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Original Research Article

A Prospective Study on Prognostic Factors in Carcinoma Breast in a Tertiary Care Hospital

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ABSTRACT

BACKGROUND

Breast lumps are most common presenting symptoms in female of all age groups. It includes disorders of normal physiologic function, inflammatory disorders and benign or malignant neoplasm. Benign breast tumours are extremely common and though not life threatening but may be the cause of much concern till the possibility of a malignant process is excluded.

OBJECTIVES

- To study the incidence of carcinoma breast in relation with the age and socio- economic status of the patients.
- To study the prognostic factors like tumour size, axillary lymph node metastasis, histopathology type, hormonal status and staging that can be assessed and routinely followed up in carcinoma breast.

MATERIAL &METHODS

Study Design: A prospective observational study. **Study area:** The study was done at surgery department, **Study Period:** Sep.2021 – March 2022. **Study population:**All the diagnosed cases of carcinoma breast or lump in the breast who were screened and after confirmation of reports who attended the OPD or admitted in Department of General Surgery.**Sample size:** 53 cases were included in our study. **Sampling method:** Simple Random sampling method. Excluded from the study. **Ethical consideration:** Institutional Ethical committee permission was taken prior to the commencement of the study. **Study tools and Data collection procedure:** Any patient presenting with clinical picture suggestive of carcinoma breast were included in the study. She was explained about the study and consent taken. Thorough history was taken, which was followed by meticulous local, general and systemic examination to confirm the diagnosis, stage of disease and definitive treatment.

RESULTS

Out of the total 53 cases, 21 cases (39.62%) were presented at stage IIIA. Second most common stage of presentation was stage IA with 10 cases (18.86%). Stage IIA, IIB, IIIB and IIIC constitute of 7, 8, 4 and 2 casesrespectively. One case presented to the hospital at stage IV i.e. metastasis to liver.Higher the stage of the breast carcinoma, poor is the prognosis.

CONCLUSION

Therefore the only way to reduce the number and type of adverse prognostic factors, it is essential to promote and spread health education, breast cancer awareness and self-breast examination for the patients to prevent late presentation and achieving an early diagnosis which ultimately is likely to result in improvement in overall survival rate in cases of breast carcinoma.

KEY Words

Breast Carcinoma, Self-Breast Examination, Oestrogen Receptors (ER), Progesterone Receptors (PR)

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INTRODUCTION

Breast lumps are most common presenting symptoms in female of all age groups. It includes disorders of normal physiologic function, inflammatory disorders and benign or malignant neoplasm. Benign breast tumours are extremely common and though not life threatening but may be the cause of much concern till the possibility of a malignant process is excluded. A disorder of breast that raises most of the concerns is the malignant neoplasm.[1] Significant numbers of malignant lesions are considered benign by clinical examination and mammography.[2,3]

This appears to be a particular problem in patient below 50 years of age where 40% of carcinomas are considered benign or normal by clinical examination. Thus clinical diagnosis calls for further investigation for confirmation of diagnosis particularly in clinical doubtful cases.[2] To overcome this difficulty many more accurate and sophisticated diagnostic modalities like frozen section biopsy, mammography, xero radiography, magnetic resonance imaging (MRI), ductography, ultrasonography, drill biopsy have been advocated and evaluated to arrive at an accurate pre-operative diagnosis. Each modality of investigation has certain advantages like sensitivity, specificity etc. in adding to the diagnosis of different breast pathologies.[3]

At present surgeon should take appropriate steps by doing early diagnosis of the disease with available modalities of investigation.[4]Multidisciplinary therapy is the established treatment for patients with locally advanced breast cancer and inflammatory breast cancer.Axillary lymph node is one of important predictor of prognosis in parents with breast cancer. It can be assessed with various methods but histopathological examination is most accurate. In the sense of less invasive USG and USG guided FNAC method of determining the axillary lymph node status is more beneficial which can avoid more invasive axillary and sentinel lymph node biopsy as it leads to lymphedema, pain, shoulder joint stiffness.[4]

In the recent times apart from surgery, chemotherapy and radiation therapy; targeted therapy to cell receptors has emerged as a promising avenue. Therapies targeting oestrogen receptors (ER), progesterone receptors (PR) and human epidermal growth factor receptor type 2/ neu (HER2/neu) are improving the outcomes in cases of breast carcinoma. Meanwhile, an entity called triple negative breast carcinoma (TNBC) is being increasingly recognised as a subtype.[4]

Objectives

- To study the incidence of carcinoma breast in relation with the age and socio- economic status of the patients.
- To study the prognostic factors like tumour size, axillary lymph node metastasis, histopathology type, hormonal status and staging that can be assessed and routinely followed up in carcinoma breast.

MATERIAL & METHODS

Study Design

A prospective observational study.

Study Area

The study was done at surgery department.

Study Period

Sep 2021 – March 2022.

Study Population

All the diagnosed cases of carcinoma breast or lump in the breast who were screened and after confirmation of reports who attended the OPD or admitted in Department of General Surgery.

Sample Size

53 cases were included in our study.

Sampling Method

Simple Random sampling method.

Inclusion Criteria

All histologically proven cases of breast cancer presenting with lump, ulcer, discharge, metastatic symptoms were included in the study.

Exclusion Criteria

- Extremes of age (<20 and >90).
- Patients who were operated elsewhere and referred for further management.

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- Male breast cancer patients.
- Patients who could not complete the study period including the follow up period were excluded from the study.

Ethical Consideration
Institutional Ethical committee permission was taken prior to the commencement of the study.

Study Tools and Data Collection Procedure
Any patient presenting with clinical picture suggestive of carcinoma breast were included in the study. She was explained about the study and consent taken. Thorough history was taken, which was followed by meticulous local, general and systemic examination to confirm the diagnosis, stage of disease and definitive treatment.

Laboratory and Radiological Investigations
Patients presenting with a clinical picture of carcinoma breast were advised for routine blood investigations.

Mammography
Mammography of the patients were done in the Dept. of Radiology. Both craniocaudal and mediolateral-oblique views were taken.

USG of Breast
USG guided FNAC of axillary lymph node.Fine Needle Aspiration Cytology (FNAC) and Core Needle Biopsy

Analysis of Data
The data was collected and compiled, tabulated, analysed using Microsoft® Excel® for Windows®.It was analysed using IBM® SPSS® 26.0 (Statistical Package for the Social Sciences version 26.0 statistical program for Windows®. Results were drawn and compared with other published references.

Observations & Results

Age group (in years)	No. of cases	Percentage
≤ 20	0	0
21-30	3	5.66
31-40	9	16.98
41-50	23	43.39
51-60	10	18.86
61-70	5	9.43
71-80	2	3.77
81-90	1	1.88
>90	0	0
Total	53	100

Table 1. Age Distribution

The incidence of breast carcinoma is maximum in perimenopausal age group.

Socio-economic status	No. of cases	Percentage
Upper class	5	9.43
Middle class	36	67.92
Lower class	12	22.64
Total	53	100

Table 2. Socio-economic Status

In the western countries, the breast carcinoma is more common in the upper socio-economic class. But in India it is more common in the lower socio-economic class.

Laterality	No. of Cases	Percentage
Right	29	54.71
Left	24	45.28
Bilateral	0	0
Total	53	100

Table 3. Side of the Breast Involved

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It was found that 29 cases (54.71%) had their right breast affected and 24 cases (45.28%) had their left breast affected by breast carcinoma. None of the cases had bilateral disease.The right side breast has more number of cases as compared to the left side.

Quadrant of breast affected	No. of cases	Percentage
Upper outer	29	54.71
Upper inner	7	13.20
Lower outer	11	20.75
Lower inner	3	5.66
Central / subareolar	3	5.66
Total	53	100

Table 4. Site of the Carcinoma

The upper outer quadrant was affected in 29 cases. Similarly the lower outer quadrant was affected in 11 cases. The upper inner and lower inner quadrants were affected in 7 and 3 cases respectively. The central/ subareolar quadrant was involved in 3 cases. It was observed that the upper outer quadrant was favoured by the tumour in 29 (54.71%) cases.The upper outer quadrant is most commonly involved followed by the lower outer quadrant.

Size of the tumour	No. of cases	Percentage	LROnly	ARonly	LR+AR	Mets.	Death
≤ 5 cm	30	56.60	0	0	3	0	0
>5 cm	23	43.39	8	3	0	1	4
Total	53	39	8	3	3	1	4

Table 5. Tumour Size of the Cases

LR : Local Recurrence; AR : Axillary Recurrence

Thirty patients out of 53 patients had tumour size ≤ 5 cm and 20 cases had tumour size of > 5 cm.More the size of the tumour, maximum chances of recurrence. Usually the patients belonging to the lower socio-economic class presented late to the hospital with a larger sized mass.

Lymph node metastasis	No. of cases	Percentage	LR only	AR only	LR+AR	Mets.	Death
Present	37	69.81	8	3	3	1	4
Absent	16	30.18	0	0	0	0	0
Total	53	100	8	3	3	1	4

Table 6. Lymph node metastasis to axillary nodes in the cases

Thirty-seven patients (69.81%) out of 53 presented with axillary lymph node metastasis. Involvement of the axillary lymph nodes is an indicator for the bad prognosis.

Histopathological types	No. of cases	%	LR only	AR only	LR+AR	Mets.	Death
Invasive ductal carcinoma (NOS)	40	75.47	4	1	1	0	1
Invasive ductal carcinoma + Ductal carcinoma in situ	2	3.77	0	0		0	0
Invasive ductal carcinoma with mucinous component	1	1.88	0	0		0	0
Invasive ductal carcinoma with clear cell change	0	0	0	0		0	0
Invasive ductal carcinoma with Paget's disease of nipple	1	1.88	1	1		0	0
Invasive ductal carcinoma with squamous differentiation	1	1.88	0	0		0	0
Invasive ductal carcinoma with Invasive lobular carcinoma	1	1.88	1	1	1	0	1
Invasive lobular carcinoma (classic type)	2	3.77	0	0		0	
Invasive lobular carcinoma (signet ring cell type)	2	3.77	2	1	1	0	2
Invasive lobular carcinoma with ductal carcinoma in situ and lobular carcinoma in situ	0	0	0	0		0	0
Medullary carcinoma	3	5.66	0	0		1	0
Metaplastic carcinoma	0	0	0	0		0	0
Duct papilloma with infiltrating papillary carcinoma	0	0	0	0		0	0

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Total	**53**	**100**	**8**	**3**	**3**	**1**	**4**

Table 7. Distribution of Histopathology

Fourth out of 53 cases (75.47%) were found to be IDC (NOS) type, making it the most common histopathological type in the study. Medullary carcinoma was the second most common type with 3 cases (5.66%). Invasive lobular carcinoma (classic type), invasive lobular carcinoma (signet ring cell type) and invasive ductal carcinoma with ductal carcinoma in situ had 2 cases (3.77%) each. Invasive ductal carcinoma with mucinous component, invasive ductal carcinoma with Paget's disease of nipple , invasive ductal carcinoma with squamous differentiation, invasive ductal carcinoma with invasive lobular carcinoma were having 1 case (1.88%) each.The most common histological type is Invasive ductal carcinoma (not otherwise specified). Medullary carcinoma has a bad prognosis.

ER status	No. of cases	Percentage	LRonly	ARonly	LR+AR	Mets.	Death
Positive	28	52.83	2	1	0	0	0
Negative	25	47.16	6	2	3	1	4
Total	53	100	8	3	3	1	4

Table 8. Oestrogen receptor status

Oestrogen receptor positivity was seen in 28 (52.83%) cases, whereas it was negative in 25 (47.16%) cases. ER negative indicates poor outcome with more number of recurrences.

PR status	No. of cases	Percentage	LRonly	ARonly	LR+AR	Mets.	Death
Positive	26	49.05	5	3	3	0	3
Negative	27	50.94	3	0	0	1	1
Total	53	100	8	3	3	1	4

Table 9.PR Status of the patients

Progesterone receptor positivity was seen in 26 (49.05%) cases a compared to its negativity in 27 (50.94%) cases.PR positive cases were found to be came out with bad prognosis with a recurrence.

HER2/neu status	No. of cases	Percentage	LR only	AR only	LR+AR	Mets.	Death
Positive	20	37.73	1	0	1	0	1
Negative	33	62.26	7	3	2	1	3
Total	53	100	8	3	3	1	4

Table 10.HER2/neu status of the patients

HER2/neu positivity was seen in 20 (37.73%) cases as compared to its negativity in 33 (62.26 %) cases. Her2/ neu negative breast cancer is a risk factor for the poor prognosis.

Stage of disease	No. of cases	Percentage	LRonly	ARonly	LR+AR	Mets.	Death
IA	10	18.86	0	0	0	0	0
IB	0	0	0	0	0	0	0
IIA	7	13.20	0	0	0	0	0
IIB	8	15.09	0	0	0	0	0
IIIA	21	39.62	3	1	2	0	2
IIIB	4	7.54	2	0	0	0	0
IIIC	2	3.77	2	2	1	0	1
IV	1	1.88	1	0	0	1	1
Total	53	100	8	3	3	1	4

Table 11.Staging of cases as per AJCC classification of 2018

Out of the total 53 cases, 21 cases (39.62%) were presented at stage IIIA. Second most common stage of presentation was stage IA with 10 cases (18.86%). Stage IIA, IIB, IIIB and IIIC constitute of 7, 8, 4 and 2 casesrespectively. One case presented to the hospital at stage IV i.e. metastasis to liver.Higher the stage of the breast carcinoma, poor is the prognosis.

DISCUSSION

Out of the total 53 cases of breast carcinoma, majority of the cases i.e. 47 (88.67%) were seen in the age group of 31-70 years with the peak of 23 (34.39%) cases in the age group of 41 -50. No cases were seen below 20 and above 90 years of age. The range for the age of the patients was 64 years (22 years being the youngest and 86 years being the eldest). Median age was 47.5 years and mean was 47.28 years.

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Kaul et al had observed that the median age of breast carcinoma in the north Indian population was 56 years.[5] While Ghosh et alin their study in Tata Memorial Hospital, Mumbai, had found that the median age of those patients was 49 years (range 20-99 years) and the majority of patients were in the age group 35-70 years (87.3%).[6]

Bhagat et al in Gujarat had found that the age of patients ranged from 35 to 73 years of age. Most of the patients were of more than 40 years of age (84.81%) and the most common age group involved was 41-50 years (41.37%).[7]Nikhra et al had found that the age of patients ranged from 31 to 75 years, with a mean age group of 49.2 years. Maximum numbers of cases were seen in the age group of 31- 40 years (30.23%) and 41-50 years (30.23%). No cases were seen in the age group of 21-30 years.[8]

In the present study, out of the 53 cases, 36 cases (67.92%) belong to middle class followed by 12 cases (22.64%) from the lower socio-economic class. Only 5 cases (9.43%) belong to upper class. In the study, 42 cases (79.24%) were having BMI of ≥25 kg/m^2 followed by 10 cases (18.86%) between 23-24-9 kg /$m^{2.}$ Only one case (1.88%) wasbelow 22.9 kg/m^2 and the mean BMI of 26.3 kg/$m^{2.}$ According to Journal of the National Cancer Institute, there is a 3% increase in risk per 1 kg/m^2 increase in BMI with the mean BMI of 26.5 kg/$^{m2.9}$

In the study it was seen that 29 cases (54.71%) had their right breast affected by carcinoma and 24 cases (45.28%) had their left breast. None of the cases had bilateral disease. In Kaul et al 78.2% cases had carcinomas in the left breast. Right breast was involved in 21.8% cases.[5] It was also seen that the upper outer quadrant was favoured by the tumour in 31 (58.49%) cases. According to Kaul et al upper outer quadrant was the most favoured site for carcinoma breast and was seen in 58.18% cases, followed by lower outer quadrant in 16.36% cases.[5]

In this study, 23 (43.39%) patients out of 53 patients had tumour size >5 cm. Sandhu et al found that proportion of patients with tumour size >5 cm were 3% to 65% (weighted average 24%).[10] Thirty seven patients out of 53 i.e. 69.81% cases, presented with lymph node metastasis to axillary lymph nodes. Patnayak et al found that lymph nodes in 65.4% cases showed metastatic deposits.[11] Sandhu et al found patients with positive axillary lymph nodes were 39% to 90% (weighted average, 57%).We can conclude from the findings that most of the cases present late in the course of the disease which is probably due to lack of awareness regarding the disease and also the social stigma attached with it.[10]

Forty out of 53 cases (75.47%) were found to be IDC (NOS) type in this study, making it the most common histopathological type in the study. IDC was found in 89% of patients in the study by Kaul et al.[5] IDC was the most common subtype (n=1908, 95.4%) in the study by Ghosh et al[6] as well. Similar results were found by Taran et al (78%), Shashidhar et al (86.15%).[12,13]

In the study Oestrogen receptor positivity was seen in 28 (52.83%) cases, whereas it was negative in 25 (47.16%) cases. The findings of various studies are compiled below.

Studies	ER positivity
Nikhra et al[8]	39.5%
Patnayak et al[11]	47.6%
Bhagat et al[7]	48.2%
Taran et al[12]	54.0%
Shashidhar et al[13]	55.3%
Present study	52.1%

In this study, Progesterone receptor positivity was seen in 26 (49.05%) cases as compared to its negativity in 27(50.94) cases.

Studies	PR positivity
Bhagat et al[7]	37.9%
Shashidhar et al[13]	40.0%
Nikhra et al[8]	41.8%
Taran et al[12]	44.0%
Patnayak et al[11]	48.8%
Present study	48.9%

In this study, 33 cases (62.26%) were Her2/neu negative and 20 cases (37.73%) were Her2/neu positive. Sandhu et al found 71.2% of cases with Her2/neu negative receptor status.[10] In the study, maximum number of locally advanced breast cancer presented in stage IIIA i.e. 39.62% and stage IIIB i.e. 7.54% followed by stage IIIC at 3.77%. Saxena et al study at a New Delhi Hospital, Stage-IIIB (35%) followed by Stage IIIA (27%) and IIB (16%) predominated.[14] Out of the total 53 cases, 25 cases (47.16%) presented as early stage breast cancer.

CONCLUSION

Therefore the only way to reduce the number and type of adverse prognostic factors, it is essential to promote and spread health education, breast cancer awareness and self-breast examination for the patients to prevent late presentation and

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achieving an early diagnosis which ultimately is likely to result in improvement in overall survival rate in cases of breast carcinoma.

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