

A CLINICAL STUDY ON CARCINOMA BREAST IN RELATION TO ER AND PR STATUSN. V. Ramanaiah¹, P. Theja²**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: INTRODUCTION: Breast carcinoma is the most common malignant tumor and the leading cause of death in women worldwide¹. It accounts for 15 % of all cancer deaths². According to the World Health Organisation (WHO), approximately 70% of breast cancers occur in women with none of the known risk factors. Only about 5% of breast cancers are inherited. Various protocols are in use for the assessment of prognosis, and also to assist further management of these cases. Of various parameters, expression of hormonereceptors Estrogen receptor (ER) and Progesterone receptor (PR) are significant **AIMS AND OBJECTIVES:** To study the occurrence of ER and PR status in breast cancer patients attending S.V.R.R.G.G. Hospital. To correlate the expression of prognostic factors like age at presentation menarche, menopause, parity, tumor size, number of lymph nodes, metastasis histology, grading with ER and PR status. **MATERIALS AND METHODS:** This clinic opathological study of carcinoma breast was carried out in patients admitted to SVRRGG Hospital, Tirupati during the period from September 2011 to August 2013 after obtaining approval from scientific committee and ethical committee .Forty cases of breast carcinoma were taken into study. The clinical study done by interviewing, detailed examination and subjecting to relevant investigations and surgeries depending upon the stage of the disease. Excised specimen is sent for Histopathological examination in 10% formaline Reports of light microscopy (Hematoxilin and Eosin) and immunohistochemistry on tumor histology including MBR (Modified Bloom Richardson) grading and Estrogen and Progesterone status is analysed. **CONCLUSION:** In conclusion, ER and PR status correlates well with histopathological grading and other clinico-pathological parameters. Higher grade is associated with ER PR negativity. Hence. Immunohistochemical assessment of ER and PR status should be incorporated as a routine investigation. This along with histopathological grading will guide the clinicians to make correct choice of treatment protocols and helps in providing improved quality of life.

KEYWORDS: Breast carcinoma, Estrogen receptor (ER), Progesterone receptor (PR).

INTRODUCTION: AIMS AND OBJECTIVES: To study the occurrence of ER and PR status in breast cancer patients attending S.V.R.R.G.G. Hospital. To correlate the expression of prognostic factors like age at presentation menarche, menopause, parity, tumor size, number of lymph nodes, metastasis histology, grading with ER and PR status

MATERIALS AND METHODS: This clinicopathological study of carcinoma breast was carried out in patients admitted to SVRRGG Hospital, Tirupati during the period from September 2011 to August 2013 after obtaining approval from scientific committee and ethical committee. Forty cases of breast carcinoma were taken into study. The clinical study done by interviewing, detailed

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examination and subjecting to relevant investigations and surgeries depending upon the stage of the disease. Excised specimen is sent for Histopathological examination in 10% formalin Reports of light microscopy (Hematoxilin and Eosin) and immunohistochemistry on tumor histology including MBR (Modified Bloom Richardson) grading and Estrogen and Progesterone status is analysed.

RESULTS: Clinicopathological data of the case were analysed using epi info software and SPSS software. Data, graphs and tables were generated from Microsoft word and Microsoft excel.

Immunohistochemistry Markers:

ER STATUS	FREQUENCY	PERCENT
NEGATIVE	26	65
POSITIVE	14	35
TOTAL	40	100

TABLE 1: DISTRIBUTION OF ER STATUS

Estrogen receptor positivity seen in 35% of cases where as receptor negativity seen in 65% of cases.

PR STATUS	FREQUENCY	PERCENT
NEGATIVE	26	65
POSITIVE	14	35
TOTAL	40	100

TABLE 2: DISTRIBUTION OF PR STATUS

Progesterone receptor positivity seen in 35% of cases whereas 65% of cases show progesterone receptor negativity.

HER2/NEU STATUS	FREQUENCY	PERCENT
NEGATIVE	19	47.5
POSITIVE	21	52.5
TOTAL	40	100

TABLE 3: DISTRIBUTION OF HER2/NEU STATUS

Her2/neu receptor positivity seen in 52.5% cases receptor negativity seen in remaining 47.5% cases

DISTRIBUTION OF ESTROGEN AND PROGESTERONE RECEPTOR STATUS:

(+, +)	(+, -)	(-, +)	(-, -)
13	1	1	25
ER Status & PR Status			

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25 out of 40 patients were both ER and PR negative constituting 62.5% cases, 13 patients were both positive constituting 32.5% cases, 1 patient positive for ER receptor alone and remainder 1 patient positive for PR receptor alone constituting 2.5% each.

TABLE 4: DISTRIBUTION OF HORMONE RECEPTOR AND HER2/NEU

(+, +)	(+, -)	(-, +)	(-, -)
2	12	19	7
ER Status & Her2 neu Status			

(+, +)	(+, -)	(-, +)	(-, -)
1	13	20	16
PR Status & Her2 neu Status			

MARKERS	FREQUENCY	PERCENT
ER-/PR-/Her2neu-	6	15
ER+/PR+/Her2neu-	12	30
ER-/PR-/Her2neu+	19	47.5
ER+/PR+/Her2neu+	1	2.5
ER-/PR+/Her2neu-	1	2.5
ER+/PR-/Her2neu+	1	2.5
TOTAL	40	100

TABLE 5: DISTRIBUTION OF COMBINED HORMONE RECEPTOR AND HER2/NEU RECEPTOR STATUS

Majority of patients have ER and PR negativity and Her2neu positivity constituting 47.5% of the cases. Triple negative tumors constitute 15% of cases. There is only one Triple positive tumor, constituting 2.5% of cases. HER2/neu receptor status is inversely related to hormone receptor status

AGE	FREQUENCY
21-30	1
31-40	19
41-50	13
51-60	7
61-70	9
71+	1
TOTAL	40

TABLE 6: AGE DISTRIBUTION

Patients who took part in the study were from 30 to 72yrs of age. Majority of people were in the age group of 41- 50yrs (31.25%). Followed by 31-40yrs and 61-70 yrs. The mean age of the patients in the study is 50.9yrs

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AGE RANGE	NUMBER OF PATIENTS	IHC MARKERS ER STATUS(+)	IHC MARKERS ER STATUS(-)
21-30	1	0	1
31-40	9	3	6
41-50	13	3	10
51-60	7	2	5
61-70	9	6	3
71-80	1	0	1

TABLE 7: DISTRIBUTION OF ESTROGEN RECEPTORS IN DIFFERENT AGE GROUPS

Majority of ER positivity seen in elderly age group i.e, between 61 – 70 yrs. Patients between 31-40 and 41-50 form second most common ER positive age groups. Majority of ER negativity seen between 41-50 yrs. Second most common ER negative age group is between 31 and 40yrs. The statistical analysis is done using fisher exact test according to which the p value is 0.3068 which is not significant.

AGE RANGE	NUMBER OF PATIENTS	IHC MARKERS PR STATUS(+)	IHC MARKERS PR STATUS(-)
21-30	1	0	1
31-40	9	4	5
41-50	13	2	11
51-60	7	2	5
61-70	9	6	3
71-80	1	0	1

TABLE 8: DISTRIBUTION OF PROGESTERONE RECEPTOR STATUS IN DIFFERENT AGE GROUPS

Majority of PR positivity seen in elderly age group i.e, between 61 – 70yrs. Second most common PR positive age group is 31-40yrs. Majority of PR negativity seen between 41-50 yrs. Patients between 31-40yrs and 51-60 yrs form second most common PR negative age group. The statistical analysis is done using fisher exact test according to which the p value is 0.1722 which is not significant.

AGE RANGE	NUMBER OF PATIENTS	IHC MARKERS HER2 NEW STATUS(+)	IHC MARKERS HER2 NEW STATUS(-)
21-30	1	1	0
31-40	9	5	4
41-50	13	8	51
51-60	7	5	2
61-70	9	1	8
71-80	1	1	0

TABLE 9: DISTRIBUTION OF HER2 IN DIFFERENT AGE GROUPS

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HER 2 positivity is most common in patient's between 41-50. HER2 negativity is most common in 61-70yrs age group.

AGE AT MENARCHE	ER ST (--)	ATUS (+)	TOTAL
12	4	0	4
Percentage	100	0	100
13	14	7	21
Percentage	66.67	33.33	100
14	5	6	11
Percentage	45.45	54.55	100
15	3	0	3
Percentage	100	0	100
16	0	1	1
Percentage	0	100	100
Total	26	14	40
Percentage	65.00	35.00	100

TABLE 10: AGE AT MENARCHE

There is no significant correlation of age at menarche to that of receptor status since the p value is 0.117.

PARITY	FREQUENCY	PERCENT
<=0	2	5
1-3	30	75
4+	8	20
Total	40	100

TABLE 11: PARITY STATUS

5% patients are nulliparous. 20% has more than 4 children. 75% has less than 4 children.

BREAST FEEDING	FREQUENCY	PERCENT
Non pregnant	2	5
Yes	33	82.5
No	5	12.5
Total	40	100

TABLE 12: BREAST FEEDING STATUS

Majority of patients (82.5%) breast fed their children. 12.5% did not breast feed.

BREAST FEEDING	ER (--)	STATUS (+)	TOTAL
N	6	1	7
Percentage	85.71	14.29	100.00
Y	20	13	33
Percentage	60.61	39.39	100.00

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Total	26	14	40
Percentage	65.00	35.00	100.00

TABLE 13: DISTRIBUTION OF ER STATUS ACCORDING TO BREAST

92.86% of ER positive cases had breast feeding history. 76.9% of ER negative cases had breast feeding history. P value is 0.208 hence not significant. Compared to non-breast feeding status, breast feeding status has more PR positivity. But in both groups ER negative tumors predominate. p value is 0.208 hence not significant

	MENOP	AUSE	
ER status	A	NA	TOTAL
(-)	16	10	26
(+)	11	3	14
TOTAL	27	13	40

TABLE 14: DISTRIBUTION ER STATUS ACCORDING TO MENOPAUSE

76% of patients who didn't attained menopause showed ER negativity. 60% of postmenopausal women had ER negative tumors. 40% of postmenopausal patients showed ER positivity. Only 23% of premenopausal patients showed ER positivity. Only 23% of premenopausal patients showed ER positivity. Statistical test applied is Fisher exact test. p value is 0.23 hence insignificant.

	MENOP	AUSE	
PR status	A	NA	TOTAL
(-)	17	9	26
(+)	10	4	14
TOTAL	27	13	40

TABLE 15: DISTRIBUTION PR STATUS ACCORDING TO MENOPAUSE

70% of premenopausal showed PR negativity. 62.9% of postmenopausal women had PR negative tumors. 37% of postmenopausal patients showed ER positivity. Only 30% of premenopausal patients showed ER positivity. Statistical test applied is Fisher exact test. p value is 0.49 hence insignificant.

TUMOR SIZE	ER (-)	STATUS (+)	TOTAL
T1	0	1	1
T2	7	6	13
T3	8	5	13
T4	9	2	11
Tis	1	0	1
TX	1	0	1
TOTAL	26	14	40

TABLE 16: DISTRIBUTION OF ER STATUS ACCORDING TO TUMOR SIZE

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32.5% patients presented with T2 and T3 tumors each. 27.5% presented with T4. 2.5% cases presented with T1, Tis, Tx each. 81% of T4 tumors are ER negative 61% of T3 tumors are ER negative. 53% of T2 tumors are ER negative. chi square is 3.65. p value =0.17 hence not significant

TUMOR SIZE	PR (-)	STATUS (+)	TOTAL
T1	0	1	1
T2	6	7	13
T3	8	5	13
T4	10	1	11
Tis	1	0	1
TX	1	0	1
TOTAL	26	14	40

TABLE 17: DISTRIBUTION OF PR STATUS ACCORDING TO TUMOR SIZE

90% of T4 tumors are PR negative. 61% T3 tumors are PR negative. 46% of T2 tumors are PR negative. One patient had T1 tumor it is PR positive. p value is 0.13 hence not significant

NODAL STATUS	ER (-)	STATUS (+)	TOTAL
N0	12	9	21
N1	13	3	16
N2	1	1	2
N3	0	1	1
TOTAL	26	14	40

TABLE 18: ER NODAL STATUS

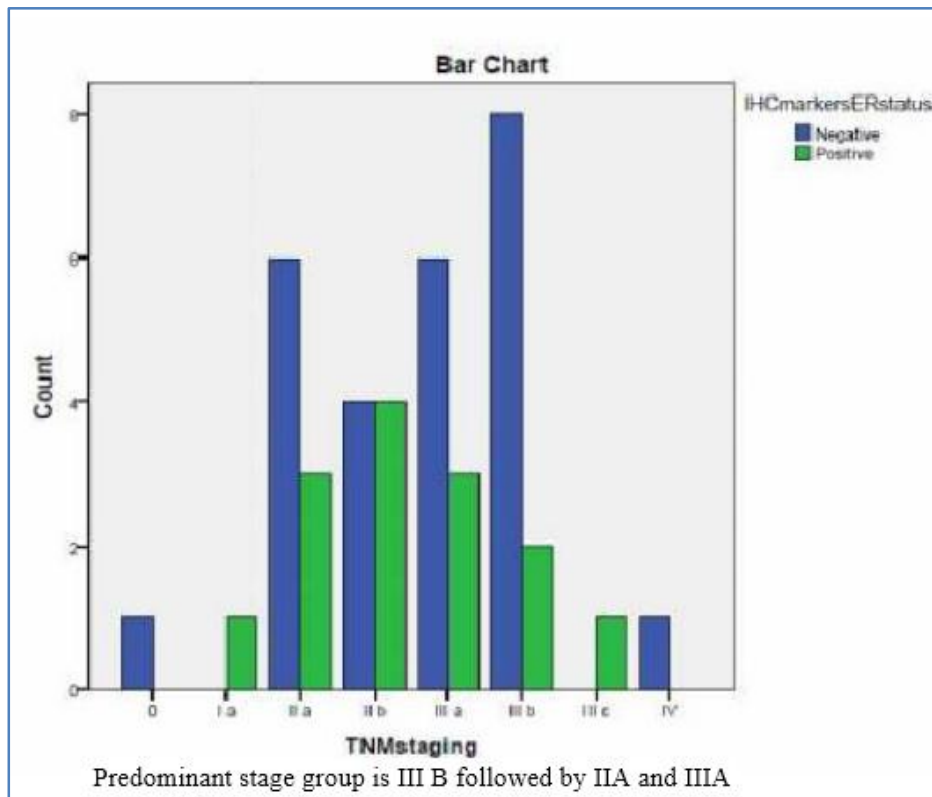
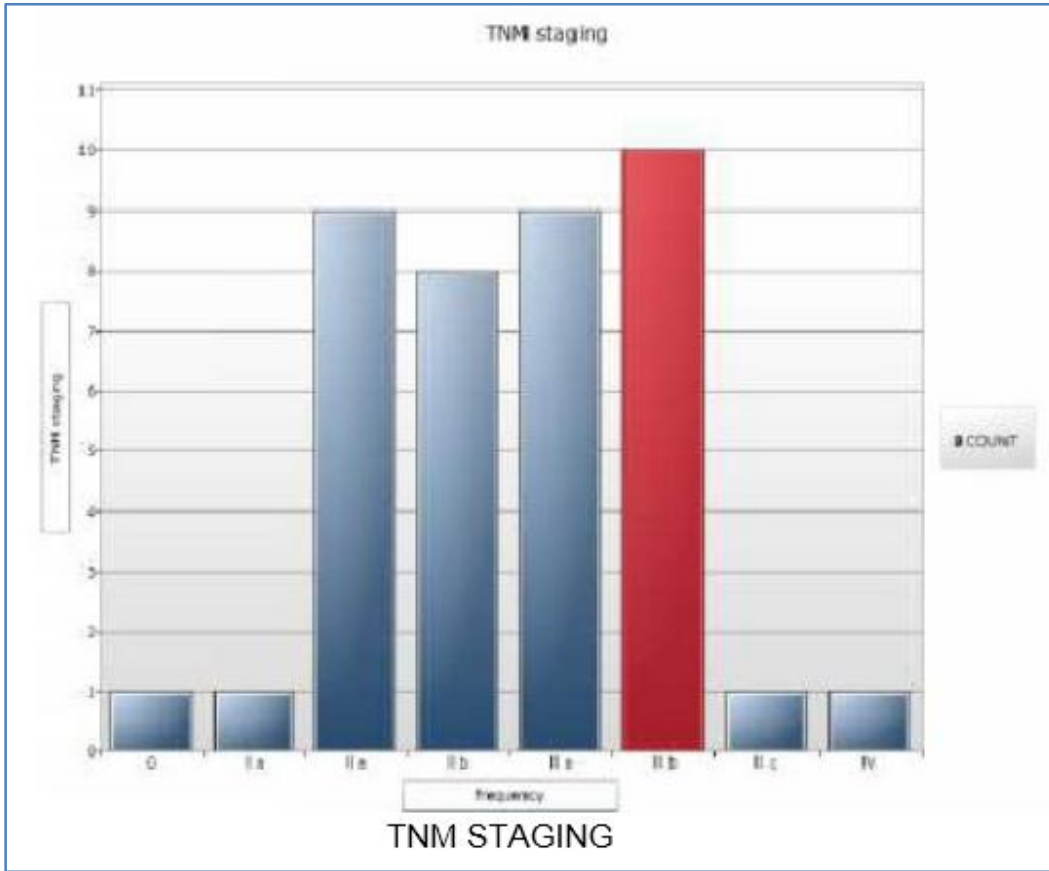
Among node negative patients 57% had ER negative tumors. Among N1 patients 81% had ER negative tumors. 50% of N2 cases had ER-ve tumors. Single patient who had N3 was ER positive. p value is 0.2 hence insignificant.

	ER	STATUS	
METASTASIS	(-)	(+)	TOTAL
M0	25	14	39
M1	1		1
TOTAL	26	14	40

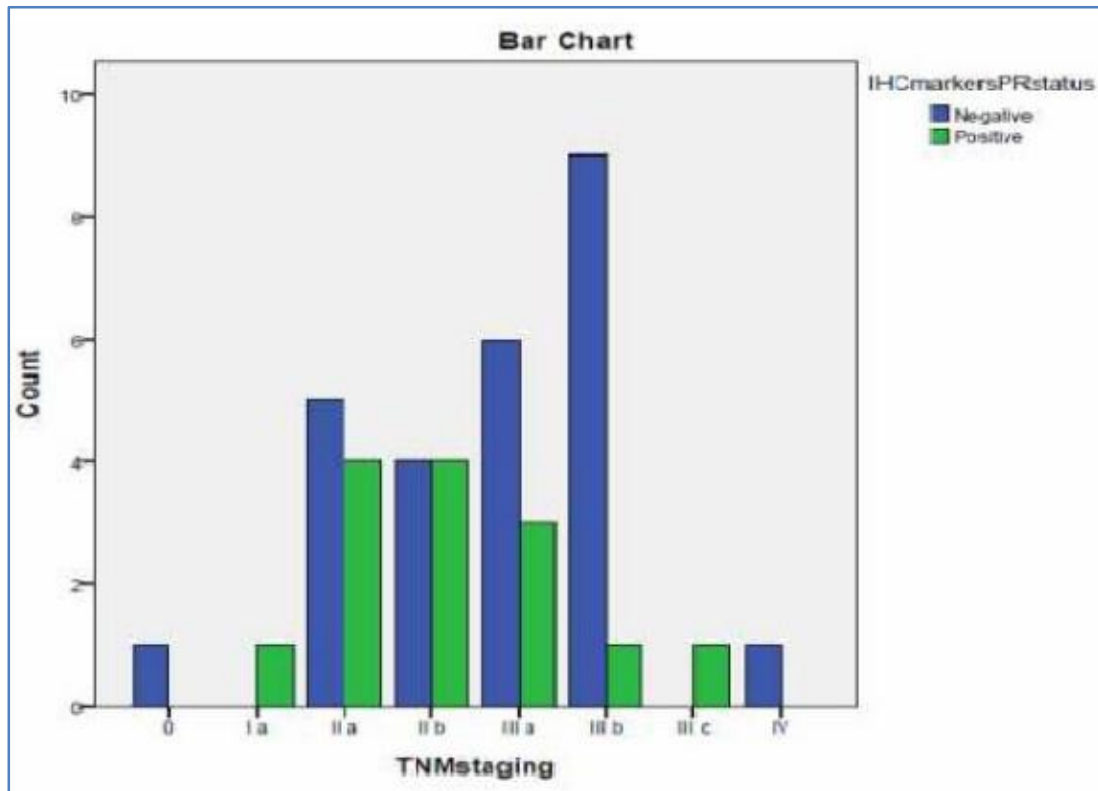
TABLE 19: DISTRIBUTION OF ER STATUS ACCORDING TO METASTASIS

64% of patients without metastasis had ER-ve status. 36% patients without metastasis had ER positive status. ER -ve status is seen in patient having metastasis. p value is 0.56 hence insignificant. Similar results are seen with distribution of PR status.

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In stage 1A ER positive status is seen. In 2A, 3A, 3B ER-ve status predominates. In 2B distribution of receptor status is similar. In 3c ER+ve status is seen. In stage 4 receptor negativity is seen.

Histological type	Frequency	% occurrence
IDC + ILC	1	2.50%
IDC comedone	1	2.50%
IDC-NOS	32	80%
Lobular	1	2.50%
medullary	2	5%
Mucinous	1	2.50%
NEC	1	2.50%
NHL, NEC, Undifferentiated	1	2.50%

TABLE 20: DISTRIBUTION STATUS OF ACCORDING TO HISTOLOGY

In stage IA PR positive status is seen. distribution of receptor status is similar. In negativity is seen. This is similar to that of ER. In IIa, IIIa, IIIa PR -ve status predominates. In IIb In IIIc PR +ve status is seen. In stage IV receptor status.

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The most common histologic type of breast carcinoma was Invasive Ductal carcinoma (NOS) type. 32 patients out of total 40 (80%) had IDC (NOS) type Next in frequency is Medullary carcinoma constituting 5% of total cases. This is followed by IDC with ILC (Invasive Lobular carcinoma) component, IDC with comedone necrosis, Lobular carcinoma, Mucinous, Neuro endocrine/undifferentiated carcinoma Neuroendocrine carcinoma -2.5% each

HISTOLOGICAL TYPE	ER STATUS – Ve	ER STATUS +ve	Total
IDC	20(62.5%)	12(37.5%)	32
IDC+ILC	1(100%)	0(100%)	1
IDC COMEDONE	1(100%)	0(100%)	1
LOBULAR	1(100%)	0(100%)	1
MEDULLARY	2(100%)	0(100%)	2
MUCINOUS	0(100%)	1(100%)	1
NEC	0(100%)	1(100%)	1
NHL/UNDIFFERENTIATED	1(100%)	0(100%)	1

TABLE 21: DISTRIBUTION OF ER STATUS ACCORDING TO HISTOLOGY

62.5% of IDC are ER -ve.37.5% of IDC are ER+ve. IDC with lobular component, IDC comedone, lobular, medullary, undifferentiated carcinomas are ER-ve. Mucinous, neuroendocrine carcinomas are ER +ve.

HISTOLOGICAL TYPE	PR STATUS – Ve	PR STATUS +ve	Total
IDC	20(62.5%)	12(37.5%)	32
IDC+ILC	1(100%)	0(100%)	1
IDC COMEDONE	1(100%)	0(100%)	1
LOBULAR	1(100%)	0(100%)	1
MEDULLARY	2(100%)	0(100%)	2
MUCINOUS	0(100%)	1(100%)	1
NEC	0(100%)	1(100%)	1
NHL/UNDIFFERENTIATED	1(100%)	0(100%)	1

TABLE 22: DISTRIBUTION OF PR STATUS ACCORDING TO HISTOLOGY

62.5% of IDC are PR -ve.37.5% of IDC are PR+ ve. IDC with lobular component, IDC comedone, lobular, medullary, undifferentiated carcinomas are PR- ve. Mucinous, neuroendocrine carcinomas are PR +ve.

LYMPHATIC INVASION	FREQUENCY	PERCENT
Yes	16	40
No	24	60
Total	40	100

TABLE 23: LYMPHATIC INVASION STATUS

Lymphatic invasion is seen in 40% of cases.

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LYMHPATIC INVASION	ER STATUS		TOTAL
	(-)	(+)	
N	7	9	16
Y	19	5	24
TOTAL	26	14	40

TABLE 24: DISTRIBUTION OF ER STATUS ACCORDING TO LYMPHATIC INVASION

79% patients with lymphatic invasion has ER negative status.56% of patients without lymphatic invasion has ER positive status. p value is 0.02 hence significant.

LYMHPATIC INVASION	PR STATUS		TOTAL
	(-)	(+)	
N	6	10	16
Y	20	4	24
TOTAL	26	14	40

TABLE25: DISTRIBUTION OF PR STATUS ACCORDING TO LYMPHATIC INVASION

83% patients with lymphatic invasion has PR negative status.62% of patients without lymphatic invasion has PR positive status. p value is 0.004 hence significant.

DISCUSSION: The present study consisted of analysis of 40 patients of breast cancer attending S.V.R.R.G.G. Hospital, Tirupati. The clinical characteristics along with histologic typing, grading and immunohistochemical staining for estrogen and progesterone receptors were studied. The objectives of this study were to document the oestrogen and progesterone receptor (ER & PR) status of breast cancer in the present study population and correlate the steroid receptor status of breast cancer with all relevant patient and tumour characteristics.

Raina V et al, ¹	2005	47years
Adedayo A et al, ²	2009	62.7years
Gulam Nabi Sofi, ³	2012	48.2years
Present study	2011-14	50.9years

TABLE 26: COMPARISON OF MEAN AGE AT PRESENTATION

Patients who took part in the study were from 30 to 72yrs of age. Majority of people were in the age group of 41-50yrs (31.25%). The mean age of the patients in the study is 50.9yrs which is much lower than the mean age of 62 year reported in study by Adedayo A et,² al in Wisconsin. The incidence rates in India begin to rise in the early thirties and peak at ages 50–64 years. The reasons are not entirely clear but a major factor could be under-diagnosis and under-reporting amongst the elderly population in India. (Raina et al.¹)

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Lakmini K.B Mudduwa, ⁴	2009	45.7%
Raina V et al, ¹	2005	53.7%
Redkar AA et al, ⁵	1992	43.9%
Adedayo A. ²	2009	77.9%
Gulam Nabi Sofi, ³	2012	66.3%
Present study	2013	35%

TABLE 27: COMPARISON OF ESTROGEN RECEPTOR POSITIVE STATUS

Receptor positivity is seen in only 35% cases much lower than that of reported in western literature.

Lakmini K.B Mudduwa, ⁴	2009	48.3%
Redkar AA et al, ⁵	1992	26.2%
Adedayo A. Onitilo, ²	2009	59.1%
Gulam Nabi Sofi, ³	2012	63.4%
Present study	2013	35%

TABLE 28: COMPARISON OF PROGESTERONE RECEPTOR POSITIVE STATUS

Progesterone Receptor positivity is seen in only 35% cases much lower than that of reported in western literature.

Rusiecki JA, ⁶	2005	33%
Redkar AA, ⁵	1992	23.8%
Gulam Nabi Sofi, ³	2012	60.4%
Present study	2013	32.5%

TABLE 29: COMPARISON OF COMBINED RECEPTOR STATUS: (ER +VE, PR +VE)

Combined receptor positivity is seen in 32.5% which is similar to that of Rusiecki JA et al.⁶

Rusiecki JA, ⁶	2005	34%
Redkar AA, ⁵	1992	53.3%
Gulam Nabi Sofi, ³	2012	30.7%
Present study	2013	62.5%

TABLE 30: COMPARISON OF COMBINED RECEPTOR STATUS(ER -VE, PR -VE)

The high proportion of receptor negative cases can be partially explained by the younger age of our patients or due to real racial differences. Majority of ER and PR positivity seen in elderly age group between 61 – 70 yrs. ER and PR immunoreactivity increased with advancing age in a study by Desai et al.⁷

Raina V et al, ¹	2005	49.7% premenopausal
Gulam Nabi Sofi, ³	2012	59.1% premenopausal
Present study	2013	22.5% premenopausal

TABLE 31: COMPARISON OF MENOPAUSAL STATUS

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Majority of the females in the present study were postmenopausal (67.5%). F. De Waard et al, 103 from their study have concluded that after 60 years of age, the age specific breast cancer risk is on the increase due to postmenopausal hormonal stimulus. While studying the relationship of menstrual status with hormone receptor status in our patients, we observed higher positivity of ER and PR in postmenopausal patients, though the difference is not statistically significant. Our results show that the proportion of both ER and PR positive tumors increase with age and in postmenopausal women and the same observations are very well reported in literature.⁹

Raina V et al, ¹	2005	Lump 96%
Gulam Nabi Sofi, ³	2012	Lump 85.3%
Present study	2013	Lump 72.5%

TABLE 32: COMPARISION OF MOST COMMON FORM OF PRESENTATION

Lakmini K.B Mudduwa, ⁴	2009	2-5cm (74%)
Raina V et al, ¹	2005	2-5cm (86.4%)
Adedayo A. Onitilo, ²	2009	<2cm (71.4%)
Gulam Nabi Sofi, ³	2012	2-5 (65.1%)
Present study	2013	>5cm (65%)

TABLE 33: COMPARISON OF TUMOUR SIZE

Lakmini K.B Mudduwa, ⁴	2009	57.7%positive
Adedayo A. Onitilo, ²	2009	31% positive
Gulam Nabi Sofi, ³	2012	65.2%positive
Present study	2013	47.5% positive

TABLE 34: COMPARISON OF AXILLARY NODE STATUS

No correlation was observed between ER and PR status and axillary nodal involvement or tumour size, suggesting that ER and PR are independent prognostic factors in breast cancer. Similar observation seen with Redkar AA et al.⁵ This is similar to Mudduwa,⁴ who found no statistically significant correlation between lymph node status and ER, PR scoring. No correlation was found between ER/PR status and lymph node metastasis.³

Adedayo A. Onitilo ²	2009	IDC NOS 72.7%
Gulam Nabi Sofi ³	2012	IDC NOS-80.3%
Present study	2013	IDC NOS -80%

TABLE 35: COMPARISON OF HISTOLOGY

62.5% of IDC are ER -ve.37.5% of IDC are ER+ ve. IDC with lobular component, IDC comedone, lobular, medullary, undifferentiated carcinomas are ER -ve. Mucinous, neuroendocrine carcinomas are ER +ve.

In a study by Desai et al,⁷ Infiltrating lobular carcinoma, mucinous carcinoma, and mixed tumours were more frequently ER & PR positive. High-grade infiltrating duct carcinomas, pure comedo ductal carcinoma, and medullary carcinoma were predominantly ER & PR negative.

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Lakmini K.B Mudduwa, ⁴	2009	I-14.6%, II-36.4%, III-49%
TB Pathak et al, ¹⁰	2011	I-20%, II-59%, III-21%
Adedayo A. Onitilo, ²	2009	I-21.2%, II-38.4%, III-35.9%
Gulam Nabi Sofi, ³	2012	I-7.6%, II-52.1%, III-40.3%
Present study	2013	I-37.5%, II-50%, III-12.5%

TABLE 36: COMPARISON OF TUMOUR GRADES

In our study Grade II tumors were more common followed by grade I. This is in contrast to the reported observations in studies from developed countries where well differentiated breast cancers are more common than poorly differentiated because of the use of routine screening mammography which has led to the detection of very early lesions ⁵

In the present study as the grade increased, the rate of ER and PR positivity decreased

Grade	ER positivity	PR expression
1	60%.	66%
2	20%	20%
3	20%	0%

TABLE 37: COMPARISON OF ER AND PR STATUS WITH GRADE OF BREAST CANCER

Statistically significant correlation present between grade and hormone receptor status in present study Lakmini KB et al.,⁴ Desai SB et al.⁷ and Pathak TB et al.¹⁰⁵, all had similar findings when ER was compared with histologic grade of the tumour.

Comparison of Lymphatic Invasion: 79% patients with lymphatic invasion has ER negative status.56% of patients without lymphatic invasion has ER positive status. p value is 0.02 hence significant Similar results were observed in a study by Desai et al¹¹.they conclude that the presence of lymphovascular invasion showed an inverse relationship with ER and PR reactivity .

CONCLUSION: In the recent years there has been outstanding advances in breast cancer diagnosis and management leading to earlier detection of disease and the development of more effective treatment. This has resulted in improved quality of life with significant decline in breast cancer deaths for those women living with the disease.

Prognosis and management of breast cancer are influenced by classic variables such as histologic type and grade, tumor size, lymph node status, status of hormone receptors- ER and PR.

In this study an attempt was made to understand the correlation of ER and PR status with histopathological grading and clinicopathological parameters. In conclusion, ER and PR status correlates well with histopathological grading and other clinico-pathological parameters. Higher grade is associated with ER PR negativity. Hence. immunohistochemical assessment of ER and PR status should be incorporated as a routine investigation. This along with histopathological grading will guide the clinicians to make correct choice of treatment protocols and helps in providing improved quality of life.

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AUTHORS:

1. N. V. Ramanaiah
2. P. Theja

PARTICULARS OF CONTRIBUTORS:

1. Professor & HOD, Department of General Surgery, S. V. Medical College and SVRRGGH, Tirupati.
2. Senior Resident, Department of General Surgery, S. V. Medical College and SVRRGGH, Tirupati.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. N. V. Ramanaiah,
18-2-73F, Korlagunta Main Road,
Near new municipal office
Tirupati, Andhra Pradesh.
E-mail: dr.nannam.vp@gmail.com

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