patients who had been treated for MBC were included for analysis. We compared clinical characteristics and overall survival (OS) of patients among two groups.

Result: Among 633 patients, the women who had surgery for metastatic lesion were 242 (48.3%) in recurrent MBC group, and 67 (50.8%) patients had surgery in de novo MBC group. Median follow-up was 75.6 months (IQR 3.0-134.3). A total of 216 (43.1%) deaths were presented (surgery n = 84 vs. no surgery n = 132) in recurrent MBC, and 52 (39.4%) deaths were presented (surgery n = 18 vs. no surgery n = 34) in de novo MBC. Median OS was 172.1 months (95% CI 156.8-187.3) in the surgery group and 139.7 months (118.7-160.7) in the no surgery group ($P = 0.00$), and the 5-year OS was 84.9% in the surgery group and 70.8% in the no surgery group in recurrent MBC. Median OS was 86.0 months (95% CI 6.1-74.0) in the surgery group and 40.4months (4.6-31.3) in the no surgery group ($P = 0.00$), and the 5-year OS was 51.9% in the surgery group and 23.4% in the no surgery group in de novo MBC.

Conclusions: The surgery for metastatic lesion in breast cancer could improve the survivals of patients in both recurrent MBC and de novo MBC.

A LINE BOT MOBILE APP MODULE TO AUGMENT LONG-TERM AND REAL-TIME FOLLOW-UP OF PATIENTS WITH BREAST CANCER

Pei-Ju Lien, Chi-Cheng Huang, Ling-Ming Tsemg

Taipei Veterans General Hospital, Department of Breast Cancer Case Manager, Taiwan

Background: Female breast cancer is one of the most frequent cancer types in Taiwan, and several novel therapeutic options have been introduced in recent years. Patients usually received a combination of treatment modalities based on the pathological type, cancer staging and personal preferences. Due to the complexity of treatment involved, specifically associated adverse reactions and variable treatment duration, assessment of quality of life (QoL), long-term and real-time surveillance are difficult to achieve. To overcome the above limitations, we developed a LINE Bot module to augment the follow-up of patients with breast cancer.

Methods: The LINE Bot is comprised of personal information including disease characteristics, therapeutic timeframe, a quality-of-life measuring instrument, the EORTC QLQ-C30 and QLQ-BR23, knowledge and guidance concerning breast cancer. The mobile app also serves as a platform for the patients to interact with their conducting physicians.

Result: During the nine-month enrollment period, 108 patients who had received breast cancer therapies at our institute were identified on hospitalization or outpatient basis. Invitation was made in person, and an access to the mobile app or a direct link to online quality-of-life questionnaire was provided. Patients with ECOG = 0 reported better global health/Global quality of life status (62 versus 14, $P < 0.01$), physical function (90 versus 73, $P < 0.05$), cognitive function (81 versus 28, $P < 0.01$), less pain (24 versus 67, $P < 0.01$) and dyspnea (10 versus 67, $P < 0.01$) compared to those with ECOG > 1. Patients in the status of follow-up had better role function than those undergoing active treatment (92 versus 78, $P < 0.05$).

Conclusions: The establishment of the LINE Bot module could improve outcomes assessment for patients themselves and physicians in charge. It provided an opportunity to reflect quality-of-life influenced by each treatment modality and disease status as these patients could repeat the questionnaire at any timing. The platform for interaction could also contribute to enhancing the quality of care.

PSYCHOMETRIC EVALUATION OF A COMPREHENSIVE FRAILTY ASSESSMENT IN PATIENTS WITH BREAST CANCER: A DEVELOPMENT AND VALIDATION STUDY

Sheng-Miauh Huang[1], Ling-Ming Tseng[2], Chi-Cheng Huang[2], Pei-Ju Lien[2], Su-Chen Fang[1], Yinhui Hong[3]

[1]MacKay Medical College, Department of Nursing, Taiwan, [2]Taipei Veterans General Hospital, Department of Comprehensive Breast Health Center, Department of Surgery, Taiwan, [3]Univ. of Taipei, Department of Psychology and Counseling, Taiwan

Background: Frail cancer patients have higher mortality rates, which is why their frail status and related factors should be considered. A specific instrument comprehensively measuring frailty among patients with breast cancer has not yet been developed. The aim of this study was to develop and validate a comprehensive frailty instrument for patients with Breast Cancer.

Methods: A descriptive and explorative study design was used. We collected the data through systematic literature and modified Delphi method. The validity was assessed using a sample of 205 patients with breast cancer in Taiwan. Its validity was then tested using item analysis, exploratory factor analysis, confirmatory factor analysis, criterion-related validity and areas under the receiver-operating characteristic, while its reliability was evaluated through internal consistencies and test-retest analyses.

Result: A three-factor solution with 16 items was chosen and accounted for approximately 58.57% of the total variance by exploratory factor analysis (KMO = 0.85; Bartlett's Test of Sphericity: $\chi^2 = 2881.34$, $p < 0.001$). The factors were interpreted as (1) deterioration of body and mobility, (2) negative emotions, and (3) cognitive impairment. The goodness of fit indices of the confirmatory factor analysis were as follows: chi-square = 234.498 ($p < 0.01$), normed chi-square = 2.322, SRMR = 0.055, RMSEA = 0.08, CFI = 0.930, and LI = 0.917. The Cronbach's alpha calculated for the BCCFS (16 items) was 0.91, and the test-retest reliability coefficient was 0.60. Using the G8 screening tool as a standard indicator of frailty, analysis of receiver operating characteristic curve showed that 31.5 was the best cut point (area under curve = 0. 816,) with a sensitivity of 63.5% and specificity of 84.4%.

Conclusions: The instrument exhibited acceptable psychometric properties, proving it to be a valuable tool for evaluating frailty in patients with breast cancer.

DEVELOPING A WEB-BASED SHARED DECISION-MAKING TOOL FOR SURGICAL OPTIONS IN WOMEN WITH EARLY-STAGE BREAST CANCER

Pei-Ju Lien[1], Chi-Cheng Huang[1], Ling-Ming Tseng[1], Sheng-Miauh Huang[2], Bo-Fang Chen[1], I-Yen Lin[1]

[1]Taipei Veterans General Hospital, Department of Breast Cancer Case Manager, Taiwan, [2]MacKay Medical College, Department of Nursing, Taiwan

Background: Treatment for breast cancer is changing rapidly. Early-stage breast cancer patients have more options for surgical treatment than ever before. Better information and support resources aimed at women to support their decision making are needed. The aim of this study was to develop a web-based shared decision-making (SDM) tool to help patients with early-stage breast cancer make decisions about surgical options.

Methods: We used both of SHARE (Seek, Help, Assess, Reach, and Evaluate) approach and three-talk model to develop a web-based SDM tool. The former includes a five-step process of shared decision making, which involves exploring and comparing the benefits, harms, and risks of each option through meaningful dialogue about what matters most to the patient. The latter depicts to depict a process of collaboration and deliberation based on team talk, option talk, and decision talk.

Result: A total of 144 women with breast cancer were enrolled in the study. Before using the SDM tool, 51 (35.4%) chose total mastectomy, 64 (44.4%) chose breast conserving surgery, and 29 (20.1%) were unable to decide. After using the SDM tool, 39 (27.1%) chose total mastectomy, 89 (61.8%) chose breast conserving surgery, and 16 (11.1%) were still unable to make an immediate decision. These patients who were unable to make decisions in the moment were taught to use the web-based tool. After discussing with their families, all patients made final decisions after their next hospital visit.

Conclusions: The findings show the web-based SDM meets both the patients' and health providers' needs and helps patients with early-stage breast cancer make decisions on surgical options. All female patients with early-stage breast cancer are expected to use the tool, which should increase patient autonomy and improve communication about surgery with clinicians.

THE EFFECTS OF ONLINE EDUCATION FOR UPPER EXTREMITY LYMPHEDEMA IN BREAST CANCER PATIENTS

Eunkyung Hwang[1], Mi Ok Yu[1], Chanmi Kim[1], Hak Jae Kim[1,2]

[1]Seoul National Univ. Hospital, Department of Cancer Edu-info Center, Korea, [2]Seoul National Univ. Hospital, Department of Radiation Oncology, Korea

Background: Since lymphedema after breast surgery has a profound effect on quality of life of breast cancer patients, education for self-care and prevention is very important. In this study, We aimed to identify the effectiveness of online education for lymphedema by comparing with the effectiveness of well-proven offline education.

Methods: To identify the effectiveness of lymphedema education, degree of upper extremity lymphedema knowledge and subjective understanding was measured twice before and after education. The subjects were 81 breast cancer patients who participated in lymphedema education. Among them, 38 participated online education, and 43 participated offline education.

Result: The academic background of the online education subjects was relatively high ($\chi^2 = 7.82$, $p = 0.05$). Offline education subjects had relatively more cases of axillary lymph node surgery than online education subjects ($\chi^2 = 11.25$, $p = 0.01$). The postoperative period tended to be relatively short in online education subjects ($\chi^2 = 11.15$, $p = 0.03$). Knowledge scores significantly increased after lymphedema education ($t = -46.67$, $p = 0.000$). There was no significant difference in the degree of change in the knowledge of lymphedema between online and offline education subjects after education ($t = 0.93$, $p = 0.357$). On the other hand, online education subjects had significantly higher score in occurrence and prevention area ($t = -2.48$, $p = 0.015$), otherwise offline education subject had significantly higher score in self-care area ($t = 2.76$, $p = 0.007$).

Conclusions: As a result of comparing the effects of online and offline education, it was proved that online education for lymphedema could increase knowledge as much as offline education. According to the subscale of the score, the education method that was advantageous for increasing knowledge was different depending on the content of the education. And there are differences in the characteristics of participants depending on the education method, so it is necessary to provide both online and offline education to broaden the range of patients' choices.

REDEFINING OUR NURSING RESTRICTIONS FOR THE AT-RISK LIMB

Jun Xian Jeffrey Hing[1,2], Yen Nee Sophia Chua[3], Su-Ming Tan[1,2]

[1]Changi General Hospital, Department of Surgery, Singapore, [2]Singhealth Duke NUS Breast Centre, Department of Surgery, Singapore, [3]Changi General Hospital, Department of Nursing, Singapore

Background: There is limited evidence to suggest that procedures such as blood pressure measurement, venipuncture or intravenous cannulation of the at-risk limb are associated with an increased risk of developing breast cancer related lymphedema (BCRL). However, it is not uncommon to observe hospital policies or nursing practices enforcing restrictions on patients' use of the at-risk limb. This may spread falsehoods regarding the risk factors of BCRL and create practical conundrums when there are no alternatives. As nurses are the frontline of these nursing practices, we aim to examine our nurses' knowledge of BCRL, and perception of blood pressure taking, venipuncture and intravenous cannulation as risk factors of BCRL. We also examined our institution's nursing policies on such restrictions.

Methods: An anonymized hospital wide survey of nursing practices was conducted to evaluate the knowledge and perception of nurse towards risk factors of BCRL. Nursing policies related to performing blood pressure monitoring, venipuncture and peripheral intravenous cannulation were identified, and reviewed for inconsistencies.

Result: A total of 870 nurses responded. 78.5% indicated blood pressure taking and 75.6% venipuncture on the ipsilateral limb as risk factors of BCRL. More than 90% of nurses would not perform blood pressure taking or venipuncture on the at-risk limb even if there were no signs of lymphedema. A significant proportion of respondents also associated having diabetes, smoking history as risk factors of developing BCRL. 4 nursing policies were reviewed and found to have inconsistencies in labelling mastectomy and/or axillary clearance as contraindications to blood pressure, venipuncture and intravenous cannulation.

Conclusions: Imposing restrictions on the use of the at-risk limb for essential procedures as a form of risk reduction is based on weak evidence and deeply ingrained in our current nursing practices. It would require concerted efforts from various stakeholders to dispel these myths and reflect the basis of such recommendations.

THE DEVELOPMENT AND EFFECTIVENESS OF A SMARTPHONE APPLICATION ON BREAST SELF-EXAMINATION ON WOMEN IN SOUTH KOREA

Sung Hae Kim

Tongmyong Univ., Department of Nursing, Korea

Background: Breast cancer is a common malignancy in women worldwide. Breast self-examination (BSE) can be performed easily and simply in daily life, and is very effective in early detection of breast abnormalities or cancer. In addition, health promotion education using smartphone applications can increase participants' motivation and accessibility. The purpose of this study is to develop a BSE smartphone application and evaluate its usefulness.

Methods: The smartphone application on BSE development proceeded in 3 stages of application development. Smartphone application consist of the educational video on BSE with interactive Chatbot. The smartphone application was completed in a hybrid type that is compatible with both IOS and Android. The study design was one group pretest-posttest experimental study to verify the usefulness of the smartphone application. Data was collected from August 2020 to May 2021. A total of 83 participants were enrolled in this study. Smartphone application were provided with BSE reminder alarms in time for their menstrual cycle. The data were analyzed using SPSS/WIN 25 software program.

Result: As a result of the expert evaluation, BSE smartphone application was evaluated as content truth 19.33 ± 1.15, accessibility and convenience 23.67 ± 1.53, speed and connection 15.0, and overall impression 15.0. After the intervention, the mean differences of the scores on participants were significantly improvement on BSE knowledge ($t = -8.91$, $p < .001$), benefit ($t = -10.51$, $p < .001$), barrier ($t = 3.49$, $p = .001$), and confidence ($t = -2.51$, $p = .014$) of health belief on BSE practice.

Conclusions: The developed smartphone application was effective for women's BSE education. It is expected that BSE smartphone applications will be widely used to improve knowledge acquisition and BSE practice.

TOWARDS ENHANCED CARE FOR BREAST CANCER PATIENTS: AN ACTION RESEARCH ON THE DEVELOPMENT AND IMPLEMENTATION OF A PRE- AND POST-SURGERY NURSING SIMULATION MODULE

Jiyoung Kang

Jeju National Univ., Department of Oncology Nursing, Korea

Background: Breast cancer is the most common cancer among women in South Korea, necessitating that nursing students gain a comprehensive understanding of the nursing process for these patients. Incorporating educational strategies such as simulation modules can significantly enhance their practical skills, improving patient nursing care and outcomes.

Methods: This study employed action research methodology to develop and implement a perioperative nursing simulation module. Initial steps included examining nursing methods currently used in the field and designing a simulation module based on these findings. The module was then integrated into a real-world nursing education course, and its effectiveness was subsequently evaluated using a mixed-method approach.

Result: The implementation of the simulation module improved students' perioperative nursing skills. Notably, their understanding and practical nursing skills for managing the physical and mental stress of patients were enhanced. Moreover, an increase in students' learning satisfaction, confidence, and flow was observed.

Conclusions: The nursing simulation module developed in this study significantly enhanced the nursing process for patients. It aided students in increasing their understanding of the perioperative nursing process for patients and improved their practical nursing skills. These findings provide valuable insights into effectively integrating simulation modules into nursing education.

EXPLORING EMOTION WELL-BEING AND PEER SUPPORT EXPERIENCE AMONG BREAST CANCER SURVIVORS USING MIXED METHODS AND PROPENSITY SCORE MATCHING: A PILOT STUDY

Ya-Chi Fan[1], Fei-Hsiu Hsiao[1,2]

[1]National Taiwan Univ., Department of School of Nursing, College of Medicine, Taiwan, [2]National Taiwan Univ. Hospital, Department of Nursing, Taiwan

Background: Breast cancer is the most prevalent cancer in the world. Patients with breast cancer have been noted being more frequently affected by depression and anxiety. While the positive effects of peer support for breast patients are well- described, less is known about the emotional status and experiences of those who providing supports. Engaging in volunteering brings benefits to oneself, but it may also lead to emotional burdens when supporting distressed patients. The purpose of the study is to understand depression, anxiety among breast cancer survivors peer support volunteers (BCS-PSVs), and explore the experiences influence their emotion well-being during volunteering.

Methods: This study used mixed methods research design and propensity score matching. BCS-PSVs were matched with breast cancer patients without volunteering. BCS-PSVs and breast cancer patients completed the questionnaire of depression (Beck Depression Inventory; BDI -II) and anxiety (State Anxiety Inventory; SAI). Twelve BCS-PSVs participants were invited to shared their peer volunteering experience through qualitative individual interview.

Result: The mean rank of depression and anxiety scores among the BCS-PSV participants (n = 13) were significantly lower than breast cancer participants (n = 13). Qualitative interviews emphasized the benefits of peer volunteering, including enhanced social connections and support, increased awareness and self-reflection, feelings of hope and appreciation when comparing experiences with other patients, learning new skills, and finding the value in suffering from cancer. Furthermore, living in the present, self-compassion, setting boundaries, external support, and religion bring emotional balance during volunteering. Nevertheless, the need for mental or professional support was noted. Empathy-based stress arises when BCS-PSV participants face helpless situations, particularly among those with limited volunteer training or insufficient past experiences supported by others. Some participants expressing insufficient medical knowledge or volunteer skills.

Conclusions: Engaging peer volunteering may be beneficial for emotional well-being of breast cancer patients. Professional volunteering training with mindfulness and compassion elements is suggested for BCS-PSVs.

USING LINE-EPRO PLATFORM FOR BREAST CANCER PATIENT DURING ADJUVANT CHEMOTHERAPY

Hsien Tang Yeh

Lotung Poh-Ai hospital, Department of Surgery, Taiwan

Background: Breast cancer patients received adjuvant chemotherapy suffered with many side effect at home and poor management of these symptoms can raising the possibility of increasing hospital visit, expenditure of medical care,and even poor compliance of treatment to result in worse outcome.

Methods: Using LINE app e-PRO platform to collect patient's response to adjuvant chemotherapy and deliver adequate information to empower self care ability of patients or caregivers , also manage the adverse toxicities above grade 3 with in time education and instruction.

Result: For stage I to III breast cancer patients received chemotherapy who joined the study group, the re-admission rate due to CT side effect decreased to previous cohort ,and the compliance of chemotherapy improving with adequate , in time care.

Conclusions: It is feasible to impliment the LINE app e-PRO platform to enhence the care quality for breast cancer patients receiving chemotherapy, It also needs further study to show the cost benefit.

FACTORS INFLUENCING BODY ACCEPTANCE IN WOMEN WITH BREAST CANCER

Jeonghee Ahn[1], Younghee Yun[2]

[1]Hanyang Univ., Department of College of Nursing, Korea, [2]Univ. of California San Francisco, Department of Community Health Systems, School of Nursing, U.S.A.

Background: Women experience profound body changes due to breast cancer and its treatment. Body acceptance has been identified as a crucial factor related to their physical, psychological health, and quality of life. This study investigates the multifaceted factors influencing body acceptance among women with breast cancer in Republic of Korea.

Methods: Data were collected from 258 participants through an online survey in September 2023. The collected data were analyzed using descriptive statistics, frequency analysis, independent t-test, one-way ANOVA, Pearson correlation coefficient, and hierarchical regression analysis.

Result: Body acceptance demonstrated positive correlations with self-esteem ($r = .71$, $p < .001$), resilience ($r = .76$, $p < .001$), social support ($r = .60$, $p < .001$), and objectified body consciousness ($r = .76$, $p < .001$). Demographic and disease-related characteristics, such as age, religion, menstruation, elapsed period after diagnosis, cancer stage at diagnosis, surgery type, and cancer treatment, were identified as influencing factors. In addition, resilience ($\beta = .36$, $p < .001$), objectified body consciousness ($\beta = .31$, $p < .001$), and social support ($\beta = .13$, $p = .027$) collectively explained 79.1% of the variance in body acceptance.

Conclusions: This study provides valuable insights into the factors influencing body acceptance in the context of breast cancer. It suggests the need for tailored interventions aimed at enhancing resilience, addressing objectified body consciousness, and fostering social support. Such interventions can effectively improve body acceptance, contributing to the overall well-being of women with breast cancer.

WHAT VALUES INFLUENCE FEMALE CANCER PATIENTS' DECISIONS TO PURSUE OR NOT PURSUE FERTILITY PRESERVATION IN SOUTH KOREA?: A QUALITATIVE STUDY

Jeehee Han[1], Mina Jang[1], Jeonghee Ahn[2]

[1]Chung-Ang Univ. College of Nursing, Department of Nursing, Korea, [2]Univ. of Ulsan College of Medicine, Department of Medicine, Korea

Background: Shared decision-making involves healthcare providers and patients collaborating to share evidence and present options, guiding decisions based on patient values, which represent what individuals consider important and cherish. However, in South Korea, there is a lack of clarity and attention on the values that significantly influence decision-making regarding fertility preservation for cancer patients.

Methods: We conducted 10 individual interviews (6 breast cancer patients). They experienced decision-making related to fertility preservation. We asked them to (1) What values significantly influenced the decision-making process regarding fertility preservation?; (2) If fertility preservation was not chosen, what values led to that decision? We performed a thematic analysis of the transcripts.

Result: The categories of values that led to the decision to pursue fertility preservation emerged as 'Protecting my own plans and life', 'Insurance for an uncertain future', and 'Encouraging opinions'. Conversely, the categories of values that led to the decision not to pursue fertility preservation emerged as 'The presence of cancer disrupting my plans and life', 'Uncertainty and body burden associated with fertility preservation', and 'Discouraging opinion'.

Conclusions: This study emphasizes the importance of healthcare providers' attention to patient values in decision-making related to fertility preservation. Specifically, efforts are needed to assist patients in weighing their personal plans and life regarding cancer treatment, alleviate concerns about fertility preservation as much as possible, and provide time for meaningful exchanges of opinions from significant others to uphold patient values.

NURSE-LED BREAST MULTIDISCIPLINARY TEAM MEETING; THE EFFECTIVE METHODS TO BUILD THE COLLABORATIVE TEAMS AND OFFER THE BEST CARE FOR PATIENTS

Kaori Tane[1], Akie Matsumura[2], Saki Kimura[2], Yuki Matsunami[2], Mayuki Hashimoto[1], Fumika Taguchi[1], Koichi Hirokaga[1], Seung Jin Kim[1], Haruko Oohara[2], Takako Kanagawa[2]

[1]Hyogo Cancer Center, Department of Breast Surgery, Japan, [2]Hyogo Cancer Center, Department of Nursing, Japan

Background: Cancer care has been more complex and required the coordination of multiple disciplines and treatment modalities. Multidisciplinary care is a key component of best practice cancer care, and Multidisciplinary Team Meetings (MDTMs) is considered a golden team approach health professionals work together to plan treatment and care for individual patient. MDTMs are often led by physicians, however, there should be some problems. First, there is not enough time to discuss about complex patients and each patients' situations. Second, non-physicians may find it difficult to express their opinion in Physician-led MDTMs.

Methods: We started Nurse-led Breast MDTM (N-MDTM) for over 15 years in addition to Physician-led MDTMs. The members of N-MDTM consists of outpatient nurses including registered breast care nurse, ward nurses, lymphedema therapist, pharmacists, nurses and social workers in regional liaison department, and breast surgeons. All meetings are conducted face to face once every two months in weekday evening. Nurses act as a MDTM coordinator, they create agendas and select patients' cases. A MDTM lead and a minute taker are rotated among outpatient nurses, ward nurses, pharmacists and regional liaison department staff. Sometimes, special case conferences are hold with nurses in outpatient chemotherapy room, palliative nurses, or a genetic nurse.

Result: We discuss about each patient's situation in detail, share the special information and treatment strategy frankly. Attendees can communicate with staff in different departments, especially with physicians, and get the smooth hospital and clinic cooperation after an admission or a discharge. All members can understand several opinions from each perspective and ensure their roles and responsibilities with higher motivation. We can build successful team collaboration and focus on person-centered care, ensure that it is able to treat patients holistically.

Conclusions: Nurse-led MDTM unites and empowers the team, leads to deliver the best care for every patient, and improves patient's quality of life holistically.

THE RELATIONSHIP BETWEEN CORE EMOTIONS AND SOMATIZATION SYMPTOMS IN BREAST CANCER PATIENTS

Ji Sook Kang[1], Unjong Choi[2]

[1]Wonkwang Univ. School of Medicine, Department of Nursing, Korea, [2]Wonkwang Univ. Hospital, Department of Surgery, Korea

Background: This study was conducted to investigate the relationship between core emotions of Korean traditional medicine (seven emotions) and somatization symptoms in breast cancer patients.

Methods: A total of 29 breast cancer patients in a university hospital located in J province were included, who agreed to participate in this study completed a self-report questionnaire. The collected data were analyzed by descriptive analysis, ANOVA and Pearson's correlation using SPSS 26.0 statistical program.

Result: The average score of somatization symptoms was 10.34 ± 5.62(maximum-22, 55.2% of participants suffered from moderate to severe somatization symptoms. As the core emotions of Korean traditional medicine(seven emotions), Joy(HUI) score was 8.44 ± 5.62(maximum-17), Anger(NO) score was 7.34 ± 2.70(maximum-15), Thought(SA) score was 10.03 ± 3.90(maximum-18), Depression(U) score was 8.48 ± 2.86(maximum-17), Sorrow(BI) score was 8.93 ± 3.64(maximum-17), Fear(GONG) score was 7.83 ± 3.23(maximum-15) and Fright(Kyeong) score was 7.52 ± 2.96(maximum-15). There were significant correlations between somatization symptoms and Anger($r = .415$, $p = .025$), Thought($r = .561$, $p = .002$), Depression($r = .618$, $p < .001$), Sorrow($r = .679$, $p < .001$), Fear($r = .627$, $p < .001$), Fright($r = .431$, $p = .020$) in breast cancer patients.

Conclusions: The emotions of breast cancer patients are very complex. They have more negative emotions than average after being diagnosed with breast cancer. These complex emotions had a strong relationships to somatization. Therefore, we need to explore the various emotions and emotional and social approach that take emotions into account should be provided to breast cancer patients.

COMPARISON OF PERIODICAL EFFECT IN EXTERNAL VOLUME EXPANSION (EVE) ON FAT GRAFT RETENTION RATE IN BALB / C NUDE MOUSE

Tae Hwan Park[1], Yong June Chang[1], Yunhyun Kim[1], Jeong Yeop Ryu[1], Joon Seok Lee[1], Kang Young Choi[1], Ho Yun Chung[1], Ho Yong Park[2], Jung Dug Yang[1]

[1]Kyungpook National Univ. School of Medicine, Department of Plastic Surgery, Korea, [2]Kyungpook National Univ. School of Medicine, Department of Surgery, Korea

Background: Autologous fat graft is widely used because it is known to be convenient and safe. There are many studies to improve the fat retention rate and EVE is the one of them. In particular, research about the effectiveness of EVE in fat retention rate is being conducted, but only a few researches have been performed about its periodical effect. This research was designed to perform research in order to examine the effective time of the EVE.

Methods: Consent was obtained from a female donor aged 36 without underlying illness condition scheduled for fat grafting from the abdomen. Liposuction was performed to absorb the fat cell and it was immediately used for animal experiment. After conducting EVE, gross examination, assessment with Quantum FX micro CT, and histopathologic assessment were implemented. The experimental groups were classified as Group A control, Group B underwent EVE 2 weeks before the fat graft, Group C underwent EVE for 5 days before fat graft. Group D underwent the EVE for 5days before the fat graft and immediately after the fat graft.

Result: Fat retention rate at 10 weeks was measured as Group A (39.3%), Group B (46.6%), Group C (57.0%), and Group D (68.4%). Measurement was also taken for the changes in the fat volume for each individual at 10 weeks of the experiment and immediately after performing fat grafting. It was measured as Group A (40.4%), Group B (47.7%), Group C (57.5%), and Group D (68.4%).

Conclusions: It is considered that performing external volume expansion at a clinically appropriate period will bring more benefits in the fat retention rate According to the results of this study, prior EVE followed by concomitant fat graft and additional EVE after fat graft can obtain the highest fat retention rate.

TAILORED AXILLARY SURGERY (TAS) IN PATIENTS WITH CLINICALLY NODE-POSITIVE BREAST CANCER IN THE UPFRONT SURGERY SETTING: A PROSPECTIVE, SINGLE-ARM, MULTICENTER TRIAL

Kaori Terata[1], Yasuaki Sagara[2], Tadahiko Shien[3], Takehiko Sakai[4], Shin Takayama[5], Dai Kitagawa[6], Tsuguo Iwatani[3], Takahiro Tsukioki[3], Mami Ogita[7], Naoko Sanuki[8], Masayuki Yoshida[9], Hitoshi Tsuda[10], Seiichiro Yamamoto[11], Hiroji Iwata[12]

[1]Akita Univ. Hospital, Department of Surgery, Japan, [2]Social medical corporation Hakuaikai Sagara Hospital, Department of Surgery, Japan, [3]Okayama Univ. Hospital, Department of Surgery, Japan, [4]Cancer Institute Hospital of JFCR, Department of Surgery, Japan, [5]National Cancer Center Hospital, Department of Surgery, Japan, [6]National Center for Global Health and Medicine, Department of Surgery, Japan, [7]The Univ. of Tokyo Hospital, Department of Radiation Oncology, Japan, [8]Yokkaichi Municipal Hospital, Department of Radiation Oncology, Japan, [9]National Cancer Center Hospital, Department of Pathology, Japan, [10]National Defense Medical College, Department of Pathology, Japan, [11]Shizuoka Graduate Univ. of Public Health, Department of Statistics, Japan, [12]Aichi Cancer Center Hospital, Department of Surgery, Japan

Background: Axillary lymph node dissection (ALND), which can induce lymphedema, has been omitted in clinically node-negative (cN0) patients with positive sentinel lymph nodes (SLNs) if they meet the eligibility criteria of ACOSOG Z0011. Furthermore, the omission of ALND has been attempted through targeted axillary dissection (TAD) in patients whose clinically node-positive (cN+) status converts to ycN0 after neoadjuvant chemotherapy. However, ALND remains the standard of care in patients with cN+ who undergo upfront surgery.

Methods: We have planned a single-arm Phase II trial. TAS involves removing marking lymph nodes by TAD (clip, wire, or tattoo) and SLNB, and ALND up to Level II are performed after TAS. These LNs are defined as non-TAS LNs. The eligibility criteria are as follows: 1) histologically-proven invasive breast cancer, 2) upfront surgery is planned, 3) pathologically-diagnosed metastatic lymph node (cytology or core needle biopsy), 4) 1-3 LN metastases in level I by imaging, 5) cT1-3, and 6) females aged ≥ 18 and ≤ 74 years on the enrollment date.

Result: The primary endpoint is the non-TAS LNs positive rate. Clinicopathological factors (the number of suspected metastases by imaging, the number of metastases in LNs resected by TAS, tumor size, and invasive ductal/lobular carcinoma) are analyzed to predict the non-TAS LN metastasis rate (e.g., < 10%). By using these clinicopathological factors, we determine the eligibility of TAS to omit ALND safely. The secondary endpoints are TAS LNs identification rate, marked lymph node resection rate, arm edema incidence rate, and quality of life. After this feasibility study, we will conduct a phase III trial that omits ALND using TAS to investigate the regional recurrence rate.

Conclusions: The patient recruitment was started in April 2023. Up to 300 patients will be enrolled from 41 sites in Japan over a 2-year recruitment period. Sixty-five patients were already enrolled until February 2024.

TREATMENT PATTERNS, TIME TO TREATMENT DISCONTINUATION, AND HEALTH RESOURCE UTILIZATION WITH ADVANCED/METASTATIC TRIPLE NEGATIVE BREAST CANCER PATIENTS IN JAPAN

Hitomi Sanno[1], Kazuko Taniguchi[2], Yuya Yoshimoto[3], Shigehira Saj[4]

[1]MSD K.K., Department of Oncology Medical Affairs, Japan, [2]MSD K.K., Department of Outcomes Research, Japan, [3]Fukushima Medical Univ., Department of Radiation Oncology, Japan, [4]Fukushima Medical Univ., Department of Medical Oncology, Japan

Background: About 14% of breast cancers in Japan are of the triple negative breast cancer (TNBC) (Kosaka Y. et al., Mol Clin Oncol. 2018). Poly ADP ribose polymerase inhibitors and immune checkpoint inhibitors for advanced and metastatic TNBC (aTNBC/mTNBC) have newly been approved in Japan since 2018. This study was aimed to understand the real-world treatments for TNBC in Japan in the era before new therapies were available.

Methods: TNBC diagnosed between April 2008 and August 2015 from commercially available hospital claims database were categorized into two groups of patients: (1) aTNBC/mTNBC had initially Stage I - IIIB breast cancer treated with surgery +/- perioperative treatments, and (2) had an initial diagnosis of de novo Stage IV.

Result: Among 3,928 TNBC patients, 276 were identified as group (1) and 490 were as group (2). 147 in 276 (53.3%) patients in group (1) received systemic treatments and the commonly used first-line treatments were capecitabine (20.4%), tegafur-gimeracil-oteracil (19.0%), bevacizumab + paclitaxel (10.9%), eribulin (8.8%), and epirubicin + cyclophosphamide (8.2%). Of 490 patients group (2), 190 (38.8%) received systemic treatments and the commonly used first-line treatments were bevacizumab + paclitaxel (19.5%), paclitaxel (12.1%), 5-FU+epirubicin+cyclophosphamide (10.0%), epirubicin + cyclophosphamide (8.9%), eribulin (7.4%), capecitabine (5.3%), vinorelbine (5.3%), and tegafur-gimeracil-oteracil (5.3%). There was more diversity in the second- and third-line regimens in both groups. Time to discontinuation decreased with advancing treatment lines in both groups. 60.9% of patients of first group and 100% of second group were hospitalized at least once.

Conclusions: The treatment strategies varied among aTNBC /mTNBC and de novo Stage IV patients in Japan which may be influenced by the decision making of patients and institutes. These data can be useful as a benchmark when investigating the impact of novel therapies for those patients in real-world clinical practice.

READABILITY AND RELIABILITY OF GENERATIVE ARTIFICIAL INTELLIGENCE (AI) AS A SOURCE OF BREAST CANCER INFORMATION FOR PATIENTS

Ko Un Clara Park[1,2], Stuart Lipsitz[2], Laura Dominici[1], Filipa Lynce[3], Christina Minami[1,2], Faina Nakhlis[1], Adrienne Waks[3], Laura Warren[4], Nadine Eidman[5], Jeannie Frazier[5], Lourdes Hernandez[5], Carla Leslie[5], Susan Rafte[5], Delia Stroud[5], Joel Weissman[2], Tari King[1], Elizabeth Mittendorf[1]

[1]Brigham and Women's Hospital, Dana-Farber Cancer Institute, Department of Breast Surgery, U.S.A., [2]Brigham and Women's Hospital, Department of Center for Surgery and Public Health, U.S.A., [3]Dana-Farber Cancer Institute, Department of Medical Oncology, U.S.A., [4]Brigham and Women's Hospital, Department of Radiation Oncology, U.S.A., [5]The Univ. of Texas MD Anderson Cancer Center, U.S.A.

Background: The chatbot interface generative pretrained transformer (ChatGPT) AI system can provide humanlike responses to user input. This study aims to evaluate the readability and reliability of ChatGPT as a source of breast cancer information for patients.

Methods: We curated a list of 20 questions that patients are likely to ask ChatGPT. The questions were posed to ChatGPT 3.5 in July 2023 and repeated 3 times. Responses were graded by 6 breast oncology specialists (3 surgical oncologists, 1 radiation oncologist, and 2 medical oncologists) in 2 domains: accuracy (4-point Likert scale, 4 = worst) and clinical concordance (i.e., information is clinically similar to the specialist response; 5-point Likert scale, 5 = not similar at all). References were requested for each response and checked for accuracy. The readability was calculated using the Flesch Kincaid readability scale. Intraclass correlation coefficient (ICC) was calculated to measure concordance of responses when questions are repeated.

Result: The overall average for accuracy was 1.88 (range 1-3; 95% CI 1.42-1.94) and clinical concordance was 2.79 (range 1-5; 95% CI 1.94-3.64). There was a weak correlation between higher readability with better clinical concordance (-0.15, $p = 0.025$). The average word count was 309.5 words per response (range 146-441) with high concordance (ICC 0.75, 95% CI 0.59-0.91, $p < 0.001$). The average readability was poor at 37.9 (range 18-60.5) with high concordance (ICC 0.73, 95% CI 0.57-0.90, $p < 0.001$). The average number of references provided was 1.97 (range 1-4; total 119). ChatGPT cited peer-reviewed manuscripts once (2 references) and the remainder (n = 117) were website references, of which 48 (41%) linked to webpages that did not exist.

Conclusions: While ChatGPT demonstrates consistency in its answers when the questions are repeated, the reading level was too high to serve as a patient education material. A significant portion of the provided references were unreliable. Further studies are needed before ChatGPT can be reliably used by patients.

ARTIFICIAL INTELLIGENCE VIRTUAL PATIENT SUPPORT GROUP PEER FOR BETTER BREAST CANCER PATIENTS

Michael Co[1], John Yuen[2,3], Ava Kwong[1]

[1]The Univ. of Hong Kong, Department of Surgery, Hong Kong, [2]Monash Univ., Department of Information Technology, Australia, [3]BME Systems, Department of Artificial Intelligence, Hong Kong

Background: Breast cancer patients usually need to go through a long journey of treatment process from diagnosis to management. Peer support from fellow breast cancer survivors have become an important part of breast cancer management. Generative artificial intelligence (AI) has rapidly evolved in 2023, the use of generative AI has been described in many different industries, including in medical education. As such, we have developed a novel AI chatbot to serve as a virtual patient peer. Benefits of virtual patient peer include 1. Patients are more willing to discuss with a "non-human" system on some sensitive topics such as "sexuality issues" after breast cancer surgery; 2. Patients can interact with virtual peer volunteer without time or geographical constraints.

Methods: A prototype patient peer support chatbot system was developed in 2024. Sample of the system-user interaction can be found on this link: https://youtu.be/ktEpIStfhFM?si = A6q2jnKnNrR-Q-RJ User acceptance test (UAT) was conducted by 5 independent reviewers with or without medical / Information technology backgrounds. Focus of evaluation include: User friendliness, question identification, accuracy of information, level of human-like response, and interaction. Each domain is individually evaluated by reviewers in a Likert scale of 0 to 20 (Very poor to excellent). The maximal score of the UAT is 100.

Result: Median total score of the UAT was 83 out of 100 (Range = 74 to 90). Concerning the individual domain of the UAT score, none of the reviewers has given a failed score for the individual component of the UAT (i.e. score < 10). Median scores of user friendliness, question identification, accuracy of information were all 18 out of 20, while level of human-like response, and interaction were both 14 out of 20.

Conclusions: Virtual patient support group peer chatbot is a technically feasible tool for breast cancer patients. Further pilot run and evaluation among genuine breast cancer patients is needed.

COMPARISON OF THE EFFICACY OF A NCCN-AUGMENTED CLAUDE LARGE LANGUAGE MODEL (THESERENITYBOT) VERSUS GPT4 AND CLAUDE 2.0 IN MULTIDISCIPLINARY TUMOR BOARD DECISION-MAKING FOR POSTOPERATIVE BREAST CANCER

Grace Soo Woon Tan[1,2], Ragunathan Mariappan[1,5], Yen Shing Yeo[2], Sathananthan Thilahavathany[5], Khong Hai Wang[5], Samuel Guan Wei Ow[4], Wee Yao Koh[3], Mikael Hartman[1,2], Kee Yuan Ngiam[1,2,5], Serene Si Ning Goh[1,2]

[1]National Univ. of Singapore, Department of Surgery, Singapore, [2]National Univ. Hospital, Surgery Department, Department of National Univ. Hospital, Surgery Department, Singapore, [3]National Univ. Hospital, Department of Radiation Oncology, Singapore, Department of Radiation Oncology, Singapore, [4]National Univ. Hospital, Department of Medical Oncology, Singapore, Department of Medical Oncology, Singapore, [5]National Univ. Hospital, Department of Medical Informatics, Singapore, Department of National Univ. Hospital, Department of Medical Informatics, Singapore, Singapore

Background: Multidisciplinary breast tumor boards (MTB) foster collaboration and knowledge exchange but encounter challenges such as logistical constraints, specialty representation gaps, and standardization issues. TheSerenityBot, an AI chatbot developed at National University Hospital (NUH) Singapore, utilizes Anthropic's Claude large language model (LLM), trained with NCCN 2023 guidelines to offer suggestions for postoperative breast cancer management. The objective of the study is to compare the accuracy of TheSerenityBot versus OpenAI's ChatGPT-4 and Antrophic's Claude 2.0.

Methods: Deidentified clinical data was extracted from postoperative breast cancer patients from 1 August to 1 November 2023. The data was anonymized, converted into prompts for ChatGPT-4, Claude 2.0 and TheSerenityBot. A new session was started for each prompt and tested twice on different days. Scoring of each adjuvant treatment (endocrine therapy ET, radiation therapy RT, oncotype OT, Genetics GT, repeat surgery RS, Chemoprevention CP) was done by two independent investigators. Ground-truth was consensus from MTB.

Result: Fifty women were included with mean age of 61 (± 19.5) years old. 22.6% patients had non-invasive cancers, 77.4% had invasive breast cancers. Majority of cancers were hormone-positive (75.5%), 11.3% were HER-2 positive and 13.2% were triple negative. 64.2% had wide local excisions as compared to 35.8% with mastectomies. TheSerenityBot scored 44.2/50 (88.4% concordance), GPT4 scored 37.6/50 (75.2% concordance) and Claude scored 35.9/50 (71.8% concordance). TheSerenityBot was superior to Claude in recommendations for RT (difference 16, p-value 0.03) and OT (difference 18, p-value 0.03). TheSerenityBot was superior to GPT4 in recommendations of RS (difference 13, $p = 0.03$) and OT (difference 20, $p = 0.02$). Rest of the recommendations were comparable. Cases with discordant scoring were related to margin re-excisions and repeat axillary surgery.

Conclusions: TheSerenityBot was superior to Claude and GPT4 for recommendations on RT, OT and RS for postoperative breast cancer cases. Training LLMs on guidelines can enhance their effectiveness in MTBs.

AXILLARY ACCESSORY BREAST EXCISION USING SURGICAL ALGORITHM

Seongbae Hwang, Byungseo Cho

Spring Day Clinic, Department of Surgery, Korea

Background: Accessory breast tissue is residual breast tissue that results from failure of regression during embryogenesis. It is common occurring in 2~6% population. It is usually located in the axilla. The shape of accessory breast varies from person to person depending on the number of pregnancies and births, or genetic specificity of the patient, just like the breast located on the chest. Therefore, it is important to perform the appropriate surgery according to their types.

Methods: Fourteen hundred and fifty-two patients who have been treated with accessory breast tissue from September 2017 to Oct 2023 at the Spring Day Clinic were analyzed retrospectively for surgical methods according to its type (Spring Day Clinic's classification). All the operations were performed by one surgeon (Dr. Hwang).

Result: According to SDC's classification (Spring Day Clinic), type I was observed in 36.5% (531 patients), type II in 50.6% (734 patients), type III in 6.8% (98 patients), and type IV in 6.1% (89 patients) of all accessory breast patients. All patients with type I and II underwent mammary tissue excision and liposuction using minimal incision in axilla. Of the patients with type III, 58 patients got the staged operation and 40 patients underwent mammary tissue excision and liposuction with redundant skin resection at the same time. Of 58 patient who got the staged operation, only 17 patients had to perform a skin resection. In our study, 98.2% of patients enjoyed cosmetically satisfying outcomes.

Conclusions: Since the characteristics of the accessory breast varies from person to person, surgeons should keep in mind that they have to perform the surgery according to their individual characteristics rather than the standardized method to achieve satisfactory results.

SEVERE CUTANEOUS ADVERSE REACTIONS INDUCED BY PEMBROLIZUMAB IN NEOADJUVANT TRIPLE NEGATIVE BREAST CANCER PATIENTS RECEIVING CARBOPLATIN AND PACLITAXEL: A CASE REPORT

Supagone Wangsubtawee[1], Thitiya Dejthevaporn[1], Teerapong Rattananukrom[2], Thanate Dajsakdipon[1]

[1]Ramathibodi Hospital, Mahidol Univ., Department of Medical Oncology, Thailand, [2]Ramathibodi Hospital, Mahidol Univ., Department of Dermatology, Thailand

Background: Neoadjuvant chemotherapy with pembrolizumab has become a standard treatment for early-stage triple-negative breast cancer (TNBC). Severe adverse reactions were uncommon. We reported a case of a locally advanced TNBC patient, who experienced a severe cutaneous skin reaction while receiving neoadjuvant treatment with carboplatin, paclitaxel, and pembrolizumab.

Methods: A 42-year-old Thai female was diagnosed with stage IIIA TNBC (cT3N2M0) A core needle biopsy confirmed an invasive ductal carcinoma that was ER-negative, PR-negative, HER-2 1+, and Ki-67 70%. A CT scan showed no evidence of metastasis. She was started on neoadjuvant carboplatin, paclitaxel, and pembrolizumab (Pem). Within the first week after the first cycle, she developed a generalized erythematous and dusky red macules and papules, coalescing into plaques covering approximately 50% of the body surface area, with some atypical target lesions on both palms and concurrent mucositis and conjunctivitis. Steven Johnson Syndrome (SJS), a severe cutaneous adverse reaction was suspected.

Result: A skin biopsy revealed superficial and deep perivascular infiltration with lymphocytes and eosinophils, occasionally with necrotic keratinocytes consistent with SJS with Pem being the most likely responsible agent. The patient was managed with corticosteroid intravenously till complete resolution. A decision was made to continue the treatment with Pem utilizing a desensitizing protocol which included premedication with steroid, antihistamine, along with a prolonged rate of infusion. She was able to tolerate and complete the rest of the treatment (Pem/carboplatin/ paclitaxel, Pem/ doxorubicin and cyclophosphamide) without recurrent SJS. The pathology of the mastectomy specimen showed a 0.9-cm residual cancer without nodal involvement. She continues to receive maintenance pembrolizumab without side effects.

Conclusions: While SJS from pembrolizumab is rare and was not initially reported, this case emphasizes the potential occurrence which requires continued vigilance and monitoring. Management with standard desensitizing protocol allowed continuing treatment after a thorough risk-benefit discussion.

ADVANCED BREAST CANCER WITH MULTI-ORGAN METASTASES: A CASE REPORT EMPHASIZING THE IMPACT OF PATIENT COMPLIANCE AND TIMELY INTERVENTION

Davaadash Batsaikhan, Bold Altangerel, Munkhzul Munkhnyam, Bilguunzaya Batmunkh

Intermed Hospital, Department of Medical Oncology, Mongolia

Background: This case report aims to highlight the significance of patient compliance in the diagnosis and management of advanced breast cancer, focusing on a 52-year-old female patient who initially refused biopsy, leading to delayed diagnosis and progression of the disease. The objective is to underscore the importance of timely intervention and adherence to recommended diagnostic and therapeutic strategies.

Methods: The patient initially presented in 2017 with suspicions of breast cancer but declined biopsy. Subsequently, she reappeared in July 2023 with advanced symptoms, including left breast skin lesions, and nipple retraction. Needle biopsy confirmed invasive carcinoma (ductal), with immunohistochemistry revealing estrogen-receptor (ER) and progesterone-receptor (PR) positivity, HER2 (Score 2+), and Ki67 index of approximately 30%. A reflex test using ISH confirmed HER2 positivity. Imaging studies, including abdominal and chest contrast-enhanced CT, disclosed multiple metastases in the liver, ascending colon, right upper-lobe, and osteoblastic metastasis in L5. The left breast mass measured up to ~5.8 × 2.4 cm, with an additional mass of 3.1 × 2.2 cm in the left axilla.

Result: The patient received palliative chemotherapy and targeted therapy with Pertuzumab, Herceptin, Carboplatin, and Docetaxel. After four cycles of treatment, follow-up imaging demonstrated a significant reduction in the size of the left breast mass, metastatic axillary mass, and liver metastases. The left breast mass decreased to ~4.2 × 1.8 cm, with the axillary mass measuring 2.5 × 1.4 cm. Liver metastases showed a remarkable decrease in size. The patient continues to undergo chemotherapy, experiencing no discernible side effects during therapy.

Conclusions: This case report underscores the critical role of patient compliance in the early diagnosis and effective management of advanced breast cancer. Despite the delayed initial intervention, the combination of palliative chemotherapy and targeted therapy resulted in a substantial reduction in tumor burden. Future studies should explore strategies to enhance patient education and promote early intervention to optimize treatment outcomes in similar cases.

A RARE CASE OF BREAST MALT LYMPHOMA WITH SYNCHRONOUS PERIPHERAL T-CELL LYMPHOMA (PTCL) PRESENTING AS PRIMARY AMYLOIDOSIS OF THE BREAST

Jia Hui Lee[1], Pamela Tan[2], Esmerelda Teo[2], Fan Foon Cheo[3], Ian Tay[4], Leonard Tan[3], Yirong Sim[1]

[1]Singapore General Hospital, Department of Surgery, Singapore, [2]Singapore General Hospital, Department of Haematology, Singapore, [3]Singapore General Hospital, Department of Pathology, Singapore, [4]Singapore General Hospital, Department of Radiology, Singapore

Background: A 62-year-old Chinese female presented with a painless left breast lump. Radiological investigations revealed a suspicious irregular hypoechoic nodule, 14 mm, classified as Breast Imaging Reporting and Data System (BIRADS) 4C. Ultrasound-guided core biopsy yielded nodular amyloidosis, and subsequent mass spectrometry identified it as AL amyloidosis, kappa subtype. Subsequent excision biopsy of this breast mass revealed a marginal zone B-cell lymphoma of MALT type. A bone marrow aspirate and trephine biopsy was performed that demonstrated co-existing PTCL.

Methods: Case report of very rare synchronous breast lymphomas, not previously reported in the literature.

Result: The patient was offered R-CHOP (Rituximab, cyclophosphamide, doxorubicin, vincristine, prednisolone) chemotherapy with a view for autologous stem cell transplant.

Conclusions: This case illustrates how amyloidosis of the breast may mimic breast cancer, and the importance in investigating any underlying haematological disorder that may be associated with systemic amyloid involvement. The simultaneous occurrence of both the uncommon breast MALT lymphomas and PTCL in a single patient reinforces the need of involving multidisciplinary team in diagnosis to optimize management and present varied modalities of treatment.

PRIMARY TUBERCULOSIS MASTITIS IMITATING INFLAMMATORY BREAST CARCINOMA

Risa Yolanda Matulessy

Moh. Saleh Hospital Probolinggo, Department of Surgery, Indonesia

Background: Primary mastitits tubercolosis is an extra pulmonaly tuberculous infection that affects the breast where no tuberculosis infection locus is found in other organs; affecting women in their productive age. The clinical and radilolgical examination showed that tuberculosis mastitis imitate pyogenic breast infection and malignancies of breast. This conditions misslead the diagnosis.

Methods: This case report aims to expose the clinical and radiological similarities between tubercular mastitis and inflammatory breast carcinoma

Result: A 39-year-old woman with family history of breast cancer, had a lump in the right breast for 6 months. For the last 3 days, it shown the symptomps of swelling reddens, pain, sores and lumps in the right armpit. Examination of the breast showed reddish mass with an unclear tumor borderline, peau d'orange, sores and ipsilaterally enlagargement of lymph nodes. Ultrasound showed a large mass, unclear borderline with heterogenous hypoechoic components, multiple fistulations and enlargement of lymph nodes ipsilateral. Thoracic examination within normal limits. In conclusion, it leads to malignancy. Patients got surgical drainage, debridement and biopsy; FNAB is performed for the axilla lymph nodes. Histopathology examination describe a granulomatous tissue consist of epithelioid, necrosis cells, also multinucleated datia and langhans datia cells, no existent of malignant cells. While FNAB provides nonspecific granulomatous tissue

Conclusions: The clinical presentation of tuberculous mastitis varies in each patient, often diagnosed as a malignancy of breast. Holistic examination with clinical, radiological and histopathological are the gold standard for confirming the diagnosis of tuberculous mastitis. Multidisciplinary collaboration therapy is needed for these case.

DOUBLE TROUBLE: A CASE OF SYNCHRONOUS INVASIVE BREAST AND PARATHYROID CARCINOMA

Ramon Jose Angelo Casipit[1], Nicola Raphaela Tison[1], Ida Marie Lim[1], Justine Vigo[2], Rowen Yolo[2]

[1]Univ. of Santo Tomas Hospital, Department of Surgery, Philippines, [2]Univ. of Santo Tomas Hospital, Department of Pathology, Philippines

Background: Multiple primary malignant tumors (MPMTs) are defined by the presence of two or more histologically distinct malignancies not due to recurrence, metastasis or local invasion. These may be diagnosed synchronously or metachronously. Breast Cancer associated with multiple primaries are mostly related to genetic risk factors such as ovarian cancer in patients with BRCA1/2 mutations or to hormonal treatment such as endometrial cancer. There are no reported cases of synchronous breast and parathyroid carcinoma to date. This case report aims to discuss the management of synchronous breast and parathyroid cancer and its outcome.

Methods: This is a case of a 57 year old female consulted due to a 2 month history of a self-palpated right breast lump which on work up was confirmed to be Invasive Ductal Carcinoma of No Special Type Stage IIB (cT2N1M0), Estrogen and Progesterone receptor positive, HER2Neu positive. Preoperative systemic therapy was advised, however elevated serum creatinine and calcium levels prompted further work up. Hypercalcemia due to primary hyperparathyroidism was detected based on elevated intact PTH level of 728 pg/mL and a sestamibi scan showing abnormal tracer retention at the inferior portion of the left thyroid bed. Neck ultrasound findings were suspicious giving an impression of a parathyroid carcinoma.

Result: She underwent Modified Radical Mastectomy, Right followed by en bloc Parathyroidectomy, Left thyroid lobectomy. Final pathology report revealed both Invasive Breast Carcinoma and Parathyroid Carcinoma, Oxyphillic type.

Conclusions: The case illustrates concurrence of double primary malignancy of breast and parathyroid diagnosed through clinical evaluation followed by appropriate diagnostic tests. Although hypercalcemia may occur due to breast cancer, particularly if there is bone metastases, the diagnostic tests support the presence of double primary malignancy. One stage surgery to tackle both malignancies may be done if the patient has good functional status.

HUGE CYSTIC ENCAPSULATED PAPILLARY CARCINOMA IN BREAST: A CASE REPORT

Youn Jung Cha, Eunhwa Park

Dong-A Univ. Hospital, Department of Surgery, Korea

Background: Encapsulated papillary carcinoma(EPC) is a rare entity of breast cancer, accounting for 1~2% of all breast carcinomas. They carry a good prognosis and are mostly seen in postmenopausal women. EPC is typically 0.5~0.8 cm in size. And commonly present with a painless mass and bloody nipple discharge. We present an 83-year-old woman with a EPC in huge cystic mass.

Methods: Here we report a rare case of breast carcinoma cancer in a patient with the huge cysts.

Result: 83-year-old woman presented with a 10-year history of a painful, gradually enlarging mass in her left breast. The palpable mass detected 10 years ago. However, the patient refused treatment at that time. Physical examination showed a large cystic mass involving the entire left breast. Mammography showed a well-defined mass and in an ultrasound, the mass appeared as a huge complex cystic and solid lesion. Additionally, chest computerized tomography revealed a large multicystic mass measuring 12×8 cm with enhanced capsule, internal septated nodules. She subsequently underwent ultrasound guided aspiration and core needle biopsy of this mass. The pathologic result demonstrated fat necrosis with acute and chronic inflammation only. Due to clinical suspicion of malignancy, the patient underwent left total mastectomy. Postoperative histologic diagnosis was invasive carcinoma with encapsulated papillary carcinoma.

Conclusions: This case highlights the need to maintain suspicion of malignant possibility when treating patients with presumed benign pathology. Breast cysts are common, and usually treated with simple aspiration. Though, it can occasionally be suggestive of a more serious underlying pathology. EPC has a favorable prognosis with or without invasive carcinoma. However, this patient had typical but rarely visible imaging findings due to the long course of the disease. We presented an unusual case of EPC, both due to the size, cystic nature of the lesion.

INVASIVE DUCTAL CARCINOMA COEXISTENCE WITH GIANT FIBROADENOMAS CONTRALATERAL ON PERIMENOPAUSAL WOMAN

Risa Yolanda Matulessy

Moh. Saleh Hospital- Probolinggo City, Department of Surgery, Indonesia

Background: Invasive Ductal Carcinoma (IDC) is the most common type of breast cancer, easily infiltrating surrounding tissue, and can metastasize through hematogenous or lymphatic. Giant Fibroadenoma is a fibroadenoma that grows progressively until the size is more than 5 cm, high hormone levels affect the tumor progressivity, it is an uncommon case in perimenopausal women.

Methods: This case report aims to describe coexistence of two types of tumors that have been treated differently.

Result: A 45 years old woman (no family history of breast cancer) had lump in the left breast for 3 years, in the right for 1 year, and they grew rapidly. Physical examination showed the right breast mass size is approximately 8x7 cm, solid, mobile; left breast mass size is approximately 4×4 cm, hard solid, limited mobility. Ultrasonography of right breast, multicentric hypoechoic solid mass in the upper, medial and lateral with speculated signs and infiltration into the muscle fascia; the left breast showed a solid lobulated without speculated signs; no lymph enlargement in the axilla. An open biopsy showed IDC in the right breast and Fibroadenoma in the left. Other examinations didn't show distant metastases. The patient was treated with Mastectomy for right breast and Lumpectomy for the left. Histopathology of mastectomy found Invasive Carcinoma of No Special Type grade 3 and Lumpectomy showed Fibroadenoma. The patient got chemotherapy.

Conclusions: There are minimum references of double primary tumors between IDC and Giant Fibroadenoma in perimenopausal women. Clinical, radiological and histopathological examinations confirm the diagnosis and eliminate the wrong clinician's suspicion of this case. Each breast has been treated differently.

TREATMENT OF PATIENTS WITH EARLY BREAST CANCER: CONTROVERSIES, AND CONSENSUS FROM WJOG (WEST JAPAN ONCOLOGY GROUP) BREAST CANCER CONSENSUS MEETING 2023

Hitomi Sakai[1,12], Yuri Kimura[2,12], Rurina Watanuki[3,12], Yosuke Aoyama[4,12], Akihiko Shimomura[5,12], Junji Tsurutani[1], Shinya Tokunaga[6], Toru Mukohara[7], Koji Matsumoto[8], Tsutomu Iwasa[9,12], Yukinori Ozaki[4,12], Kazuki Nozawa[10,12], Mitsuo Terada[11,12], Rika Kizawa[4,12], Toshimi Takano[4]

[1]Showa Univ. School of Medicine, Department of Advanced Cancer Translational Research Institute, Japan, [2]St. Luke's International Hospital, Department of Breast Surgery, Japan, [3]National Cancer Center Hospital East, Department of Breast Surgery, Japan, [4]Cancer Institute Hospital of the Japanese Foundation for Cancer Research, Department of Breast Oncology Center, Japan, [5]National Center for Global Health and Medicine, Department of Breast and Medical Oncology, Japan, [6]Osaka City General Hospital, Department of Medical Oncology, Japan, [7]National Cancer Center Hospital East, Department of Medical Oncology, Japan, [8]Hyogo Cancer Center, Department of Medical Oncology, Japan, [9]Kindai Univ. Faculty of Medicine, Department of Medical Oncology, Japan, [10]Aichi Cancer Center, Department of Center for Cancer Genomics and Advanced Therapeutics, Breast Oncology, Japan, [11]Nagoya City Univ. Graduate School of Medical Sciences, Department of Breast Surgery, Japan, [12]West Japan Oncology Group, Department of Bright, Japan

Background: The WJOG (West Japan Oncology Group) is a group of expert physicians dedicated to establishing standard cancer treatments and working on cancer prevention through clinical studies. The WJOG BRIGHT consists of young breast oncologists of WJOG. We aimed to reveal controversies and consensus of breast cancer treatment through the meeting.

Methods: The WJOG Breast Cancer Consensus Meeting 2023 was conducted virtually. Breast medical and surgical oncologists deliberated on and provided comments regarding questions related to breast cancer treatment. The discussion themes included 'Triple Negative (TNBC)', 'Genetics', and 'estrogen receptor (ER)-positive chemotherapy decisions.' Following the initial voting, participants engaged in discussions, and a secondary vote was conducted.

Result: Fifty oncologists participated in the meeting, addressing seven questions through voting. A majority (92%) endorsed the use of adjuvant pembrolizumab for TNBC with pathological complete response following pembrolizumab-based neoadjuvant chemotherapy. For premenopausal patients with pT1N1M0, grade 2, Recurrence Score (RS) 11, and ER-positive breast cancer, 59% of participants recommended a combination of chemotherapy and endocrine therapy, 18% suggested aromatase inhibitors (AI) and ovarian function suppression (OFS), and 9% recommended tamoxifen and OFS. Concerning treatment choices for postmenopausal patients with pT2N1M0, grade 3, RS10, and ER-positive breast cancer, 35% supported endocrine therapy (ET) and abemaciclib, 25% supported ET and S-1, and 25% supported chemotherapy and abemaciclib. Following further discussion, 46% favored ET and abemaciclib, 15% suggested ET and S-1, and 27% recommended chemotherapy and abemaciclib.

Conclusions: Unmet needs were identified in endocrine therapy for premenopausal patients and in the treatment choice between abemaciclib and S-1 for ER-positive breast cancer. In GBCC 2024, members of WJOG BRIGHT will also present clinical trial proposals based on the results of Consensus Meeting 2023.

BORDERLINE PHYLLODES TUMOR IN A YOUNG MAN NECESSITATING A MASTECTOMY: A CASE REPORT

Kristine Louise Bugayong, Celestine Marie Trinidad, Nicola Raphaela Tison

Univ. of Santo Tomas Hospital, Department of Pathology, Philippines

Background: Phyllodes tumors are considered to be a rare breast neoplasm, accounting for only 0.3% to 0.9% of all breast tumors. Even rarer are phyllodes tumors occurring in males, which have only been described previously in a few case reports. These were often documented in men with a previous history of gynecomastia or those who had undergone hormonal therapy for cancer, such as prostatic carcinoma.

Methods: This is the case of a 26-year-old Filipino male who consulted due to a progressively enlarging mass on his left breast, with associated hyperesthesia and tenderness, which was noted 5 months prior. He had no underlying gynecomastia or previous history of hormonal therapy. Breast ultrasound revealed a large circumscribed hypoechoic mass with heterogenous echopattern and internal and peripheral vascularity on his left breast. An ultrasound-guided core needle biopsy revealed a fibroepithelial lesion with increased stromal cellularity and stromal atypia. The patient then underwent a left simple mastectomy.

Result: Gross dissection of the mastectomy specimen showed a cream white, well-circumscribed, lobulated mass measuring 7.0 cm in widest dimension. Microscopic examination showed a fibroepithelial neoplasm showing moderate stromal cellularity, associated with cleft-like and leaf-like ductal distortion. The tumor borders were sharply circumscribed, with pushing margins. The stromal cells displayed moderate nuclear atypia with mitotic activity of up to 5-6 MF/10 HPF. There was focal stromal overgrowth. No areas of tumor necrosis were seen. The skin and surgical margins were negative for tumor.

Conclusions: Though extremely rare, Phyllodes tumors may also be seen in the male breast, and early recognition, as well as a thorough clinical, radiologic, and histopathologic workup, is necessary for proper treatment. Wide local excision is the recommended management due to their potential for local recurrence, and a mastectomy may be necessary, as in this case, to achieve clear margins.

TREATMENT TRENDS OF ELDERLY BREAST CANCER PATIENTS OVER 80 YEARS OLD AT DIAGNOSIS IN A RURAL HOSPITAL

Sayuri Kashiwakura[1,2], Masato Tatakashi[2], Mitsuchika Hosoda[2], Norihiko Takahashi[1], Tomoaki Kawai[1], Hironobu Kikuchi[1], Shin Emoto[1], Kazuaki Shibuya[1], Takeyuki Uebayashi[1], Haruna Nakamura[1]

[1]Iwamizawa Municipal General Hospital, Department of Surgery, Japan, [2]Hokkaido Univ. Hospital, Department of Breast Surgery, Japan

Background: The increase in the number of elderly people is a worldwide trend, and the number of elderly breast cancer patients is expected to increase steadily. Since it is difficult for elderly patients to travel to distant locations, local hospitals will inevitably have more opportunities to see elderly patients. We have summarized treatment trends among patients who were 80 years of age or older at the time of diagnosis.

Methods: Breast cancer patients aged 80 years or older at the time of diagnosis who have been diagnosed with breast cancer in our hospital between January 1, 2017 and December 31, 2023.

Result: There were 77 subjects, 79 cases, all female. The subtypes were ER+/HER2- in 56 cases, ER+/HER2+ in 5 cases, triple negative (TN) in 10 cases, ER-/HER2+ in 3 cases and unknown in 5 cases.

Conclusions: The NCCN Guidelines for Older Adult states that the standard of care should be administered even to the elderly if there are no treatment-specific problems. However, they also note that the evidence is limited for patients over 80 years of age. There is no clear-cut right answer for the treatment of cancer in the elderly, and treatment should be selected based on the characteristics of each case.

COMPARISON OF BREAST CANCER CHARACTERISTICS AND SURGICAL MANAGEMENT BETWEEN PUBLIC HOSPITALS OF A 1ST WORLD VS THIRD WORLD COUNTRY IN THE ASIA-PACIFIC REGION

Jayme Natasha Paggao[1], Jinyoung Byeon[1], Ik Beom Shin[1], Hwajeong Lee[1], Ji-Jung Jung[1], Eunhye Kang[1], Hyeong-Gon Moon[1,2,3], Wonshik Han[1,2,3], Han-Byoel Lee[1,2,3]

[1]Seoul National Univ. Hospital, Department of Surgery, Philippines, [2]Seoul National Univ. Hospital, Department of Cancer Research Institute, Korea, [3]Seoul National Univ. Hospital, Department of Biomedical Research Institute, Korea

Background: In the Philippines, breast cancer is the most frequently diagnosed malignancy and is diagnosed in late stages, while in South Korea, most cases are diagnosed in the early stages with patients undergoing breast-conserving surgery (BCS) and sentinel lymph node biopsy (SLNB). The objective of this study is to compare breast cancer characteristics and surgical management in a 1st-world country and a 3rd-world country.

Methods: A retrospective review of the breast cancer census in a single public hospital in the Philippines and in South Korea from 2018-2022 was done. The following data were extracted from the breast cancer census of each institution: age, diagnosis, stage, molecular subtype, breast surgery type, axillary surgery type, time from initial biopsy to surgery, and complications from surgery.

Result: A total of 448 and 7971 breast cancer patients who underwent surgery in the Philippines and in South Korea, respectively, from 2018 to 2022 were reviewed. In the Philippines, there were 417 (93%) cases of total mastectomy (TM), 31 (7%) BCS, 331 (74%) axillary lymph node dissection (ALND), and 28 (6%) SLNB. While in South Korea, 3456 (43%) underwent TM, 4515 (57%) BCS, 6365 (80%) SLNB, and 670 (8%) ALND. A p-value of < 0.001 in the Chi-square test indicates that the distribution of surgeries significantly differs between the two institutions. In Korea, 415 (10%) patients had Stage 0 disease, 2056 (50%) Stage I, 1421 (34%) Stage II, and 236 (6%) Stage III. While in the Philippines, most cases were locally advanced.

Conclusions: Overall, in contrast to South Korea, TM and ALND are still mostly done in the Philippines due to the locally advanced nature of breast cancer cases that come in for surgical consult. In Korea, BCS with SLNB are mostly done, which may be due to the availability of surgical infrastructure and post-operative treatment equipment for patients who undergo BCS and SLNB.

INTER-INSTITUTIONAL VARIATIONS OF CONSENT FORM FOR BREAST CANCER RADIOTHERAPY IN KOREA

Hae Jin Park[1], Kyubo Kim[2], Jin-Kyu Kang[3], Won Il Jang[4], Byoung Hyuck Kim[5], Kyung Su Kim[6]

[1]Hanyang Univ. College of Medicine, Department of Radiation Oncology, Korea, [2]Seoul National Univ. Bundang Hospital, Department of Radiation Oncology, Korea, [3]Inje Univ. Sanggye Paik Hospital, Department of Radiation Oncology, Korea, [4]Korea Institute of Radiological & Medical Sciences, Department of Radiation Oncology, Korea, [5]SMG-SNU Boramae Medical Center, Department of Radiation Oncology, Korea, [6]Seoul National Univ. Hospital, Department of Radiation Oncology, Korea

Background: Consent forms play a pivotal role between physicians and patients, providing treatment information and supporting informed decision-making. This study presents the inter-institutional variations prevalent in the content, format, and level of details provided to patients through consent forms for breast cancer radiotherapy(RT) in Korea.

Methods: In June 2022, the Korean Society for Radiation Oncology's Informatics and Clinical Practice Guideline Committees initiated a study on consent forms used by board-certified radiation oncologists. From June to October 2022, consent forms from various institutions were collected to examine inter-institutional variations in consent forms of breast cancer radiotherapy. The investigation focuses on whether to distinguish acute and chronic RT-related toxicities and to specify detailed RT-related toxicity items. Terminology regarding toxicities primarily adheres to CTCAE version 5.0.

Result: Forty-nine out of 101 radiation oncology departments in Korea submitted their in-use RT consent forms, resulting in a response rate of 48.5%. Analysis was conducted on 47 informed consent forms, excluding those from two institutions providing free text forms. Noteworthy, all 13 Regional Cancer Centers in Korea were incorporated in the analysis. Among the 47 consent forms, 33 (70.2%) distinguished between acute and late toxicities, while 14 (29.8%) did not. Additionally, 22 consent forms (46.8%) were designated as cancer-specific rather than organ site-specific for breast cancer. Commonly reported acute toxicities included radiation dermatitis (100%), fatigue (91.5%), and anorexia (85.1%). Late toxicities primarily consisted of radiation pneumonitis (93.6%), lymphedema(89.4%), and soft tissue fibrosis (74.5%). Treatment-related secondary malignancies were reported less frequently (72.3%), as were cardiac toxicities, with ischemic heart disease at 34.0% and myocarditis/pericarditis at 61.7%.

Conclusions: This survey shows inter-institutional variations in the presentation of side effects associated with breast cancer RT in real-world practice across Korea. It would serve as a valuable foundation for discussions on patient-centered care, legal clarity, and ethical practices in the development of standardized consent forms.

A REAL WORLD APPLICATION OF ARTIFICIAL INTELLIGENCE (AI)-BASED BREAST CANCER RECURRENCE RISK PREDICTION MODEL

Joon Young Choi, Youngji Kwak, Dong Seung Shin, Sung Yoon Jang, Hyunjun Lee, Jai Min Ryu, Byung Joo Chae, Jeong Eon Lee, Seok Won Kim, Seok Jin Nam, Jonghan Yu

Samsung Medical Center, Department of Surgery, Korea

Background: Breast cancer remains a significant health concern, requiring ongoing research for improved screening, biomarkers, and treatment strategies. Traditional risk prediction models have limitations, prompting exploration into artificial intelligence (AI) applications. Recent AI models have demonstrated impressive the Area Under Curve (AUC) values ranging from 85% to 93%. However, there is a gap in survival prediction models and clinical applications. In order to resolve this, we developed the AI model for breast cancer recurrence prediction, achieving high AUC values (2 years: 0.90, 5 years: 0.91, 7 years: 0.91). We subsequently validated the model using a prospective cohort for breast cancer recurrence prediction.

Methods: Data were collected from invasive breast cancer patients who underwent curative surgery with adjuvant treatment at Samsung Medical Center from January to April 2021. Exclusions included patients with neoadjuvant chemotherapy, double primary cancer, distant metastasis, recurrent breast cancer, bilateral breast cancer, male patients, and those with follow-up loss. This AI model categorized 400 selected patients into high-risk and low-risk groups based on the cut off value. We then prospectively validated the model using data from 2021 to 2023.

Result: Among 400 eligible patients, the AI model identified 391 in the low-risk group and 9 in the high-risk group. Significant differences in various factors were observed between the groups, except for age, adjuvant radiotherapy, and adjuvant target therapy. Over a 2-year post-surgery period, recurrence occurred in 1.5% (6 of 391) of the low-risk group and 11.1% (1 of 9) of the high-risk group.

Conclusions: This AI model for breast cancer recurrence prediction, prospectively revealed fair positive predictive value (PPV, 11.1%) and notable negative predictive value (NPV, 98.5%). Further validation with a larger patient cohort and an extended timeframe is crucial for clinical application.

RISK OF OSTEONECROSIS AND FREQUENCY OF DENTAL PROCEDURES IN BREAST CANCER PATIENTS ON BISPHOSPHONATE: A NATIONWIDE STUDY

Young-Jin Lee, Tae-Kyung Yoo, Sae Byul Lee, Jisun Kim, Beom Seok Ko, Hee Jeong Kim, Jong Won Lee, Byung Ho Son, Il Yong Chung

ASAN Medical Center, Department of Surgery, Korea

Background: Bisphosphonates (BPs) are recommended as first-line treatments for osteoporosis in breast cancer (BC) patients. During treatment, dental procedures should be avoided to decrease the risk of osteonecrosis of the jaw (ONJ). This study aimed to investigate the frequency of dental procedures during BPs and to analyze the risk of ONJ in BC patients.

Methods: This nationwide retrospective study utilized Health Insurance Review and Assessment data. Subjects were classified based on whether they had undergone dental procedures within 90 days before or after initiating BPs, which are known as a major risk factor for ONJ. The occurrence of ONJ was analyzed with respect to age, insurance type, Charlson Comorbidity Index (CCI), adjuvant therapy for BC, and history of dental surgery during BPs use.

Result: A total of 164,090 participants newly diagnosed between 2010 and 2020 were included. All of them were prescribed BPs as needed. Among them, 6,258 individuals (3.8%, high-risk group) underwent dental extraction within 90 days before or after initiation of BPs. The high-risk group was older at diagnosis compared to the group without such procedures (63.8 years vs. 52 years) and had a higher CCI (3.6 vs 2.4). The multivariable analyses showed the higher risk for ONJ in the high-risk group (HR 2.17, 95% CI 1.97 - 2.38), old age (HR 1.06, 95% CI 1.06 - 1.07), and with a higher CCI (HR 1.05, 95% CI 1.03 - 1.06).

Conclusions: This nationwide study emphasizes the importance of adhering to clinical practices regarding dental procedures during bisphosphonate treatment among BC patients in Korea.

COVID-19 VACCINATION STATUS AND WILLINGNESS OF CHINESE BREAST CANCER PATIENTS AFTER THE OPENING OF EPIDEMIC PREVENTION POLICY

Yan Cheng[1], Yaotiao Deng[1], Haomiao Lan[2], Xiao Bo Zhao[3], Yuxin Xie[1], Xiaorong Zhong[1], Ping He[1], Ting Wang[4], Ting Luo[1]

[1]West China Hospital, Sichuan Univ., Department of Breast Disease Center, China, [2]Zigong First People's Hospital, Department of Thyroid and Breast Surgery, China, [3]Affiliated Hospital of Sichuan North Medical College, Department of Thyroid and Breast Surgery, China, [4]Xijing Hospital, The Air Force Medical Univ., Department of Thyroid, Breast and Vascular Surgery, China

Background: The current epidemic prevention policy makes breast cancer patients quickly exposed to an environment prone to infection. COVID-19 vaccination and its impact on patients' psychology and quality of life need to be understood.

Methods: The multicenter cross-sectional study of breast cancer patients in China was conducted from December 12, 2022 to January 12, 2023. Each patient completed an online questionnaire about COVID-19 's vaccination and its impact on cancer treatment and social life, as well as the GAD-7/PHQ- 9 scales and the FACT-B scale to evaluate psychological status and quality of life.

Result: Of the 1202 participants, 59.3% were vaccinated against COVID-19, mainly due to changes in epidemic prevention policies, and 60.3% of the vaccinated group had no side effects. The vaccination population was accompanied by fewer complications, and mainly focused on early breast cancer patients whose diagnosis time was less than 3 years and the treatment interval was more than 1 year. Hesitation and refusal were observed in 56.1% of patients who did not receive the vaccine or did not fully receive three doses of the vaccine, mainly because of concerns about the safety and efficacy of the vaccine; the oncologist's recommendation facilitated the willingness of the remaining 43.9% of patients to proceed with the vaccine. Overall, whether or not to be vaccinated did not affect the treatment process, but social activities were affected, with a median decline of 68.0%, especially for the no-vaccinated. In addition, the vaccinated reported less anxiety and depression. However, no-vaccinated patients had more advantages in the quality of life, and the specific differences were reflected in the two dimensions of physiological status and additional attention ($p < 0.05$).

Conclusions: Breast cancer patients can be vaccinated, and it can provide benefits on the anxiety and depression, but the impact on the survival outcome of patient needs further follow-up.

RESTORATION OF OVARIAN FUNCTION AFTER 2 YEARS OF OVARIAN FUNCTION SUPPRESSION (OFS) FOR PREMENOPAUSAL WOMEN WITH BREAST CANCER

Seung Hwan Lim[1], Woo Chul Noh[1,2], Young Bum Yoo[1,2], Kyoung Sik Park[1,2], Sang Eun Nam[1,2], Jong Hyun Kim[1]

[1]Konkuk Univ. Medical Center, Department of General Surgery, Korea, [2]Konkuk Univ. College of Medicine, Department of Surgery, Korea

Background: This study investigated the predictable factors for patients who restored ovarian function after 2 years of adding ovarian function suppression (OFS).

Methods: This study analyzed 806 premenopausal breast cancer patients with estrogen receptor (ER) positive treated with definitive surgery. Either adjuvant or neoadjuvant chemotherapy was done. The patients were enrolled between 2010 and 2019. All patients received 2 years of ovarian function suppression (OFS) and tamoxifen treatment. The evaluation of ovarian function was checked with hormone levels (follicle-stimulating hormone [FSH] and estradiol [E2]) or history of ovarian function recovery. Kaplan-Meier plot and Cox regression were used to analyze the association between restoration of ovarian function and multiple factors.

Result: The ovarian function recovery rate was 45.4% for patients younger than 40 years old during the 5-year follow-up period. Patients between the ages of 40 and 45 and patients over the age of 45 were 41.2% and 18.1%, respectively. Patients with and without chemotherapy were 34.9% and 33.3%, respectively. The 5-year disease-free survival (DFS) was 95.6% among ovarian function restoration patients.

Conclusions: Patients younger than 40 years old showed faster ovarian function restoration compared with older patients. Our findings will suggest decision-making in the clinical management related to preservation options and childbearing.

COMPREHENSIVE DEEP LEARNING MODEL IN PREDICTION OF RECURRENCE RISK IN EARLY BREAST CANCER

Junping Shiau

Kaohsiung Medical Univ. Chung-Ho Memorial Hospital, Division of Breast Surgery and Oncology, Taiwan

Background: Breast cancer is the fastest-growing cancer among women. With the advancement of diagnostic tools, more and more early-stage breast cancers are being discovered. We use clinical data registered in the national cancer database and use a deep learning model to create a prediction model to answer the most commonly asked question in clinical practice: What is my probability of recurrence?

Methods: We retrograde reviewed 2011~2017 cancer registration data in Kaohsiung Medical University Hospital. Collected data included age, tumor size, cancer characteristics, pathological stage, immunohistochemistry result, systemic therapy type, radiation therapy, and recurrence status. The mean follow-up period is 8.6 months. Data analysis used logistic regression, modified random forest, and SMOTE model.

Result: There were 3,486 patients enrolled in this study, and 1,432 patients were qualified for analysis. There were 89 patients had local recurrence while 113 patients had distant metastasis. During the model training, 24 characteristics were input, and 8 important factors were selected as important factors, including Estrogen receptor, tumor size, chemotherapy, hormone therapy, and progesterone receptor. The accuracy of the prediction rate is 81.76%.

Conclusions: Machine deep learning models using big data could provide promising answers for recurrence rate prediction. This could be a good guide in selecting high-risk patients for more aggressive adjuvant therapy.

www.gbcc.kr

GBCC 2024
in conjunction with IERBS 2024

Author Index

"Go Beyond Cure of Breast Cancer"