Original Article

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Assessment of Effect of Lump Size and Nodal Status on Prognosis of Invasive Breast Carcinoma

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Abstract

Background: Latest report on national cancer registry website in India suggest breast cancer to be leading cancer in females in a population based survey, surpassing cervical cancer, at both urban and rural locations across India. The present study was conducted to assess effect of lump size and nodal status on prognosis of invasive breast carcinoma. **Subjects & Methods:** The study was done in Department of General Surgery for a period of six months from September 2019 to February 2020 in a tertiary care hospital among 45 women with invasive breast carcinoma was recorded. In all patients, side and location of tumour and histological types, tumour size, histological grade, skin, nipple and areola invasion was recorded. **Results:** Group I had 6, II had 8, III had 4, IV had 5, V had 2, VI had 6, VII had 7, VIII had 3 and IX had 4 patients. Location was upper outer quadrant (22), upper inner quadrant (5), lower outer quadrant (4), lower inner quadrant (3), center quadrant (9) and multifocal tumour (2). The difference was significant (P< 0.05). **Conclusion:** The size of the primary tumour and the number of positive lymph nodes has an inverse linear relationship with prognosis.

Keywords: Breast tumor, Lymph nodes, lump size

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Introduction

The accurate staging of invasive breast carcinoma is a major objective in the management of this disease.[1,2] For example, it has long been known that both tumor size and the presence of malignant disease in the regional lymph nodes are indicators of outcome for patients with invasive breast carcinoma; however, the way in which these two characteristics could be integrated into an overall assessment of prognosis has not been obvious.[3]

Latest report on national cancer registry website in India suggest breast cancer to be leading cancer in females in a population based survey, surpassing cervical cancer, at both urban and rural locations across India.[4] Goal of treatment of any disease is to achieve cure, but when it comes to cancer quest for cure, largely eludes us. The success of treatment largely depends on the extent of disease at presentation.[5] Hence, identification of prognostic factors and factors predicting response to specific treatment protocols, epitomize an important area in research. Screening in breast cancer helps to detect disease at an early stage, when chances to achieve cure are high.[6] Small tumours confined to the breast, without micro-metastasis have high chances of cure whereas big tumours which spread to axillary lymph nodes are consistently associated with subclinical systemic spread and strongly predict advanced disease.[7] TNM staging in breast cancer by AJCC includes the size of the tumour and the nodal status as the most important prognostic factors.[8] The present study was conducted to assess effect of lump size and nodal status on prognosis of invasive breast carcinoma.

Subjects and Methods

The present study was done in Department of General Surgery for a period of six months from September 2019 to February 2020 in a tertiary care hospital among 45 women with invasive breast carcinoma. All were informed regarding the study and their consent was obtained. Institutional ethics committee approval obtained for the study.

Data pertaining to patients such as name, age etc. was recorded. In all patients, side and location of tumour and histological types, tumour size, histological grade, skin,

nipple and areola invasion was recorded. The size of tumour was defined as the largest diameter of tumour reported on pathological examination following surgery. The number of nodes were pathologically evaluated and grading was done Scarff– Bloom–Richardson (SBR) system. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table 1: Distribution of patients based on tumour size

Groups	Size (mm)	Number
I	10-15	6
II	16-20	8
III	21-25	4
IV	26-30	5
V	31-35	2
VI	36-40	6
VII	41-45	7
VIII	46-50	3
IX	>50	4

[Table 1] shows that group I had 6, II had 8, III had 4, IV had 5, V had 2, VI had 6, VII had 7, VIII had 3 and IX had 4 patients.

Table 2: Breast lump based on location within breast

Location	Number	P-value
Upper outer quadrant	22	0.01
Upper inner quadrant	5	
Lower outer quadrant	4	
Lower inner quadrant	3	
Center quadrant	9	
Multifocal tumour	2	

[Table 2 & Figure 1] shows that location was upper outer quadrant (22), upper inner quadran (5), lower outer quadrant (4), lower inner quadrant (3), center quadrant (9) and multifocal tumour (2). The difference was significant (P< 0.05).

[Table 3] shows that as the tumour size increases more lymph nodes were involved suggesting a significant positive correlation between size of primary tumour and axillary lymph node metastasis (P<0.05).

Discussion

Breast carcinomas are associated with a varied range of clinical and pathologic profile, ultimately influencing the clinical

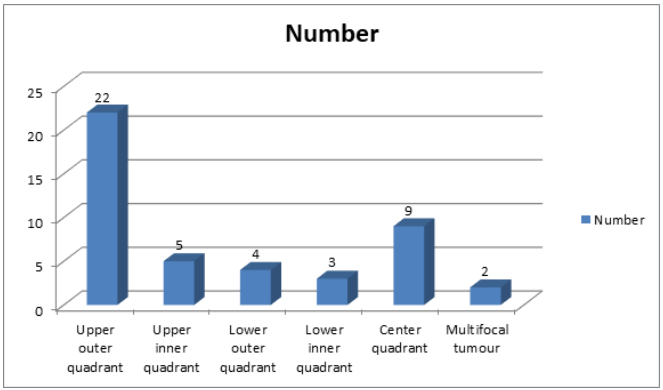

Figure 1: Breast lump based on location within breast

Table 3: Correlation between tumour size and lymph node involvement

Groups	Lymph node involvement		Total	P value
	Negative	Positive		
I	2	4	6	0.021
II	3	5	8	
III	1	3	4	
IV	1	4	5	
V	0	2	2	
VI	2	4	6	
VII	2	5	7	
VIII	1	2	3	
IX	1	3	4	
Total	13	32	45	

outcome.[9] The present study was conducted to assess effect of lump size and nodal status on prognosis of invasive breast carcinoma.

We found that group I had 6, II had 8, III had 4, IV had 5, V had 2, VI had 6, VII had 7, VIII had 3 and IX had 4 patients. Michaelson et al,[10] in their study to isolate the individual contributions to death made by tumor size and lymph node status, data were sorted according to both of these variables. For women with tumors of equivalent size, lethality increased with increasing number of positive lymph nodes, such that there was an extra 6% chance of death associated with each positive lymph node. For women with equivalent lymph node status, tumor size was associated with increased lethality, such that each millimeter of tumor diameter was associated with an additional 1% chance of death. The overall lethality was equal to the sum of the contribution from lymph node status and the contribution from tumor size, and this finding led to

the creation of a new technique (the Size Nodes method) for predicting outcome.

We found that location of lump breast was upper outer quadrant (22), upper inner quadrant (5), lower outer quadrant (4), lower inner quadrant (3), center quadrant (9) and multifocal tumour (2). As the tumour size increases more lymph nodes were involved suggesting a significant positive correlation between size of primary tumour and axillary lymph node metastasis Garg et al,[11] analysed relationship between tumour size, lymph node status and there relation with outcome after treatment. Fifty patients with cytology-proven invasive breast tumours were evaluated for size, clinical and pathologic characteristics of tumour, axillary lymph node status and outcome data recorded on sequential follow-up. Mean age of all participated patients was 52.24±10 years. Most common tumour location was in the upper outer quadrant with mean size of primary tumour being 3.31±1.80 cm. On pathology number of lymph nodes examined ranged from 10 to 24 and 72% of patients recorded presence of disease in axilla. Significant positive correlation ($p<0.013$; $r(2) = 0.026$) between tumour size and axillary lymph node involvement on linear regression. Also an indicative correlation between size and grade of tumour and axillary lymph node status was found with survival from the disease.

Waks et al,[12] in their study breast cancer is categorized into 3 major subtypes based on the presence or absence of molecular markers for estrogen or progesterone receptors and human epidermal growth factor 2 (ERBB2; formerly HER2): hormone receptor positive/ERBB2 negative (70% of patients), ERBB2 positive (15%-20%), and triple-negative (tumors lacking all 3 standard molecular markers; 15%). More than 90% of breast cancers are not metastatic at the time of diagnosis. For people presenting without metastatic disease, therapeutic goals are tumor eradication and preventing recurrence. Triple-negative breast cancer is more likely to recur than the other 2 subtypes, with 85% 5-year breast cancer–specific survival for stage I triple-negative tumors vs 94% to 99% for hormone receptor positive and ERBB2 positive. Systemic therapy for nonmetastatic breast cancer is determined by subtype: patients with hormone receptor–positive tumors receive endocrine therapy, and a minority receive chemotherapy as well; patients with ERBB2-positive tumors receive ERBB2-targeted antibody or small-molecule inhibitor therapy combined with chemotherapy; and patients with triple-negative tumors receive chemotherapy alone. Local therapy for all patients with nonmetastatic breast cancer consists of surgical resection, with consideration of postoperative radiation if lumpectomy is performed. Increasingly, some systemic therapy is delivered before surgery. Tailoring postoperative treatment based on preoperative treatment response is under investigation. Metastatic breast cancer is treated according to subtype, with goals of prolonging life and palliating symptoms. Median overall survival for metastatic triple-negative breast cancer is approximately 1 year vs approximately 5 years for the other 2 subtypes.

The shortcoming of the study is small sample size.

Conclusion

Authors found that the size of the primary tumour and the number of positive lymph nodes have an inverse linear relationship with prognosis.

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