



HISTOPATHOLOGICAL AND IMMUNOHISTOCHEMICAL PARAMETERS OF CARCINOMA BREAST – EXPERIENCE IN A TERTIARY CARE INSTITUTE IN SOUTH INDIA.

Pathology

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ABSTRACT

Background: Breast cancer is one of the leading causes of cancer death in women worldwide. Incidence is increasing in India that may be due to increase in use of hormones and life style changes. Management and prognosis of carcinoma breast are influenced by stage and grade of tumor, Hormone receptor status and overexpression of HER2.

Aim: The aim is to study the histopathological types of carcinoma breast and to evaluate Immunohistochemical expression.

Materials and Method: The present study is a retrospective study conducted for a period of 3 months. Data collected from Nov 2020 to October 2021. Clinical data, histopathology and Immunohistochemistry slides were retrieved. A total of 66 cases were studied. The tumors were classified into luminal type, HER2 group and basal-like. Results thus obtained was analyzed using SPSS 20.0 version.

Results: In this study, most common age group affected in our study was between 41 to 50 years (34.8%). Left breast is most commonly affected. Invasive carcinoma breast no special type was the most common malignant lesion (78.8%) followed by mixed ductal and lobular carcinoma (9.1%). MBR Grade III lesions (56.1%) were more common. By immunohistochemistry, 48.5% were HER2 enriched, followed by luminal 33.3% and basal type 18.2%. **Conclusion:** Histopathology plays an important role in the diagnosis of breast carcinoma. Assessment of hormone receptors for management of breast cancer patients is highly recommended to provide prognostic information and best therapeutic options.

KEYWORDS

Invasive carcinoma NST, Estrogen Receptor, Progesterone receptor, HER2.

INTRODUCTION:

Breast is a glandular organ. Lesions of breast can be inflammatory to benign to malignant.¹ After lung cancer, carcinoma of breast is one of the commonest malignant tumors in the world and is the leading cause of death due to cancer in females.²

In India, the most common malignancy in females is breast carcinoma next to uterine cervical carcinoma.³ As per ICMR – PBCR data, breast malignancy is the commonest malignancy among females in urban registries of Delhi, Mumbai, Ahmadabad, Kolkata and Trivandrum and it accounts for more than 30% of all cancers in females.^{1,3} If left untreated, the mean survival is about 3 years after clinical presentation and 5 year survival rate is less than 20%.⁴

Prognosis of breast cancer depends on histological type and grade, tumour size and status ER,PR and HER2. The presence of hormone receptors is associated with favourable prognosis. HER2 overexpression results in a more aggressive clinical behaviour. Analysis of marker status is an important factor in detecting cancer with worse prognosis.⁵

ER and PR expression can be assessed by Immunohistochemistry. Amplification and/or overexpression of Her2/Neu gene is routinely evaluated using immunohistochemistry and/or FISH.⁶ Main goal of doing this receptor status study is to provide right treatment to the right patient.

AIMS AND OBJECTIVES:

- To study the histopathological and immunohistochemical patterns of breast cancer

MATERIALS AND METHODS:

Present study was conducted in a Tertiary care hospital in South India for a period of 3 months.

Inclusion Criteria:

All histopathologically proven carcinoma breast cases.

Exclusion Criteria:

Post chemotherapy, post-radiotherapy specimens and metastatic tumors.

A total of 66 cases were included in this study. Clinical data, histopathology slides and IHC were collected retrospectively from November 2020 to October 2021. H&E and IHC slides were reviewed, details were recorded. The IHC slides were examined based on ASCO/CAP guidelines. Statistical Analysis was carried out using

SPSS 20.0 version.

OBSERVATION AND RESULTS:

Of the 66 breast cancer cases included in the study, majority of the cases were Trucut biopsies (63.6%) followed by MRM specimen (27.3%). Among the 66 cases 98.5% cases were females and 1.5% were males.

In the present study, 53% of tumors were located at the left side, 44% at the right and 3% were bilateral. Age group of patients ranges from 30 to 79 years. Majority of the patients belonged to the age group of 41-50 years (34.8%).

The most common type of malignancy observed in our study was Invasive carcinoma of No Special Type (78.8%) followed by mixed ductal and lobular carcinoma i.e. 9.1%. (Fig.1)

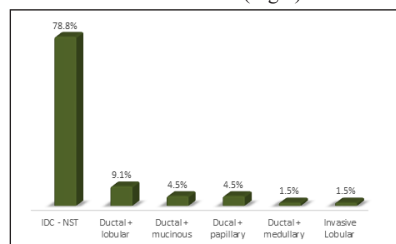


Fig.1 : Histopathological Diagnosis

Histological grade (Nottingham modification of the Bloom–Richardson system) was done based on tubule formation, nuclear pleomorphism and mitotic activity. Grade III lesions (56.1%) were found most commonly followed by Grade II lesions (40.9%) and Grade I lesions (3%).

In our study ER was noted to be positive in 41 patients (62.1%) and PR was found positive in 28 patients (42.4%). Table. 1 shows the correlation of ER and PR status.

Table. 1: ER and PR Correlation.

ER vs PR		PR		Total
		Negative	Positive	
ER	Negative	22	3	25
	Positive	16	25	41
Total		38	28	66

With ER, PR & HER2 combinations, carcinomas were categorised

based on their molecular subtype. 4 cases had equivocal score for HER2 and FISH was done for those cases. 37 cases (48.5%) were in the HER2 enriched category, which was followed by the luminal type (33.3%) and finally the basal type which had only 5 cases (18.2%). Among the Her 2 enriched cases few had ER/PR positivity. (Fig.2)

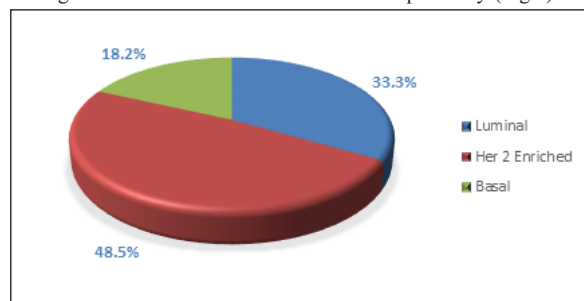


Fig.2: Molecular subtype based on Immunohistochemistry.

DISCUSSION:

A total of 66 cases were included in the study. In our study, majority of the cases were Trucut biopsies (63.6%). Studies conducted by Mudholkar et al.⁷ had more cases of excision biopsies. Among the 66 cases, 64 were female (98.5%) and 2 were male (1.5%). Similarly, a higher proportion of female patients have been seen in studies conducted by Ly et al.⁸ and Cook et al.⁹

In the present study, involvement of breast was more on left side (53%) than the right. Our observation was similar to that of Agrawal GP et al.¹⁰, who also observed increased incidence of breast cancer on left side.

Most common age group in our study was 41-50 year of age (34.8%). This was similar to studies conducted by Anyikam et al.¹¹ and Chikhlikar et al.¹² which showed 30.8% and 34.61% respectively. The mean age of the patients in the present study was 49.56 years. This is lower than the age reported in western countries where the mean age at diagnosis is in the sixth decade of life. This shows that there is a difference in mean age of patients in developed and the developing nation.¹³

Most commonly observed histological type of carcinoma breast in our study was Invasive ductal carcinoma NST accounting 78.8% of the total cases. Reddy et al.¹⁴ in their study observed 85.05% cases with ductal carcinoma NOS type correlates with our study. Study conducted by Wang et al.¹⁵ reported 90.1% of breast carcinoma was invasive ductal which is also similar to our study.

We found that the majority of cases were in Grade III category (56.1%). Study done by Albrektsen et al.¹⁶ shows that majority of cases they encountered in their study was Grade III. This is in contrast to studies conducted by Dhaka et al.¹⁷ and Ibrahim et al.¹⁸ where they reported grade II and Grade I tumors to be most common respectively.

In the present study ER positivity is noted in 62.1% cases and PR positivity in 42.4% cases. A prevalence of 32.6% for ER-positive and 46.1% for PR-positive breast cancers was documented in a study carried out by Desai et al.¹⁹ which is in contrast to our study. The data we analysed for our study showed that 25 cases (38%) were ER+/PR+, 3 cases (5%) were ER-/PR+, 16 cases (24%) were ER+/PR- and 22 cases (33%) were ER-PR-. and in 16 cases. Gupta et al.²⁰ in their study showed that 15 cases (30%) were ER+/PR+; 6 cases (12%) were ER-/PR+; 1 case (2%) were ER+/PR- and 28 cases (56%) were ER-/PR-. HER2 enriched type was the most frequently identified molecular subtype in our study. This was in discordance with a study done by Suvarchala et al.⁵ which had higher triple negative tumors (42.19%). Jain et al.²¹ did a study on 203 breast cancer patients to find ER, PR & HER2 reactivity in breast cancer. Most of the patients who had HER2 over expression also were ER-/PR-. But in our study ER & PR positivity was noted with HER2 positivity.

CONCLUSION:

Although breast cancer can develop in both genders, women are at greatly increased risk. Incidence of malignant breast lesions was maximum in 4th to 5th decades of life. So, screening and awareness can detect the malignancy at an early stage. Infiltrating carcinoma NST is the most common malignant lesion of breast. Assessment of hormone receptors and Her2Neu amplification for breast cancer patients is

required to provide prognostic information and best therapeutic options.

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Nil.

Conflicts Of Interest:

There are no conflicts of interest

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