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CLINICOPATHOLOGICAL PROFILE OF HORMONE POSITIVE BREAST CANCER.

Surgery

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ABSTRACT

Aim

The aim of this study was to determine the correlation of expression of Hormone receptors with various pathological parameters like tumour size, tumour grade, age of the patient at the time of presentation of disease in Northern part of INDIA.

Background:

Molecular classification of breast cancer is based on gene expressing profile.

They subgroup [luminal A, luminal B, HER2, and basal like] have distinct gene expression pattern and phenotypical characteristics.

Hormone positive shares phenotypical features with luminal like breast cancer, which is in turn the less aggressive and with good outcome.

They are associated with Good responsive to endocrine therapy and short survival.

Material And Method:

Study Design: Hospital based retrospective, descriptive type of observational study.Study place: Dept. of general surgery SMS hospital Jaipur.

Study population: 402 cases of diagnosed breast cancer.

Statistical Analysis: Descriptive statistics.

Result:

Total breast cancer patients studied = 402. Among total cases 115 were luminal type A

- In less than 40 years old cases 33.3% are ER/PR positive and in > 50 years old cases 75.0% are ER/PR positive.
- In our study 80% cases were ER/PR positive in tumor less than 2 cm compared to 42.11% in tumor size more than 5 cm .
- The left sided breast is more commonly involved (60.0%) to right (40.0%) in our study.
- The upper outer quadrant was most commonly involved (69.5%) in our study.
- Painless lump was more common in all ER/PR +ve (77.2%)
- In our study 87.5 % cases were in grade I tumor .
- 70.6% cases were ER/PR positive in negative axillary lymph node tumour

Conclusions:

1. Painless lump is commonest complaint in ER/PR +ve
2 .The left sided breast is more commonly involved (60.0%) to right (40.0%) in our study.
3 . The upper outer quadrant was most commonly involved (69.5%).
4. Younger patient were less likely to be ER/PR positive as compared to older patients.
5. Patient with lower tumour grade were more likely to be ER/PR positive as compared to patients with high grade tumour.
6. Patient with lower tumor size was more likely to be ER/PR positive as compared to patient with large tumor size.
7. ER/PR positive patient have less number of positive nodes

KEYWORDS

INTRODUCTION

Breast cancer is the most common female cancer worldwide representing nearly a quarter (25%) of all cancers with an estimated 1.67 million new cancer cases diagnosed in 2012. In India, breast cancer was the second most common cancer in women after cervical cancer prior to 1990 (Takiar and Srivastav, 2008)3.

1)Luminal A (HR+/HER2-, Ki67 low); ii) Luminal B (HR+/HER2-/+, Ki67 high); iii) HER2 positive (HR-/HER2+); iv) Triple Negative (TN; i.e. ER/PR/HER2-); and v) TN basal-like (i.e. TN with any positivity for CK5/6, CK14 or EGFR).

Hormone receptor positive tumors represent the most common form of breast cancer .

Presence of ER, PR and human epidermal growth factor receptor-2 (HER-2) status in invasive breast carcinoma is now-a-days routinely estimated as these markers are considered to be important prognostic factors. (Ambroise M et al 2011)1

The role of hormone receptors as a prognostic and therapeutic tool in breast cancer is widely emerging; as Estrogen and progesterone appear to be major hormones involved in regulation of breast tumor growth. Its determination nowadays is becoming an important predictor of response to hormonal therapy and overall prognosis of the patient. (Desai SB 2000)2

Neoplasms showing Hormone receptor overexpression (+) are characterized by a frequency increasing with age as opposed to hormone receptor (–) tumors, which occur more frequently up to 50 years of age and then reach a plateau. This phenomenon explains an increased percentage of hormone receptor (+) tumors diagnosed in women after menopause.(Ban KA et al 2014)4

S. B. Desai et a5(2000) studied 798 breast carcinomas in Indian population and found 32.6% ER positive and 46.1% PR positive. ER, PR immunoreactivity increased with advancing age and correlated with presence of elastosis.

Bhargava et al6(2008) studied cytological nuclear grading of breast carcinoma and its correlation with ER/PR expression in 30 cases of carcinoma breast. On correlating Robinson's nuclear grading with ER and PR status there was significant correlation between ER, PR positivity and lower nuclear grades.

II. Patients And Methods

Study Design: Hospital based retrospective, descriptive type of observational study.

Study Place: Dept. of General Surgery SMS hospital Jaipur Rajasthan.

Study Population: 115 cases of diagnosed breast cancer.
Statistical Analysis: Descriptive statistics

This analysis included women with diagnosed breast cancer at SMS hospital Jaipur.

Patient demographics were obtained.
Tumors were staged according to the TNM criteria.

The data on ER, PR, andHER2/neu was obtained through standard clinical testing, Tumors scored as 2 were not included in this study.

Statistical analysis
The data was coded and entered into Microsoft excel spreadsheet. Analysis was done using SPSS version20 (IBM SPSS STATISTICS inc., Chicago, Illinois, USA) Window software program. The variables were assessed for normality using the Kolmogorov Smirnov test. Descriptive statistics included computation of numbers and percentages. Chi- square test and Mcnamer test were used for qualitative data whenever two or more than two groups were used to compare. Level of significance was set at P<0.05.

TABLE 1 - Relation of Hormonal Receptor status to Age in Breast cancer

AGE	NO OF CASES	ER+/PR+
<40	30	10(33.3%)
41-50	45	25(55.6%)
>50	40	30(75.0%)
	115	65(56.5%)

P value = 0.02.

TABLE 2 - Relation of Hormonal Receptor status to Size of Tumor in Breast cancer

SIZE OF TUMOUR	NO OF CASES	ER+/PR+
1-19mm	25	20(80.00%)
20-50mm	71	37(52.11%)
>50 mm	19	8(42.11%)

P value = 0.038

TABLE 3 - Relation of Hormonal Receptor status to Grade of Tumor in Breast cancer

GRADE OF TUMOUR	NO OF CASES	ER+/PR+
I	8	7(87.50%)
II	32	25(78.13%)
III	75	34(45.33%)

P value = 0.029

TABLE 4 - Relation of Hormonal Receptor status to Menopausal status in Breast cancer

MENOPAUSAL STATUS	NO OF CASES	ER+/PR+
PRE	40	13(30.50%)
PERI	0	0(0.00%)
POST	75	53(70.67%)

P value < 0.001

TABLE 5 - Relation of Hormonal Receptor status to presentation of disease in Breast cancer

HARMONAL STATUS	NO OF CASES	Painless lump	Painful Lump	Nipple Discharge	Ulceration
ER+/PR+	66	51(77.27%)	15(22.73%)	8(12.12%)	0(0.00%)

TABLE 6- Relation of Hormonal Receptor status to Side of Tumor in Breast cancer

SIDE	NO OF CASES	left	right
ER+/PR+	66	39(59.09%)	27(40.91%)

TABLE 7 - Relation of Hormonal Receptor status to Quadrant of Tumor in Breast cancer

HARMONAL STATUS	NO OF CASES	UO	UI	LO	LI
ER+/PR+	66	47(71.21%)	13(19.70%)	6(9.09%)	69.09%)

TABLE 8- Relation of Hormonal Receptor status to No of Positive Lymph Node in Breast cancer

NO. OF LYMPH NODE	NO OF CASES	ER+/PR+
0	37	26(70.27%)
1 to 3	31	21(67.74%)
3 to 9	33	14(42.42%)
>9	14	5(35.71%)

P value = 0.045

TABLE 9- Relation of Hormonal Receptor status to Type of IDC in Breast cancer

		MORPHOLOGY	
		IDC	
HARMONAL STATUS	NO OF CASES	IDC-NOS	IDC Comedo
ER+/PR+	66	56(84.85%)	10(15.15%)

DISCUSSION

AGE-In less than 40 years old cases 33.3% are ER/PR positive and in > 50 years old cases 75.0% are ER/PR positive .This result agrees with result of the studies conducted by Graham A.colditz (2004)7

MENOPAUSAL STATUS-72.6% cases were ER/PR positive in postmenopausal women compared to 32.5% in premenopausal women.These results are compatible with studies done by Rajan et al 20148 and Benjamin et al 20179.

TUMOUR SIZE- In our study 80% cases were ER/PR positive in tumor less than 2 cm compared to 42.11% in tumor size more than 5 cm .These results were compatible with result of studies conducted by Sushan J 201310 and Pourzand et al.201111

SIDE OF BREAST-The left sided breast is more commonly involved (60.0%) to right (40.0%) in our study. Left breast is more common in all groups of hormonal receptors.This result compatible with studies done by Sandhu et al (2010)12

QUADRANT OF BREAST-The upper outer quadrant was most commonly involved (69.5%) in our study.which is compatible with studies done by (Sandhu et al 2010)12

PRESENTATION-Painless lump was the chief complaint (80.5%) followed by painful lump (19.1%), Nipple discharge (12.1%) and ulceration (0.89%) in our study.Painless lump was more common in all ER/PR +ve (77.2%)This result agree with the result of the studies conducted by Sandhu et al (2010)12

TUMOR GRADE- In our study 87.5 % cases were ER/PR positive in grade I tumor compared to 45.33% cases were in grade III.These results were agreeing with the results of studies done by Sushan SS 201310

LYMPH NODE-70.6% cases were ER/PR positive in negative axillary lymph node tumour compared to 67.7 % in 1-3 lymph node positive, 42.4% in 4-9 lymph node positive and 35.7% in more than 9 lymph node positive tumour. Thess results agree with result of the studies conducted Sumegha Rana 201613

HISTOLOGY-Histology as a prognostic factor has been well documented. Infiltrating duct carcinoma (IDC) was the predominant morphological category with IDC NOS (Not otherwise specified) 84.85% cases, IDC comedo 15.15 % cases in our study. Results are similar with findings reported by the Sharma RG et al (2005)14

SUMMARY & CONCLUSION

1. The mean age of presentation of breast cancer in our study was 49.8 years and median age was 49. Maximum numbers were in the age group 41-50.
2. Painless lump is commonest complaint in ER/PR +ve
3. The left sided breast is more commonly involved (60.0%) to right (40.0%) in our study.
4. The upper outer quadrant was most commonly involved (69.5%).
5. We compared ER/PR positivity with age at diagnosis and found that younger patient were less likely to be ER/PR positive as compared to older patients.
6. Patient with lower tumour grade were more likely to be ER/PR positive as compared to patients with high grade tumour.
7. Patient with lower tumor size was more likely to be ER/PR positive as compared to patient with large tumor size.
8. Patient with less number of positive node more likely to be ER/PR positive
9. Infiltrating duct carcinoma (IDC) was the predominant

morphological category with IDC NOS (Not otherwise specified) 84.85% cases.

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