Lymphovascular invasion and tumor size are predictors of sentinel lymph node involvement in clinically node negative breast cancer patient

Mohamed Al Bashir[1], Amal Suhool[1], Issam Faour[1], Eisa Al Dhaheri[1], Sabir Hussain[2]

Departments of Surgery[1] and Oncolgy[2],

Tawam Hospital, Al-Ain, UAE

Background

- Nodal status in breast cancer patients remains one of the most important prognostic factors.
- Sentinel lymph node (SLN) biopsy is currently considered to be the standard of care in staging the axilla of breast cancer patients.

TAWAM HOSPITAL
JOHNS HOPKINS

Background

- Ability to predict SLN or non-SLN involvement may spare many patients unnecessary surgery and its associated morbidity.
- The purpose of this study is to evaluate predictors of sentinel lymph node (SLN) and non-SLN involvement.

TAWAM HOSPITAL
JOHNS HOPKINS

Methods

- A retrospective review of all clinically node negative breast cancer patients who underwent SLN biopsy with or without axillary node dissection (ALND) between April 2008 & July 2010 in our tertiary care center.

TAWAM HOSPITAL
JOHNS HOPKINS

Methods

- Variables reviewed:
  - Age
  - ER/PR status
  - Tumor Grade
  - HER2 status
  - LVI
  - Size of tumor (T)

TAWAM HOSPITAL
JOHNS HOPKINS

Methods

- Patent blue was used in all cases except one.
- 99mTc-sulfur colloid radiotracer was used in two cases only.
- Retroareolar injection of the blue dye was the most common method of injection.
- SLN was evaluated by intra-op FZ
- Univariate and multivariate analysis was performed using Epi Info software

TAWAM HOSPITAL
JOHNS HOPKINS

Patient and Tumor Characteristics

n= 117

Characteristic	# of patients (%)
Mean age	47.4
ER +	88 (75.2%)
PR +	72 (61.5%)
HER2 +	29 (24.8%)
LVI +	28 (25.4%)
Grade 1 2 3 Unknown	 17 (14.5%) 59 (50.4%) 35 (29.9%) 6 (5.1%)
T size 1 2 3 unknown	 37 (31.6%) 61 (52.1% 7 (6.0%) 12 (10.2%)
Stage 1 2 3 Unknown	 29 (24.8%) 63 (53.8%) 15 (12.8%) 10 (8.5%)

Results

- The SLN was identified in 107 out 117 patients (91.5%).
- The number of sentinel lymph nodes removed ranged from 1-10 nodes with a mean of 2 nodes.
- The SLN was positive in 39 patients (36.4%).
- 37 patients with positive SLN underwent AND with a mean of 15.8 lymph nodes dissected.
- Additional positive nodes were found in 15 patients (14.0% of total patients/40.5% of patients with positive SLN) with a mean of six positive nodes

Univariate analysis of breast cancer variables in predicting SLN metastasis

Variable	OD Ratio (95% CI)	*P* value
Age	1.00 (0.96-1.04)	0.943
ER/PR +	1.83 (0.70-4.75)	0.216
Grade III	0.45 (0.18-1.13)	0.089
HER2 +	1.05 (0.44-2.54)	0.901
LVI	3.35 (1.37-8.19)	0.0079
T2 & T3	2.65 (1.02-6.91)	0.046
T3	15.78 (1.82-137.12)	0.0124

TAWAM HOSPITAL
JOHNS HOPKINS

Multivariate analysis of breast cancer variables in predicting SLN metastasis

Variable	OD Ratio (95% CI)	*P* value
Age	1.01 (0.96-1.07)	0.6085
ER/PR +	2.28 (0.67-7.72)	0.1843
Grade III	0.33 (0.099-1.086)	0.0680
HER2 +	1.77 (0.58-5.41)	0.3158
LVI	7.60 (2.31-25.03)	0.0008
T2 & T3	3.12 (1.02-9.50)	0.0456

TAWAM HOSPITAL
JOHNS HOPKINS

Multivariate analysis of breast cancer variables in predicting SLN metastasis

Variable	OD Ratio (95% CI)	*P* value
Age	0.999 (0.95-1.05)	0.9911
ER/PR +	2.10 (0.59-7.46)	0.2494
Grade III	0.36 (0.10-1.28)	0.1145
HER2 +	1.91 (0.60-6.10)	0.2754
LVI	11.07 (3.21-38.25)	0.0001
T3	19.62 (1.93-199.52)	0.0119

TAWAM HOSPITAL

Conclusion

- Local tumor factors such as LVI and Tumor size (T2 and T3) are significant predictors of SLN involvement.
- Tumor biology (ER/PR/HER status) is not a significant predictor of SLN involvement.
- No predictors of non-SLN involement were found.

TAWAM HOSPITAL
JOHNS HOPKINS

Conclusion

- Most clinically node-negative breast CA patients have either negative SLN or only SLN involvement.
- Future studies to incorporate LVI and tumor size into muliparameter models to predict patients in whom SLN biopsy alone would suffice will be very valuable.

TAWAM HOSPITAL
JOHNS HOPKINS

TAWAM HOSPITAL

JOHNS HOPKINS