CARCINOMA OF BREAST IN CORRELATION WITH ESTROGEN AND PROGESTERONE RECPTOR EXPRESSION -A 3YEARS STUDY

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ABSTRACT Aims: 1.To study the incidence and age wise occurrence of carcinoma of breast, 2. To correlate ER and PR expression with Bloom Richardsons grading and TNM staging, 3. To help in therapeutic management and prognosis of the carcinoma of breast. **Materials And Methods:** 3Yrs study conducted in the department of Pathology, Kurnool Medical College, Kurnool. Out of 106 carcinoma of breast cases, 60 were subjected for ER and PR expression. **Results:** Among 60 cases, both ER+/PR+ were 34(56.66%)cases and both ER-/PR– were 21(35%)cases. **Conclusion:** Present study establish a correlation between ER and PR expression with tumor histomorphology, Grading and Staging of the tumor.

INTRODUCTION:

Breast cancer is the second most common cancer among women in India after Cervical cancers and accounts for 7% of the global burden of breast cancer and one-fifth of all cancers among women in India[1]. At present breast cancer is regarded as a unique disease in oncology and the specific markers like Estrogen Receptor(ER), Progesterone Receptor(PR) and HER2/neu are used to predict the treatment response to guide the therapeutic plan[2]. The tumors that are both ER and PR positive have lower risk of mortality than compared to both ER and PR negative[3].

MATERIALS AND METHODS:

A three years study was conducted in the department of Pathology, Kurnool medical college, Kurnool, after approval from the ethics committee of KMC, Kurnool. Out of 106 carcinoma breast specimens, 60 cases were subjected for Estrogen and Progesterone receptor expression. Entire clinical details of the cases were obtained from the Department of Surgery, Govt. General Hospital, Kurnool. Specimens were fixed in 10% formalin, submitted for processing and H&E staining done. After histological grading and staging, best sections representing the tumor were selected for ER and PR expression.

RESULTS:

In the present study, age of the patients ranged from 26 to 80yrs, with mean age was 49.73yrs, maximum number of cases were seen between 41-50yrs(40%) with right side predominence 48cases(45.2%). Out of 106 carcinoma cases, commonest hisological type was Duct cell carcinoma 101cases(95.28%), followed by medullary, mucinous and Papillary. According to modified scarf-Bloom-Richardson grading system, grade I were 26(24.5%)cases, grade II 34(32.07%)cases and grade III 10(9.43%)cases. According to TNM staging, Stage I were 32(30.18%), stage II 48(45.28%) and Stage III 26(24.52%)cases.

Table1: Combined ER/PR Status Correlation With Age, Grade And Stage

		ER+/PR+	ER+/PR-	ER-/PR+	ER-/PR-	X^2 value	df	P value
Age (Yrs)	<50	21 (35%)	2 (3.3%)	1 (1.7%)	10 (16.7%)	1.22	3	0.749
	>50	13 (21.7%)	1 (1.7%)	1 (1.7%)	11 (18.3%)			
Grade	I	9 (15%)	-	-	5 (8.3%)	10.8	6	0.095
	II	20 (33.3%)	3 (5%)	2 (3.3%)	7 (11.7%)			
	III	5 (8.3%)	-	-	9 (15.0%)			
Stage	I	9 (15%)	-	-	6 (10.0%)	13.5	6	0.036
	II	19 (31.7%)	-	2 (3.3%)	7 (11.7%)			
	III	6 (10%)	3 (5%)	-	8 (13.3%)			

On comparison of combined ER/PR status with age, grade and stage, the statistical correlation found only with TNM staging (P-value 0.036). both ER/PR positive tumors were 21(35%) in <50yrs age group where as both ER/PR negative tumours were more 11(18.33%) in >50yrs age group. Majority of moderate Grade and stage II tumors were both ER/PR positive.

DISCUSSION:

In the present study the average age was 49.17yrs with a peak incidence in the 5th decade, where as in the western countries decade later when compare with Indian studies[4]. In various studies conducted in the world, invasive duct cell carcinoma not otherwise specified (IDC NOS) was found to be the most common type, the present study is correlated with other studies. In various studies conducted in the world, incidence of Grade I tumors varies from 9.4-29%, Grade II tumors vary from 36-57.3% and Grade III varies from 27-46%. In our study Grade I, Grade II and Grade III accounts for 24.54%, 56.60% and 18.66% respectively, correlating well with other studies. In the present study 45.28% of the tumours were in Stage II, which is similar to the studies conduted by Geethamala et al, shelbaya et al and Vasudha et al.

Table2: Combined Hormone Receptor Status Compared With Other Studies

	ER+/PR+%	ER+/PR-%	ER-/PR+%	ER-/PR-%
Rashmikaul et al[5]	18.4%	16.3%	20.4%	49.9%
Geethamala et al[6]	52%	2%	0%	20%
Ambrose et al[7]	47%	12.2%	4%	36.8%
Dunnwald et al[8]	63%	13%	3%	21%
Present study	56.7%	5%	3.33%	35%

In our study, we reported both ER+/PR+ tumors were 56.66%, ER+/PR-tumors 5%, ER-/PR+ 3.33% and ER-/PR- were 35%. The percentage of ER+/PR+(56.66%), is similar to Dunnwald et al(63%), Geethamala et al (52%) and Ambrose et al (47%). The percentage of both ER-/PR- tumors, is correlated well with Ambrose et al(36.8%).

Most of the studies conducted were shown that, Grade I tumors are both ER+/PR+ range from 5.7% to 78.9% and both ER-/PR- range from 8.33 to 55.5%. while Grade II tumors were both ER+/PR+ range from 21.5% to 64.9% and both ER-/PR- range from 11.66% to 27.8%. while Grade III both ER+/PR+ range from 5.26% to 15.1% and both ER-/PR- range from 15% to 57.8%. Our study correlated well

with Geethamala et al and Suvearchala et al.

**Table3: Comparision Of Hormone Receptor Status With A Grade Of The Tumor.**

	Grade I		Grade II		Grade III	
	ER+/PR+	ER-/PR-	ER+/PR+	ER-/PR-	ER+/PR+	ER-/PR-
Geethamala et al	(78.9%)	(15.8%)	(64.9%)	(27.8%)	(07.4%)	(26.4%)
Suvarchala et al[9]	(33.3%)	(55.5%)	(51.8%)	(22.2%)	(05.3%)	(57.8%)
Masood et al[10]	(05.7%)	(21.0%)	(21.5%)	(19.4%)	(15.1%)	(21.5%)
Present study	(15.0%)	(8.33%)	(33.3%)	(11.7%)	(8.33%)	(15.0%)

Table4: Comparision Of Stage And ER/PR

Study	ER+/PR+	ER-/PR-
Adedayo et al[11]	StageI	StageIII
Rai et al [12]	StageI	StageIII
Zhou et al [13]	StageII	StageIII
Urmila Devi et al[14]	StageII	StageII
Present study	StageII	StageIII

Most of the studies shown that early stages (stage I & stage II) of the tumor correlated well with both ER+/PR+. Advanced tumors stage III correlated with both ER-/PR- receptor negativity.
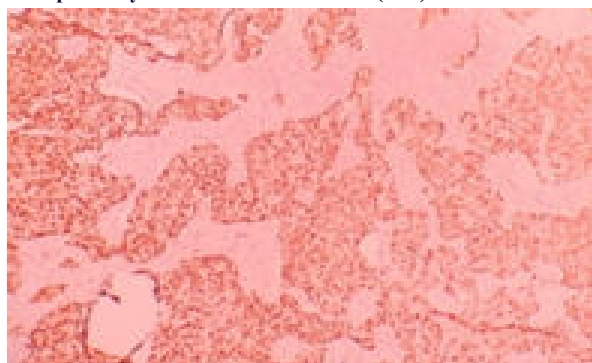
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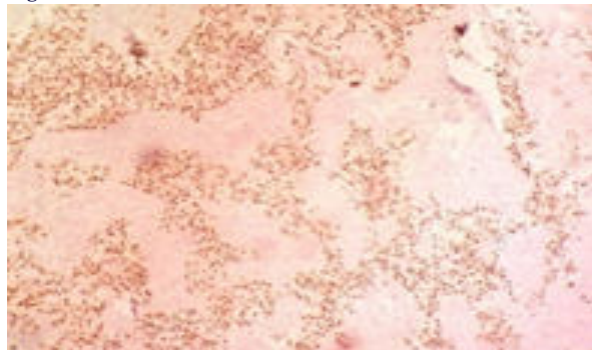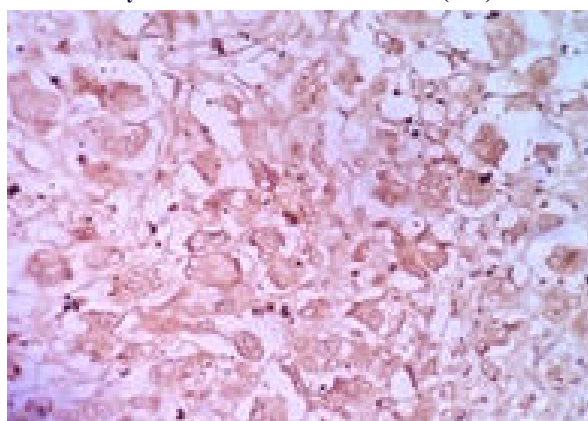

1.ER positivity 2+ to 3+ of the tumor cell nuclei (10X)
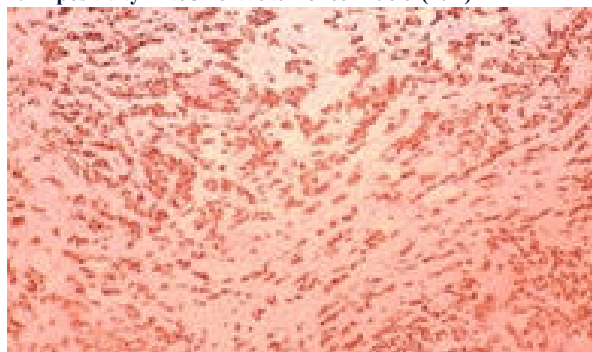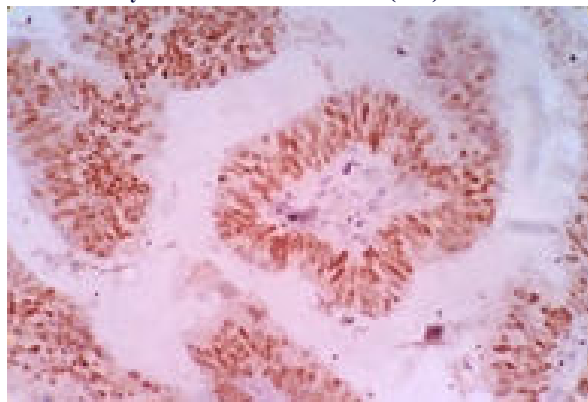

2.ER positivity3+ of the tumor cell nuclei (10X)

3.PR positivity 3+ in 100% of tumour cell nuclei (10X)

4 PR Positivity 2+ to 3+ Of The Tumor Cell Nuclei(10X)

5.ER Positivity 3+ In Mucinous Carcinoma(40X)

6. Papillary Carcinoma With 3+ ER Positivity(40X)

CONCLUSIONS:
The age group of the patients ranges from 26 to 80yrs with mean age was 47.19yrs. Left breast commonly involved (54.7%) than the right. Infiltrating duct cell carcinoma NOS type was most common histological type. Younger age group were associated with higher histological grade. Stage of the carcinoma did not show any correlation with the age of the patients. Most of the Grade II and Stage II tumors showed both ER+/PR+, while Grade III and Stage III were both ER-/PR- negative.

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