Original Research Paper

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Prognostic Significance of Age and Size of Tumor in Carcinoma Breast- A Tertiary Care Centre Study

General Surgery

KEYWORDS: carcinoma breast, patient's age, tumor size, metastasis, axillary lymph node positivity.

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ABSTRACT

Back ground: Breast cancer is one of the commonest cancers in female worldwide and in India. Lymph node metastasis is one of the most important factors for staging as well as prognosis of the cancer. Since 75 percentage of lymphatic drainage is to axillary lymph node, axillary metastasis is very significant in prognosis. The primary objective of our study is to find out the incidence of axillary lymph node in carcinoma breast, prognostic significance of age of the patient and the significance of tumor size in the prognosis of carcinoma breast. Secondary objective was to find out the prevalence of breast cancer among various age groups. **Materials and methods:** this was a retrospective study conducted in the department of surgery, medical college, Trivandrum, during the period 2013 to 2015, in 272 patients who underwent modified radical mastectomy for carcinoma breast. Exclusion criteria were simple mastectomy and breast conservation surgery. **Results:** The lymph node metastasis was found to be increased in the age group 26-35, after that with increasing age lymph node metastasis decreased. The significance level was $p<0.001$. Axillary lymph node involvement increased with size of tumor. The significance level was $p<0.001$. Conclusion: Tumor more than 2cm has got increased axillary metastatic potential, the involvement increases linearly with size of tumor

Introduction

Breast is an accessory female reproductive organ which forms a secondary sexual characteristic besides being a source of nutrition for neonates(1). During the course of a female's life dynamic disturbances may take place in the normal anatomy and physiology of this glandular organ like extreme of normalcy a benign change or a malignant change (2-4). Breast cancer is the most common cancer among women worldwide(5). About 1.3 million women are diagnosed with breast cancer annually worldwide and about 4,65,000 die due to carcinoma breast(6). It is the second leading cause of death due to cancers in women(7). In India it is the second most common cancer in female; next to ca cervix which is the most common cancer(8). But in India in urban areas carcinoma breast is the most common cancer in females and its incidence is gradually increasing both in urban and rural areas(9).

Carcinoma of the breast is extremely rare below the age of 20 years(10). The incidence rises after the age of twenty. Genetic factors, dietary factors, endocrine factors and history of previous radiation play an important role in causation of carcinoma breast(11). The prognosis of carcinoma breast does not depend upon the duration of disease from the onset, but on its metastatic or invasive ability. Prognostic factors described are histological grade of tumor, hormone receptor status, measures of tumor proliferation such as S-phase fraction, growth factor analysis and oncogene or oncogene product measurement(12). The early detection of breast cancer is the most important factor in the prevention of breast cancer(13). Breast self examination, mammography and FNAC, are commonly used in early detection of breast cancer(14). There are different modalities of treatment for carcinoma breast. The prognosis of breast cancer depends on the lymph node metastasis(15). The selection of treatment also depends upon the extend of lymph node involvement. Since more than 75 percentage of lymphatic drainage of the breast is to the axillary lymph node, the extend of lymph node metastasis of axilla is the most important factor deciding the choice of treatment(16). There are a large number of factors affecting the lymph node metastasis in the axilla. the main factors are the size of the tumor, the site of tumor, the histological type of tumor, the grade of the tumor etc(17). The aim of this study is to delineate the frequency and the number of lymph node metastasis according to the size, site, type and grade of the tumor and to find out its possible clinical application.

Methods and materials

We retrospectively evaluated 272 patients who underwent modified radical mastectomy in the department of surgery medical college, Trivandrum, during the period 2013 to 2015. The institutional ethics committee had approved the study.

The study participants were all consecutive patients undergoing modified radical mastectomy for carcinoma breast. Pregnant ladies and patients with less than 13 yrs were not included in the study. Other exclusion criteria were simple mastectomy and breast conservation surgery. A formal sample size determination was done before conducting study.

Clinical and pathological data were collected from charts, electronic register and operation theatre register. Demographic data, operative finding, node gain by axillary dissection were noted. All the variables included in the study were abstracted into a pretested proforma and entered into a computer database. The variables abstracted for the study were T status of the tumor, type of surgery, side of the tumor, pathological axillary status. The total number of axillary nodes dissected and total number of axillary node positive for the malignancy was extracted from the relevant records. Grade of tumor and other relevant data were abstracted from the histopathology records.

The relevant data were extracted from patient inpatient chart using a pretested data abstraction form. All these data were then checked for any data entry errors. Patients with missing data were not included in the study. The surgical approach consisted of only modified radical mastectomy with axillary node dissection. The variables extracted were age, gender, node gain, histopathological status, TNM staging, size and grade of the tumor. Each variable was abstracted if they met operational definitions.

Axillary node positivity for the malignancy was calculated, taking into account the total number of nodes dissected out. Percentage wise axillary node positivity was calculated from each case and the average for each subgroup of age and tumor size was calculated. Descriptive statistics and correlation coefficient were calculated. All statistical analysis was done in SPSS statistical software version 16. P value less than 0.05 was taken as the level of significance

Results

From December 2013 to December 2015, 272 patients with

histological diagnosis of carcinoma breast treated with modified radical mastectomy were studied. Of these, 271 were females and one male. The trend in lymph node metastasis with respect to the age of the patient and the size of the tumor were calculated as given in Table 1, Graph 1 and Graph 2 respectively. The probability of lymph node metastasis increase with age till 35 yrs and thereafter it showed a statistically significant decrease($p<0.001$)

Correlation coefficient for the age of the patients and size of the tumor were calculated with Pearson correlation. The probability of the axillary node involvement increased with the size of the tumor and was statistically significant ($p=<0.001$). Table 2

The trend in lymph node metastasis with respect to the age of the patients was found to be increased in the age group 26-35, and a dip in the incidence of lymph node metastasis can be seen in the age group 36-45. After that a slight increase in the same is noted in the age group 46-55. After that with increasing age the lymph node metastasis decreased, this is calculated as shown in the table 2 and graph 2. The significance level was <0.001

Discussion

This study showed an association between age and nodal status. In addition, we found an association between the tumor size and nodal status. This is in consistent with the existing literature. In our study prevalence of the carcinoma breast was more in the age group 36-55. Our study showed increased prevalence of carcinoma breast in patients in the below 40 age groups similar to the western series (1, 2). It possibly indicates early detection of breast cancers in Kerala due to high literacy rate. An increase in prevalence is also seen in the age group 40-55, as consistent with the existing literature. It possibly indicates the post menopausal variation in hormonal status in correlation with the development of carcinoma breast. Further population based studies are needed to confirm these trends similar to western trend. In our study we noticed certain interesting observations as follows A). The association between different age groups and lymph node status; the lymph node metastasis more in the 26-35 age groups. B). Decrease in the prevalence of breast cancer older than 65 years. C). The lymph node positivity that is aggressiveness is gradually declining after 35 years, but its slight increase in the age group 46-55 years. These results do not conform to other studies (3, 4). However Indian studies agree with our result (a) (5).

The major subgroup in our study had tumor size between 2-4 cm, which had an axillary node positivity of 35.47 percentage.

In our study we noticed that as the tumor size increases the axillary node positivity is also increasing which is consistent with the existing literature.

Conclusion

In the present study prevalence of carcinoma breast is more in the age group 36-55.carcinoma behaved more aggressively in the age group 26-35. The lymphatic metastasis was more in this group and there after found decreasing. Size of the tumor also influences the metastatic chance .as the size of tumor increased the axillary node positivity increased. Tumor less than 2 cm showed only 25 percentage axillary lymph node positivity. As the size increased axillary node positivity also increased. This shows the importance of more radical procedures as the tumor size increases.

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Ethical approval: Obtained.

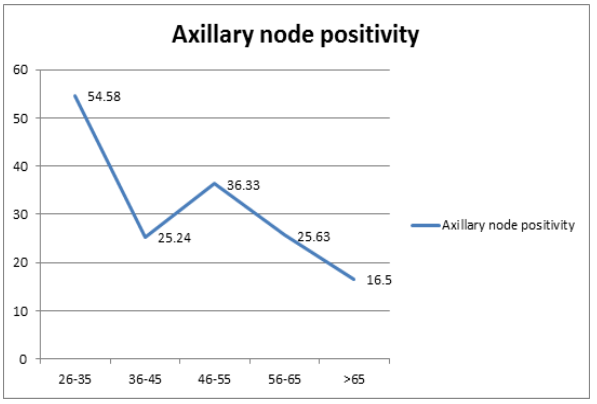
Table 1.

	Overall
n	272
AGE GROUPS	
26-35	56
36-45	88
46-55	88
56-65	32
>65	8
GENDER = Female/Male (%)	271/1 (99.6/0.4)
Total case with metastasis in axillary node (%)	160(58.8)
Tumor size in cm (%) 0-2 cm	16
2-4 cm	128
4-6 cm	76
6-8	40
8 and more	12

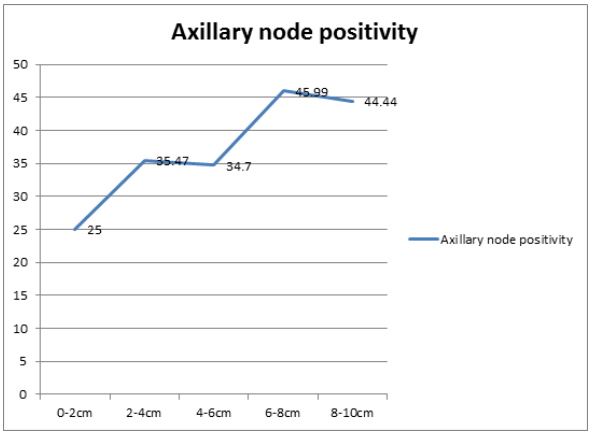
Table 2. Correlations

		Axillary node	Size
Axillary Node	Pearson Correlation	1.000	0.921
	Sig.(2-tailed)		.026
Size	Pearson Correlation	0.921	1.00
	Sig.(2-tailed)	.026	

*correlation is significant at the 0.05 level (2-tailed)



Graph 1.



Graph 2.

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