



Non-Sentinel Lymph Nodes Status in Patients With Breast Cancer Operated at Omdurman Teaching Hospital

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Objectives: To assess the status of axillaries lymph nodes in patients of breast cancer to determine further management of the axilla and to assess status of non sentinel lymph nodes cases of negative SLN.

Patients and methods: It is prospective interventional study done in Omdurman Teaching Hospital, department of General Surgery from 27/6/2012 to 30/8/2013 in 39 patients under went modified radical mastectomy plus level I and II axillaries clearance by injecting methylene blue dye and identifying sentinel lymph node in patients diagnosis by breast cancer.

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Results: Total number of 39 female patients under went modified radical mastectomy and level I and II axillaries clearances, In 22 patients 56.4% the retrieved sentinel axillary lymph node proved histopathologically to contain malignant cells. In eight patients 20.5% the sentinel lymph node were negative for malignancy and in 09 (23.1%) the SLN was either not found or reactive, Non-sentinel lymph node (NSLN) was found to be positive for malignancy in 11 (28.2%) of the cases. In 23 (59.0%) it was negative and in 05 (12.8%) it was not found. Out of 22 patients with positive SLN, half of them 11 patients were concomitantly had a positive NSLNs and the other half had a negative NSLN. In the eight patients with negative SLN for malignancy, all of them 08 (100%) had their NSLNs as well were negative for malignancy. These relations were found statistically to be highly significant (P value 0.000) none of the patients in study diagnosis as positive NSLN in negative SLN base.

Conclusion: Highly occurrence of positive NSLN in patient diagnosis by T3 and T4 in the study, a number of patients diagnosis by positive NSLN in positive SLN was 32, 4 %, none of the patients in study diagnosis by positive NSLN in negative SLN base.

Keywords: breast cancer, sentinel lymph node, sentinel lymph node biopsy, non-sentinel lymph node biopsy.

I. INTRODUCTION AND BACKGROUND

Sentinel lymph node biopsy has been emerged as a safe and accurate procedure for axillary staging in breast cancer and directs the need for further axillary and systemic treatment in patients with early breast cancer (1). The hypothesis that one or a few lymph nodes receive the first drainage from a tumor site

and that a regional node dissection and its morbidity might be avoided if the SLNs prove negative, is logical and intuitive. First suggested by Cabanas in the context of penile cancer and conceived in its modern form in 1992 report by Morton et al. SLN biopsy is rapidly emerging as a new standard of care in melanoma and breast cancer (2). This technique has been studied as a means to improving the quality of life in patients with primary breast cancer it has been proved to be a valuable and accurate tool for the staging of early breast cancers (3). Also has largely replaced level I and level II axillary lymph node dissection (ALND), and identification should be possible in more than 95% of patients (4). The SLN is defined .as the first node or group of node receiving lymph from a tumor area, is usually an axillary node, and is most often in the central group of level I. However it may be an internal mammary node, a supraclavicles node, or even a contralateral axillary node. The status of the SLN has been shown to reflect the presence of metastases in the axillary lymph nodes [non sentinel lymph nodes] (5, 6).

a) Techniques used in sentinel lymph node

Currently there are two techniques Used for SLNB: radio colloid Tc 99m sulfur colloid and methylene blue dye (isosulfan blue). Most institutions recommend both, some experienced surgeons use one or the other. Methylene blue is as good for SLN mapping agent as Isosulfan blue and is much cheaper. Addition of radio-colloid mapping to blue dye does not achieve a sufficiently higher identification rate to justify the cost. Methylene blue is therefore the agent of choice for SLN mapping in developing countries (7).

b) Objectives

To assess the status of axillary lymph nodes in breast cancer to determine further management of the axilla and to assess status of non-sentinel lymph nodes cases of negative SLN patients.

II. PATIENTS AND METHODS

It is prospective interventional study, done in Omdurman Teaching Hospital, department of General Surgery from 27/6/2012 to 30/8/2013 in patients who underwent modified radical mastectomy plus level I and II axillary clearance by injecting methylene blue dye and identifying sentinel lymph node.

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III. RESULTS

a) Patients' demographics

This study included 39 female patients. The mean age was 51.3 (SD± 11.4) years, (range 34-75 years). Eight patients (20.5%) were young below forty and similar number of cases was elder above 60 years of age. The majority 23 (59.0%) were in the age group 41-60 years (Table 1).

Most of our patients were housewives 23 (59.0%), the rest were laborers, employee or teachers representing, 20.5%, 12.8% and 7.7% respectively. Thirty seven patients (94.9%) were married. Patients seen were coming from different state of the country but 17 (43.6%) from Khartoum state, followed by Kordofan 6 (15.4%), River Nile 5 (12.8%) and Darfour state 4 (10.3%) of the patients.

b) Clinical presentation

Breast lump was the common presenting symptom, being the chief complaint in 38 (97.4%) of the patients. followed by breast pain 24 (61.5%) then bloody nipple discharge 09 (23.1%) and no single patient presented with symptoms suggestive of metastases.

c) Investigations

Images of the breast was done as U/S in 04 (10.3%) and were below 35 years of age, or breast mammography 08 (20.5%), was suspicious in all. Cytopathological diagnosis was conducted to the majority, true cut needle biopsy to 31 (79.5%), fine needle aspiration cytology 19 (48.7%), or excisional biopsy which was the least done in 02 (05.1%) of the patients.

d) Tumor characteristic

These tumor characteristics were based on clinical assessment. T2 (tumor size 2-5 cm) was the most prevalent accounting for 17 (43.6%) and T4 for only two cases (5.1%). No axillary lymph node was detected on clinical examination on 22 (56.4%) of the patients whereas N1 (single mobile ipsilateral axillary lymph node) was detected in 12 (30.8%). No evidence of distal metastasis was seen in 38 (97.4%) of the cases (Table2).

e) TNM classification and staging

Most of our patients 19 (48.8%) were stage II, 10 (25.6%) Stage III, 9 (23.1%) stage I and only a single

patient (02.6%) of stage IV. Of stage II (A 12 (30.8%, B 07 (18%)) and stage III (A 08 (20.5%), B 02 (05.1%) (Table3).

f) Surgical management:

All our patients underwent modified radical mastectomy i.e. mastectomy and axillary clearance. None had breast conserving surgery neither axillary sampling.

g) Sentinel lymph node status:

In 22 patients 56.4% the retrieved sentinel axillary lymph node proved histopathologically to contain malignant cells. In eight patients 20.5% the sentinel lymph node were negative for malignancy and in 09 (23.1%) the SLN was either not found or reactive.

h) Non-sentinel lymph node status:

Non-sentinel lymph node (NSLN) was found to be positive for malignancy in 11 (28.2%) of the cases. In 23 (59.0%) it was negative and in 05 (12.8%) it was not found.

i) Relation of sentinel and non-sentinel lymph node:

Out of 22 patients with positive SLN, half of them 11 patients were concomitantly had a positive NSLNs and the other half had a negative NSLN. In the eight patients with negative SLN for malignancy, all of them 08 (100%) had their NSLNs as well were negative for malignancy. These relations were found statistically to be highly significant (P value 0.000) as shown in (Table 4) and (Table5).

j) Outcome:

The outcome was uneventful in 30 (76.9%), complications were seen in 09 (23.1%) and no mortality was reported in this study. Most of the morbidity were surgical site infection in five (12.8%), seroma 03 (7.7%) or hematoma 02 (5.1%) of the patients respectively.

k) Hospital stay:

The mean length of hospital stay was 5.7 (SD± 1.6) days, (ranged 4-10 days). Two third of our patients (66.7%) were discharged home on day five post-operative.

Table 1 : Age group distribution for breast cancer patients

Age (years)	Frequency	Percent
≤ 40yrs	08	20.5
41-50yrs	12	30.8
51-60yrs	11	28.2
>61+ yrs	08	20.5
Total	39	100.0

Table 2 : Tumor size, lymph node and metastasis (TNM) in patient of breast cancer included in the study

	<i>Frequency</i>	<i>Percent</i>
Tumor size		
• T1	09	23.1
• T2	17	43.6
• T3	11	28.2
• T4	02	5.1
Lymph nodes		
• N0	22	56.4
• N1	12	30.8
• N2	05	12.8
Metastasis		
• M0	38	97.4
• M1	01	2.6

Table 3 : TNM and staging system in patient of breast cancer included in the study

<i>Stage</i>	<i>TNM</i>	<i>Frequency</i>	<i>Percent</i>
Stage I	T1.N0.M0	09	23.1
Stage II A	T2.N0.M0	12	30.8
Stage II B	T3.N0.M0	03	07.7
	T2.N1.M0	04	10.3
Stage III A	T3.N1.M0	05	12.8
	T3.N2.M0	03	07.7
Stage III B	T4.N2.M0	02	05.1
Stage IV	T2.N0.M1	01	02.6
Total		39	100%

Table 4 : Relation of sentinel and non-sentinel lymph node

Sentinel LN		NSLN			Total
		NS LN positive for malignancy	NSLN negative for malignancy	NSLN not found	
SLN contain malignancy	Count	11	11	00	22
	% within Sentinel LN	50.0%	50.0%	0.0%	100.0%
	% within NSLN	100.0%	47.8%	0.0%	56.4%
SLN does not contain malignancy	Count	00	08	00	08
	% within Sentinel LN	0.0%	100.0%	0.0%	100.0%
	% within NSLN	0.0%	34.8%	0.0%	20.5%
SLN not found or reactive	Count	00	04	05	09
	% within Sentinel LN	0.0%	44.4%	55.6%	100.0%
	% within NSLN	0.0%	17.4%	100.0%	23.1%
Total	Count	11	23	05	39
	% within Sentinel LN	28.2%	59.0%	12.8%	100.0%
	% within NSLN	100.0%	100.0%	100.0%	100.0%

P value 0.000

Table 5 : Relation between SLN and NSLN patient of breast cancer included in the study

Parameter	P value	
	SLN	NSLN
Age group	0.423	
Occupation	0.007	0.025
Marital status	0.443	
clinical presentation	NS	
TNM state	0.324	
NSLN	0.000	0.000
T	0.274	
N	0.278	
M	0.181	0.031

IV. DISCUSSION

This study included 39 female patients. The mean age was 51.3 (SD± 11.4) years, (range 34-75 years) and this rang of age most of the patients of breast cancer come to hospital to see doctors. Eight patients (20.5%) were young below forty and similar number of cases was elder above 60 years of age. The majority 23 (59.0%) were in the age group 41-60 years, This is similar to reported findings (8), and lower than 40-50 years in another study. This may indicate that slightly late incidence of carcinoma of breast in Sudan.

The majority of our patients were house wife's about 59% and this may be due to large number of a woman in my country that do not go to work in outside, This is similar to other study (The majority of the patients (76.0%) were house women, while teachers, employee, Farmers, Police women, Sellers, students and mid wives constituted 4.7%, 7.3%, 6.7%, 2.7%, 1.3%, 0.7% and 0.7% respectively) (9).

Low incidence is found in nulliparous patients about 5% of the cases and this does not go with literature which showed high incidence of breast cancer in nulliparous woman (breast cancer is commoner in nulliparous women) (10). This may be due to a little number of woman is nulliparous in Sudan at this age.

Most of our patients have tissues diagnosis by histopathology obtained using true cut needle biopsy. Invasive ductal carcinoma is most common (79. 5%) type of breast malignancy seen in our patients. This is in agreement with the reported 82% -85% in other studies (8, 9,11).

In 5/39 (12.8%) the sentinel lymph node was not found after injecting the dye. This is higher than a rate of 3%-10% reported by other workers (12).

In 22 patients 56.4% the retrieved sentinel axillary lymph node proved histopathologically to contain malignant cells. This is similar to other findings of 50 to 65% (13)however our detection rate is higher than 30 to 40% (14) These differences may be due to different stages of breast cancer at presentation or use of combine Methylene blue dye and radio isotope.

Non-sentinel lymph node was found to be positive for malignancy in 11 (28.2%) of the cases. This rate is lower than (35%) in SLN positive patients (4).

In 23 (59.0%) of our patient negative NSLN was found which is comparable to 50%- 70% in other studies. This will enhance the use of sentinel lymph node practice in breast surgery instead of axillaries clearance (3) to avoid a lot of complications found after axillaries surgery ALND is associated with substantial morbidity affecting up to 39% of patients, with a nearly three-fold increased risk of lymph edema or regional sensory loss (9). The rate of false negative results varies from 9.8 % -10.8% (4) to 5% in other study, yet in in other report, it was 1% - 2% (14). Some study reported positive NSLN with negative SLN base. If no SLN metastases are identified, the likelihood of additional NSLN involvement is 9.8%, this is comparable to that reported in NSABP-32 and recently by both Lyman and Veronese ranging 9.7%, 8.4%, and 8.8% respectively (4).

V. CONCLUSION

High prevalence of breast carcinoma in Khartoum state. Most of the patients presented with breast lump. Highly occurrence of positive NSLN in patient with T3 and T4 in the study. The rate of positive NSLN in positive SLN was 32.4 % .None of the patient in study had positive NSLN in negative SLN base.

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