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HORMONE RECEPTOR STATUS AND HER-2/NEU EXPRESSION IN BREAST CARCINOMA AND ITS CORRELATION WITH CLINICO-PATHOLOGICAL FEATURES: A STUDY AT MEDICAL COLLEGE HOSPITAL

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ABSTRACT: Breast carcinoma is the most common cancer in women and leading cause of cancer death in women. The role of hormone receptor status and Her-2/neu expression as a prognostic and therapeutic tool in breast carcinoma is widely accepted. The present study was undertaken to observe the trend and to analyze the status of hormone receptors and Her-2/neu expression in breast carcinoma at our hospital and its correlation with tumor grading.

KEYWORDS: Breast carcinoma, Hormone receptors, Her-2/neu expression and tumor grading.

INTRODUCTION: World-over carcinoma breast is the most frequent type of cancer among females. In India, it is the second most prevalent cancer among females after carcinoma cervix. It ranks second among cancer deaths in adult females.¹ There has been slight decline in breast cancer mortality overall, which can be attributed both to success of early detection programs and to advances in treatment, particularly development in systemic therapy.² Prognosis and management of breast cancer are influenced by the classic variables such as histological type and grade, tumor size, lymph node status, status of hormone receptors estrogen receptors (ER) and progesterone receptors (PR) of the tumor and Human epidermal receptor-2/neu (Her-2/neu) status.³⁻⁶ The aim of our study is to analyze hormone receptors (ER and PR) and Her-2/neu expression status and correlate it with other clinico-pathological features.

MATERIAL AND METHOD: The study conducted in 76 patients who were diagnosed to have carcinoma breast admitted to Fr Muller Medical College Hospital, Mangalore during Jan to Dec 2013. Specimen for histo-pathological examination was obtained after trucut biopsy, wide local excision, simple mastectomy and modified radical mastectomy depending upon the staging of breast carcinoma.

Histo-pathological examination of specimens for tumor type and grading were performed routinely on 4 to 5 µm thick H&E stained sections of formalin fixed, paraffin embedded blocks. All the paraffin blocks were studied for grading according to the Scarff-Bloom-Richardson grading system of breast cancer with Nottingham modification as grade 1, 2 and 3. Immunohistochemistry (IHC) for ER, PR and Her-2/neu were performed on representative blocks of paraffin embedded tissue.

RESULTS: Total 76 patients diagnosed to have carcinoma breast were included in the study. Distribution of various histopathological features like subtypes, age and grading were shown in table 1.

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Histopathological Features		No (%)
Subtype	Infiltrating Ductal Carcinoma-NOS	72 (94.8%)
	Infiltrating lobular carcinoma	2 (2.6%)
	Mucinous carcinoma	1 (1.3%)
	Medullary carcinoma	1 (1.3%)
Age	< 40 yrs.	20 (26.3%)
	>40 yrs.	56 (73.7%)
Grade	1	16 (21%)
	2	52 (68.4%)
	3	8 (10.6%)

Table 1: Histopathological features

Distribution of receptor status, ER, PR and Her-2/neu were shown in table 2.

Receptor status		No (%)
ER	Positive	32 (42.1%)
	Negative	44 (57.9%)
PR	Positive	29 (38.15%)
	Negative	48 (61.85%)
Her-2/neu	Positive	27 (35.52%)
	Negative	47 (64.48%)

Table 2: Receptor status

Distribution of receptor positive status with various grades was shown in table 3.

Grade	Cases	ER-positive	PR-positive	Her-2/neu-Positive
1	16	10 (62.5%)	9 (56.3%)	0 (0%)
2	52	18 (34.6%)	17 (32.7%)	22 (42.3%)
3	8	4 (50%)	3 (37.5%)	5 (62.5%)

Table 3: Immunohistochemistry positivity according to histological grade

DISCUSSION: Breast carcinoma is leading cause of cancer death in women aged 40-44 years, and second leading cause of cancer death for women overall. During the past two decades the mortality rate has been decreased significantly due to early detection of disease and the use of aggressive multimodality treatment leading to improved clinical outcomes. Further decline in the breast cancer mortality is due to advances in the outstanding of the biology of the disease and its risk factors. It is well known that breast carcinoma prognosis depends on various clinicopathological factors including metastatic status of lymph nodes, tumor size, tumor grade, hormone receptor status and Her-2/neu status.

In the present study, most breast carcinomas were invasive ductal carcinoma (94.8%), not otherwise specified (IDC NOS). Azizun-Nisa et al⁷ recorded 85.3%, Vaidyanathan et al⁸ recorded

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90.3%, while Sandhu DS et al⁹ reported 97.3% tumors of IDC NOS histological type. The present study correlates with the above studies. Other subtype of carcinoma found was infiltrating lobular carcinoma, medullary carcinoma and mucinous carcinoma. Most of the patients were presented with >40 years of age (73.7%). In our study Grade 2 tumors were more common followed by grade 1. Azizun-Nisa et al⁷ and Dutta et al¹⁰ recorded similar results.

Our study reports 32 (42.1%) ER-positive tumors and 29 (38.15%) PR-positive tumors. Dutta et al¹⁰ and Desai et al¹¹ obtained similar hormone receptor positivity in breast cancer in India which correlated with our study. Her-2/neu positivity in our study was 35.52%. Vaidyanathan et al⁸ found 43.2%; Munjal et al¹² found 40.2% positivity respectively in their study which correlated to our study.

Significant inverse association was found between hormonal receptor and histology grade. Greater percentage of grade 1 tumors showed ER, PR positivity while compared to grade 3 tumors. The findings in study by Azizun-Nisa et al⁷ showed similar results. In our study Her-2/neu positivity was expressed 0%, 42.3% and 62.5% in grade 1, 2 and 3 respectively. Similar results were observed by Azizun-Nisa et al⁷ and Moses Embroise et al.¹³

CONCLUSION: In the present study of ER, PR and Her-2/neu expression in breast carcinoma indicates higher rates of positive expression correlated with various clinic-pathological features. Higher number of grade 1 tumors showed ER, PR positivity as compared to grade 3 tumors. Her-2/neu expression increases with increase in grade of tumors. Inverse relationship was observed between Her-2/neu expression and ER, PR receptor status.

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