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AXILLARY LYMPH NODE STATUS ACCORDING TO LOCATION, SIZE, NUMBER AND GRADING AMONG BREAST CANCER PATIENTS IN TERTIARY CARE HOSPITALS, BANGLADESH

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Background: There are a good number of tumor related features available to predict the prognosis of breast cancer and its stage of severity. Axillary lymph node status according to the location, size, number and grading among breast cancer patients has a potential prognostic value in the course of breast cancer treatment, mortality and morbidity. We have very limited researched-based information regarding these issues. **Aim of the study:** The aim of this study was to assess the axillary LN status according to location and grade of tumor also size and number of axillary LN among breast cancer patients. **Methods:** This was axillary LN status according to location a prospective observational study conducted in the Department Surgery & Oncology, Dhaka Medical College Hospital, BSMMU and NICRH Dhaka, Bangladesh during the period from January 2015 to December 2016. In total 100 patients of several age groups with breast cancer patients attended, diagnosed and treated in the mentioned hospital were selected as the study subjects. Proper clinical examination and ultrasonography for the assessment of axillary lymph node status were done for every participant. All data were processed, analyzed and disseminated by MS Office and SPSS program as per need. **Results:** In location analysis we observed, most of the tumors were located in the upper outer quadrant (57%) followed by 22.0%, 17.0% and 4.0% were

located in the upper inner quadrant, lower outer quadrant and in other location respectively. The most of the tumors were of Grade II (67%) followed by 21.0% and 12.0% were of grade I and grade III respectively. Maximum 52.5% patients of this study had lymph node with the size of 1-2 cm followed by 25.0% and 22.5% patients had lymph node with the size of >2cm and 9. Both clinical examination and USG showed positive result in increasing with the number of lymph node. **Conclusion:** In analyzing the location, size, number and grading of axillary lymph node among breast cancer patients by using clinical examination and USG findings, we found statistically significant correlations in size and number of lymph node. So, we can conclude that the location & grade of tumor and number & size of axillary lymph node among breast cancer patients are the most potential indicators of severity and status of breast cancer.

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1. INTRODUCTION

Axillary lymph node status according to the location, size, number and grading among breast cancer patients has a potential prognostic value in the course of breast cancer treatment, mortality and morbidity. We have very limited researched-based information regarding these issues. A study showed that, the best predictive variables to axillary lymph node involvement in breast cancer were tumor histology, grade, stage and lympho-vascular invasion.[1] Although several diagnostic methods are applied in detecting and/or assessing the axillary lymph node status in breast cancer patients besides clinical examination, physicians are using ultrasonography (USG) in such purposes for long time. So, both the clinical examination and ultrasonography (USG) for the assessment of axillary lymph node status in breast cancer patients can be considered as the traditional diagnostic method in detecting breast cancer and its status. In operable primary breast cancer, the involvement of axillary lymph nodes (LNs) is the most potential prognostic factor and is strongly associated with both disease-free and overall survival.[2] Due to the radical nature of breast cancer, surgery has now been reduced to a minimum by the use of breast conserving procedures[3] and axillary lymph node dissection.[4] On the other hand, lymph node status is an important prognostic factor for breast cancer.[5] Nodal stage also affects the selection of adjuvant therapeutic modalities.[6] There are a good number of tumor related features available to predict the prognosis of breast cancer and its stage of severity. Tumor histology, grade, size and lympho-vascular invasion were related with node positivity.[7] Axillary ultrasonography is a useful approach in excluding N2 and N3 invasive ductal metastases. [8] Basically, ultrasound scanning is routinely available in diagnostic breast clinics. Previous experience of USG in identification of axillary lymph nodes is mixed. [9] Partly, ultrasound scanning of the axilla may be dependent upon the expertise of the radiologist and the quality of the ultrasound equipment. The major objective of this study was to assess the axillary LN status according to location and grade of tumor also size and number of axillary LN among breast cancer patients.

2. METHODOLOGY

This was a prospective observational study conducted in the Department Surgery & Oncology, Dhaka Medical College Hospital, BSMMU & NICRH Dhaka, Bangladesh during the period from January 2015 to December 2016. In total 100 patients of

several age groups with consecutive primary breast cancer patients attended following the inclusion criteria of who had LN in USG was hypoechoic, irregular shape and anterior posterior diameter was more than transverse diameter , diagnosed and treated in the mentioned hospital were selected as the study population. Proper clinical examination and ultrasonography for the assessment of axillary lymph node status were done for every participant. The ethical committee of the mentioned hospital approved the study. Proper written consents were taken from all the participants before date collection. According to the exclusion criteria of this study, patients with palpable axillary disease, ipsilateral recurrent breast malignancy, clinical and radiologic T4 status, and neoadjuvant chemotherapy were excluded. If it had an irregular nodular cortex and/or a diminished or absent hilum, the lymph nodes were classified as suspicious if its cortical thickness was 2.3 mm.[10] Patient and tumor characteristics were retrieved from the original patient registers. Patient's data regarding the age BMI were recorded. Besides these, the size, number and location of tumors were assessed and recorded. Proper data regarding the sizes as well as the number of lymph node according to clinical examination and USG were recorded and analyzed very carefully. Patient data were collected by using a predesigned questioner. Collected data were processed, analyzed by MS Office and SPSS program as per need.

3. RESULT

In this study, among total 100 participants, majority of the participants were from >45 year's age group which was 85% and the rest 15% were from ≤45 years' age group. In this study, most of the patients (85%) were in the peri and postmenopausal group. The median age was 55 years. The minimum and maximum ages were 35 and 70 years respectively. In 100 patients 46 patients had palpable auxiliary lymph node and 62 have suspicious lymph node on clinical examination and USG respectively. There was no statistically significant difference in age both in clinical examination and USG findings between positive and negative cases. In location analysis we observed, most of the tumors were located in the upper outer quadrant (57%) followed by 22.0%, 17.0% and 4.0% were located in the upper inner quadrant, lower outer quadrant and in other location respectively. There was no statistically significant difference in tumor location on clinical examination and USG for the assessment of auxiliary lymph node status in breast cancer patients. As per the grading of tumor according to clinical examination and USG in assessment of auxiliary lymph node status in breast cancer patients we found, the most of the tumors were of grade II (67%) followed by 21.0% and 12.0% were of grade I and grade III respectively. There was no statistically significant difference in tumor grading on clinical examination and USG for the assessment of auxiliary lymph node status in breast cancer patients. As per the size of lymph node according to clinical examination and USG in assessment of auxiliary lymph node status in breast cancer patients we observed, the maximum 52.5% patients had lymph node with the size of 1-2 cm followed by 25.0% and 22.5% patients had lymph node with the size of >2cm and 9. Both clinical examination and USG showed positive result in increasing with the number of lymph node. There was statistically significant difference in number of lymph node on both clinical examination and USG for the assessment of auxiliary lymph node status in breast cancer patients.

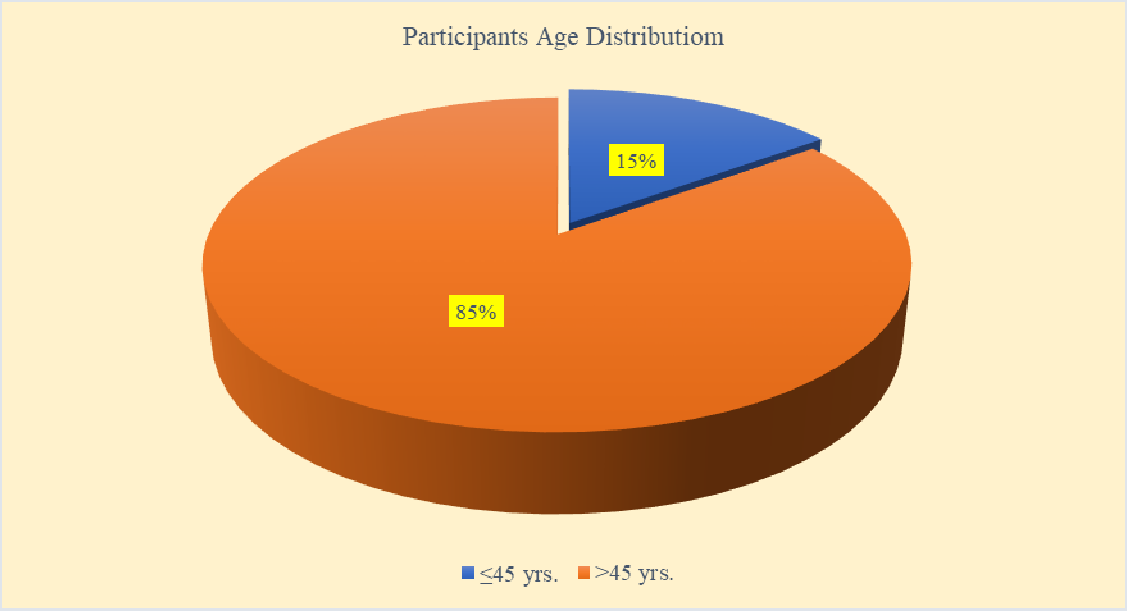

Figure I: Age distribution of participants (N=100)

Table 1: Impact of age on clinical examination (CE) and USG findings for the assessment of auxiliary lymph node status in breast cancer patients (N=100)

Age	Clinical examination		USG		Total
	Positive	Negative	Positive	Negative	
	n (%)	n (%)	n (%)	n (%)	
≤45	7 (15.2)	8 (14.8)	9 (14.5)	6 (15.8)	15 (15.0)
>45	39 (84.8)	46 (85.2)	53 (85.5)	32 (84.2)	85 (85.0)
P value	0.995		0.863		

Table 2: Location of tumor according to clinical examination and USG in assessment of auxiliary lymph node status in breast cancer patients

Location of tumor	Clinical examination		USG		Total
	Positive	Negative	Positive	Negative	
	n (%)	n (%)	n (%)	n (%)	
Upper outer	30 (65.2)	27 (50.0)	37 (59.7)	20 (52.6)	57 (57.0)
Lower outer	8 (17.4)	9 (16.7)	10 (16.1)	7 (18.4)	17 (17.0)
Upper inner	7 (15.2)	15 (27.8)	13 (21.0)	9 (23.7)	22 (22.0)
Others	1 (2.2)	3 (5.6)	2 (3.2)	2 (5.3)	4 (4.0)
P value	0.32		0.896		

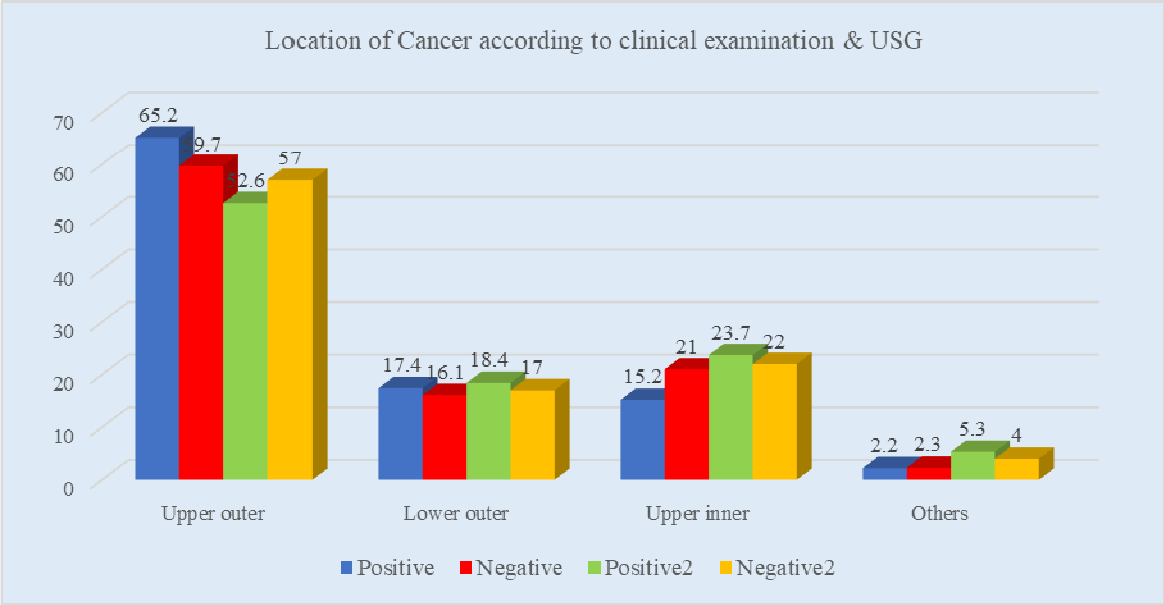

Figure II: Location of cancer according to clinical examination & USG (N=100)

Table 3: Grading of tumor according to clinical examination and USG in assessment of auxiliary lymph node status in breast cancer patients (N=100)

Grading of tumor	**Clinical examination**		**USG**		**Total**
	Positive	Negative	Positive	Negative	
	n (%)	n (%)	n (%)	n (%)	
Grade I	9 (19.6)	12 (22.2)	12 (19.4)	9 (23.7)	21 (21.0)
Grade II	28 (60.9)	39 (72.2)	41 (66.1)	26 (68.4)	67 (67.0)
Grade III	9 (19.6)	3 (5.6)	9 (14.5)	3 (7.9)	12 (12.0)
P value	0.099		0.58		

Table 4: Size of lymph node according to clinical examination and USG in assessment of auxiliary lymph node status in breast cancer patients (N=100)

Size of lymph node	**Clinical examination**		**USG**		**Total**
	Positive	Negative	Positive	Negative	
	n (%)	n (%)	n (%)	n (%)	
<1 cm	0 (0.0)	18 (48.6)	4 (6.8)	14 (66.7)	18 (22.5)
1-2 cm	24 (55.8)	18 (48.6)	35 (59.3)	6 (33.3)	42 (52.5)
>2 cm	19 (44.2)	1 (2.8)	20 (33.9)	0 (0.0)	20 (25.0)
P value	0.001[s]		0.001[s]		

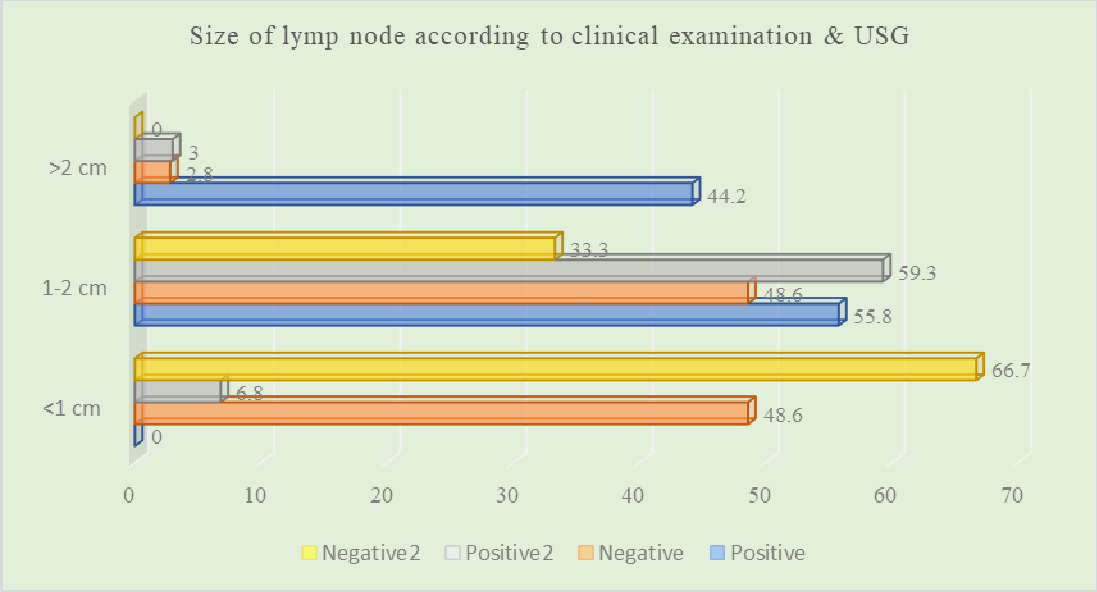

Figure III: Size of lymph node according to clinical examination & USG (N=100)

Table 5: Number of lymph node according to clinical examination and USG in assessment of auxiliary lymph node status in breast cancer patients (N=100)

Number of lymph node	Clinical examination		USG		Total
	Positive	Negative	Positive	Negative	
	n (%)	n (%)	n (%)	n (%)	
N1 (1-3)	7 (16.3)	16 (43.2)	10 (16.9)	13 (61.9)	23 (28.8)
N2 (4-9)	18 (41.9)	19 (51.4)	29 (49.2)	8 (38.1)	37 (46.2)
N3 (>9)	18 (41.9)	2 (5.4)	20 (33.9)	0 (0.0)	21 (25.0)
P value	0.001[s]		0.001[s]		

4. DISCUSSION

The aim of this study was to assess the axillary LN status according to location and grade of tumor also size and number of axillary LN among breast cancer patients. In this study, most of the patients (85%) were in the peri and postmenopausal group. The median age was 55 years. The minimum and maximum ages were 35 and 70 years respectively. In 100 patients 46 patients had palpable auxiliary lymph node and 62 have suspicious lymph node on clinical examination and USG respectively. In a study11 the mean age of the participants was 60 years (range 28-87 years). In our study, among total participants, most of the tumors were located in the upper outer quadrant (57%) followed by 22.0%, 17.0% and 4.0% were located in the upper inner quadrant, lower outer quadrant and in other location respectively. As per the grading of tumor according to the clinical examination and USG in assessment of auxiliary lymph node status in breast cancer patients we observed, most of the tumors were of grade II (67%) followed by 21.0% and 12.0% were of grade I and grade III respectively. There was no statistically significant difference in tumor grading on clinical examination and USG for the assessment of auxiliary lymph node status in breast cancer patients. Routine clinical examination of axilla showed no palpable

nodes in 45(52%) patients and palpable nodes in 41(48%) patients. [11] The involvement of axillary lymph nodes as a prognostic factor in breast cancer has been accepted from the time of Halsted.[12] In this current study, according to the validity test, the sensitivity, specificity, positive predictive value, negative predictive value, accuracy and likelihood ratio (LR) of the clinical examination in assessment of auxiliary lymph node status in breast cancer patients were 53.7%, 85.0%, 93.5%, 31.5%, 60.0% and 3.58 respectively. Ultrasound examination combined with fine-needle aspiration has been reported to increase the specificity to 100% but decrease the sensitivity to 53%.[13] Another study reported similar findings that ultrasonography-guided fine-needle aspiration had a low sensitivity (39.5%) and high specificity (95.7%) for detecting ALN metastasis.[14] In our study, out of 100 cases 62 were diagnosed as auxiliary lymph node by USG and among them 59 were confirmed by histopathological evaluation, they were true positive. The other 3 cases were not confirmed by histopathological evaluation; they were false positive. As per the validity test, the sensitivity, specificity, positive predictive value, negative predictive value, accuracy and likelihood ratio (LR) of the USG in assessment of auxiliary lymph node status in breast cancer patients were 73.8%, 85.0%, 95.2%, 44.7%, 76.0% and 4.91 respectively. In this study, in analyzing the location, size, number and grading of axillary lymph node among breast cancer patients by using clinical examination and USG findings, we found statistically significant correlations in size and number of lymph node. In a study, [15] they claimed, clinically negative lymph nodes, favorable histologic type, tumor size

Limitation of the study:

Though it was a single centered study with a small sample size, the findings of this study may not reflect the exact scenario of the whole country.

5. CONCLUSION & RECOMMENDATION

Both the clinical examination and USG showed positive result in increasing the size of lymph node. There was statistically significant difference in size of lymph node on both clinical examination and USG for the assessment of auxiliary lymph node status in breast cancer patients. On the other hand, both clinical examination and USG showed positive result in increasing with the number of lymph node. There was statistically significant difference in number of lymph node on both clinical examination and USG for the assessment of auxiliary lymph node status in breast cancer patients. For getting more specific information regarding this issue we would like to recommend for conducting more studies in several places with larger sized samples.

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