Axillary lymph nodes and breast cancer metastasis.

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ABSTRACT ... Objectives: The purpose of current study is to evaluate the correlation of axillary lymph node status with metastases in patients presented with carcinoma breast. Study Design: Prospective study. Setting: Surgical Unit 1, CMC Hospital Larkana. Period: March 2019 to January 2020. Material & Methods: Female patients presented with carcinoma breast were assessed clinically and by investigation then underwent a mastectomy and axillary dissection (sampling or clearance). Data was entered into pre-designed proforma. After proper staging, surgery was done in all patients accordingly. Lymph node involvement was confirmed histopathology. Then it was correlated with clinical findings. Results: Fifty-five female patients of proven carcinoma breast underwent a mastectomy and axillary dissection. The majority of the patients (76%) were between 30-60 years, the median age being 45 years. The left breast contained the tumor in 30 (55.5%) patients while the rest of the patients had the right breast involved. The size of the tumor varied from 2cm to 12cm. 33 (61%) patients were in the pre-menopausal state while 21 (38.88%) were in postmenopausal state. In 07 patients (13%) the axillary lymph nodes were not palpable while in the rest of the 47 patients (87%), the axillary lymph nodes were palpable to a variable extent. Most of the patients were in an advanced stages. Among seven patients (N0), histopathology revealed positive lymph nodes in 3/7 (42.85%) patients. Conclusion: Breast carcinoma is a serious type of carcinoma affecting the younger generation in our community, usually diagnosed at a late stage. Clinical examination is not an effective way for proper staging. Further investigations should be performed for accurate staging and management.

Key words: Axillary Lymph Nodes, Breast Cancer, Clinical Examination, Metastasis.

INTRODUCTION

Breast carcinoma is the most common malignancy in females throughout world and makes 2nd leading cause of death among cancer patients.¹,² In Pakistani population it has been observed at young age contrary to the Western countries where it is more frequent in old aged females (after 60 years).³ Patients with breast cancer in developing countries, including Pakistan, present in advanced stage and lead to high percentage of mortality.

There are various risk factors for the development of breast carcinoma including advanced age, early start of menstrual cycle, delayed menopause, increased age at first pregnancy, no parity, obesity, and prolonged use of oral contraceptive pills. Mutation of some genes like BRCA1 and BRCA 2 may cause carcinoma in females at earlier age.⁴ The American joint committee on cancer used Tumor-Node-Metastasis system (TNM) for staging purpose. This staging system depends upon the size, and extent of the primary tumor, regional lymph nodes involvement, and distant spread.⁵ The prognosis of breast carcinoma depends upon the stage of disease at the time of diagnosis. Treated at early stage is cost effective with excellent outcome while treating advanced-stage disease is expensive with poor outcome.

Axillary nodal involvement is considered as the most critical factor in the prognosis of breast carcinoma. It helps in the treatment choose for...
individual patient. If axillary lymph nodes are not palpable on clinical examination it should not be considered as negative until excluded by other investigations. Sentinel lymph node biopsy has become the gold standard for axillary lymph node staging in breast cancer patients it is now well known that axillary lymph node status can be assessed accurately with sentinel lymph node biopsy. After proper assessment through investigations the treatment plan should be made.

The treatment of breast carcinoma depends upon the stage of disease. Surgery is main treatment strategy, which may be combined with chemo or radiotherapy given as neoadjuvant or as adjuvant therapy. The surgical options may include breast conservation surgery with sentinel lymph node biopsy or the modified radical mastectomy and axillary lymph nodes dissection. Hormonal therapy may be needed in some patients. Early intervention can reduce the mortality by 30%.

The aim of this study was to assess the accuracy of clinical staging of patients presented with breast carcinoma in our setup specially those present in early stage of disease.

MATERIAL & METHODS
This study was conducted at Department of Surgery, teaching hospital of Chandka Medical College Shaheed Mohtarma Benazir Bhutto Medical University Larkana, Pakistan from March 2019 to January 2020. Fifty four patients diagnosed as breast carcinoma on histopathology were selected for study by non- probability purposive technique and patients who did not give consent were excluded from study.

Biodata including age of patient, menopausal status, parity, breast feeding, affected side, stage of disease and histopathological findings were also noted on designed proforma. The data analysis was done by SPSS v 20. Mean ± SD was calculated for age of the patient. Frequency and percentage were calculated for above mentioned parameters.

RESULTS
Fifty four female patients undergoing mastectomy and axillary dissection were studies. Majority of patients 42 (77%) were between 30-60 years, median age patients was 45 +/- 4.35 years. Five (9.2%) patients were unmarried. Forty one (46%) patients had history of breast feeding to their children. Seven (13%) had family history of breast cancer.

Left breast contained the tumor in 30 (55%) patients while the rest of patients had right breast involved. 33 (61.11%) patients were in pre-menopausal state and 21 (38.88%) were in postmenopausal state (Figure-1).

In 07 patients (13%) the axillary lymph nodes were not palpable while in rest of the 47 patients (87%), the axillary lymph nodes were palpable to variable extent (Table-I). Among these 7 patients in whom clinically lymph nodes were not palpable, metastasis to lymph nodes was confirmed in 3/7 (42.85%) patients on histopathology (Figure-2).

| Lymph node status                                                                 | No of Patients | %  |
|----------------------------------------------------------------------------------|----------------|----|
| 1. Axillary lymph nodes not palpable (No)                                        | 07             | 13 |
| 2. Freely mobile axillary lymph nodes (N1)                                       | 14             | 26 |
| 3. Matted axillary lymph nodes without fixity to surrounding structures (N2)    | 18             | 33.33 |
| 4. Lymph nodes fixed to deeper structures (N3)                                   | 14             | 26 |

Table-I. Axillary lymph nodes involvement in breast carcinoma patients.
DISCUSSION

Breast carcinoma comprises 23% of all cancers in women throughout the globe.9 The incidence is rising in developing countries.10 Proper management of breast cancer depends upon its proper diagnosis and staging. Sentinel lymph node biopsy (SLNB) has evolved significantly the management of breast cancer11 (Giuliano, 2016 #364). Axillary Lymph node involvement is considered as an important prognostic factor in breast carcinoma. Loco-regional progression of the disease effect on the recurrence of disease and patient’s survival.8 The relation between lymph node metastasis and survival has been demonstrated12,13 and it reduces the survival rates are up to 40% in node-positive patients when compared with those who are node-negative12 therefore it’s important to stage the patient pre operatively and assess the nodal status.14,15 Status of axillary lymph nodes keeps important impact on therapy decision making i.e. surgical, chemotherapy radiological or combined.16,17

In our study mean age of patients was 45 years. Shukla A et al in their study have also mentioned the mean age of patients 51.18±11.93 years.18 This indicates earlier involvement of breast cancer in our population. Sharif MA et al in their study have mentioned that Majority (62%) patients with breast cancer were under 50 years as against the Western epidemiology.19 In our earlier study we had found same finding that breast carcinoma is going to involve younger population in our society.20

Figure-2. Percentage of axillary lymph node positive patients who presented with N0.

In our study 55% patients were having left side involvement. Shukla A also showed that majority (62%) cases of breast carcinoma involving the left side, but this does not have any influence on metastasis.18

Like age, menopausal status has great influence breast carcinoma.19 61.11% of patients were in pre-menopausal state. A large meta-analysis has described the strong correlation between menstrual cycle status and increased risk of breast carcinoma, specially starting and cessation age is very important. There is a 5% increased risk of breast cancer with each year earlier start of menstrual cycle.21 Studies conducted in women at menopause stage revealed increased risk of breast carcinoma risk in those who had experienced prolonged reproductive period (>490 menstrual cycles) in comparison to women with fewer or irregular cycles.22 This indicates that fluctuations in ovarian hormones associated with menstrual cycling enhance the susceptibility of breast cancer.23 Increased level of estrogen and progesterone during main proliferative phase and mid secretory phase enhance the development of mammary glands epithelia, which may contribute in the development of breast carcinoma.24,25

In our study 7(13%) patients were clinically negative for lymph nodes involvement but 3 among them become positive for metastasis on histopathology thus making the 42.85% false negative diagnosis on clinical assessment. Somashekhar et al in their study mentioned the 3.7% false negative result.7 Seok et al in their study assessed 104 patients of breast cancer who were clinically negative for axillary lymph node metastasis. After performing ultrasonography, FDG, PET, and MRI, they found that 21(20.2%) patients of them were having axillary lymph node metastases(26). Clinical examination is biased and varies from person to person. There are more chances of false negativity, thus other sophisticated investigation should be carried out for proper staging of breast cancer. SLNB using methylene blue dye and radio-active Tc99m sulphur colloid has high accuracy in axilla staging with low rate of false negativity in early breast
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7. Liu M et al. have suggested that while treating patients with clinically node negative should be assessed by ultrasound and sentinel lymph node biopsy.27

CONCLUSION
Although clinical examination of axilla in patients with breast cancer is of utmost importance and it helps in having an idea of nodal metastases, but keeping in view the false negatives, other tests and techniques need to be applied before deciding any treatment plan and to avoid unnecessary surgery and recurrence.

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