EVALUATION OF RECEPTOR STATUS IN CARCINOMA BREAST

General Surgery

Dr Mahesh K.	Professor, Department of General Surgery, J.J.M Medical College, Davangere, Karnataka, India.
Dr Jagadeesha BVC	Professor, Department of General Surgery, J.J.M Medical College, Davangere, Karnataka, India.
Dr Varsha L. Reddy*	Post Graduate, Department of General Surgery, J.J.M Medical College, Davangere, Karnataka, India. *Corresponding Author
Dr Naveen D. T.	Post Graduate, Department of General Surgery, J.J.M Medical College, Davangere, Karnataka, India.
Dr Jnani Dinesh Reddy Reddibattula	Associate Consultant, Department of Surgical Oncology, Manipal Hospital, Vijayawada.

ABSTRACT

Background/Objective: In Indian population, there has been a fairly steady and large increase in the incidence of breast cancer over the past several decades and its management requires complex multidisciplinary approach to increase overall survival rate. As data for incidence of luminal subtypes is Indian patients is absent which will indicate the prognosis of the patient, this study was taken up to study the incidence of receptor status and hence luminal subtypes in Indian patients. **Methods:** This study was conducted in the Department of General Surgery at Chigateri General Hospital and Bapuji Hospital attached to J.J.M. Medical college, Davangere. 30 patients with diagnosed carcinoma breast were selected according to the inclusion criteria and tumor tissue was sent to pathology lab to determine the Estrogen Receptor (ER), Progesterone Receptor (PR), Her 2 Neu status and Ki67 index. **Results:** 50% are above 50 years (post- menopausal) and 90% of the patients are females. Histopathological examination showed that 76.6% were diagnosed with IDC and majority of patients are present in stage IIB and stage IIIA . In our study we observed luminal A subtypes comprised of 23.33% of cases where as luminal B subtypes comprised of 20% of cases, Majority of cases i.e. 33.33% were basal like / triple negative with poor prognosis .Her 2 Neu amplified cases comprised 23.33% of total study population which is similar to western population. **Conclusion:** The receptor status is very different on out study population of Indian patients as compared to the western population and hence it is recommended that ER, PR, Her 2 Neu and Ki67 index analysis should be performed routinely on all breast cancer patients which changes the treatment plan and impact on the overall survival rate.

INTRODUCTION

In Indian women, breast cancer is the most common cause of death due cancer next to carcinoma cervix and has shown fairly steady and large increase in the incidence of the disease. The relatively constant mortality despite increase in incidence of the disease maybe the result of improved outcome secondary to earlier detection and advances in treatment modalities.

The management of breast cancer requires a complex multi-disciplinary approach involving surgeons, pathologists, radiologists, medical oncologists and other professionals such as counsellors and breast nurses.

Guideline from American Society of Clinical Oncology(ASCO) and the College of American Pathologists (CAP) that both Estrogen(ER) and Progesterone receptor (PR) analysis should be performed routinely in all invasive breast cancers and the information be used to select patients for endocrine therapy since there is evidence of potential benefit of PR testing to predict the response of ER- negative, PR- positive patients .[1-3]

Breast cancer patients with tumors that are estrogen receptor positive and/or Progesterone receptor positive have lower mortality risks after their diagnosis compared to women with ER and/or PR negative disease.[4-9] clinical trials have also shown that survival advantage for women with hormone receptor positive tumors is enhanced by treatment with adjuvant hormonal and /or chemotherapeutic regimens.[10-12]

Triple negative breast cancer accounts for approximately 20 percent of breast cancers diagnosed worldwide, which amounts to almost 200,000 cases each year.[13]

CASE STUDY

This study was conducted in the Department of General Surgery at

Chigateri General Hospital and Bapuji Hospital attached to J.J.M. Medical College,Davangere.30 patients who were diagnosed on the basis of clinical examinations, supportive radiological findings and FNAC proven carcinoma breast were studied within 2 years study period.

All these patients also underwent routine investigations and special investigations like biopsy of the tumor with study of the receptor status (ER, PR, Her 2 Neu,Ki67)

RESULTS

| PARAMETERS		FREQUENCY	PERCENT
ER	POS	13	43.3
	NEG	17	56.7
PR	POS	13	43.3
	NEG	17	56.7
HER-2 NEU	POS	12	40.0
	NEG	18	60.0
Ki67	LOW	19	63.3
	HIGH	11	36.7
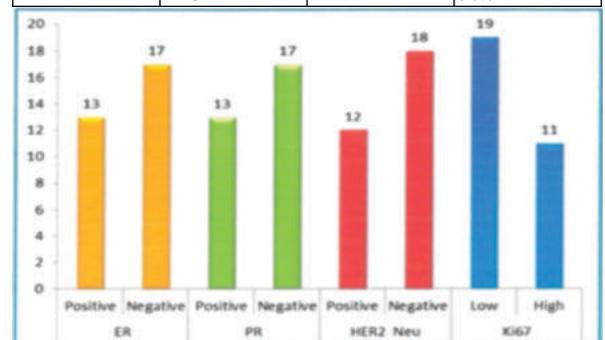
- Out of 30 patients 43.3% (n=13) are ER positive and 56.7% (n=17) are ER negative.
- 43.3% (n=13) are PR positive and 56.7% (n=17) are PR negative.
- 40% (n=12) are Her2 Neu positive and 60% (n=18) areHer2Neunegative.
- 63.3% (n=19) are with low Ki67 index and 36.7% (n=11) are with high Ki67 index.

PARAMETERS	Ki67		FISCHER'S EXACT TEST
	LOW	HIGH	
ER+ PR+	7	1	P<0.04, S
ER- PR-	6	1	P<0.125, NS
ER+PR+HER2 NEU +	4	1	P<0.318, NS
ER-PR-HER2 NEU-	1	9	P<0.000, HS
ER+PR+HER2 NEU-	7	1	P<0.06, NS
ER-PR-HER2 NEU+	6	1	P<0.125, NS

S-Significant; NS- Not Significant

HS-Highly Significant
- 7 patients comes under luminal A type (ER+PR+Her2 Neu- with low Ki67).
- 6 patients comes under luminal B type (ER+PR+Her2 Neu- with high Ki67) or ER+Her2 Neu+ any Ki67, any PR)
- 10 patients comes under basal like/triple negative (ER-PR-Her2 Neu-)
- 7 patients comes under Her2 Neu amplified (ER-PR-Her2 Neu+).
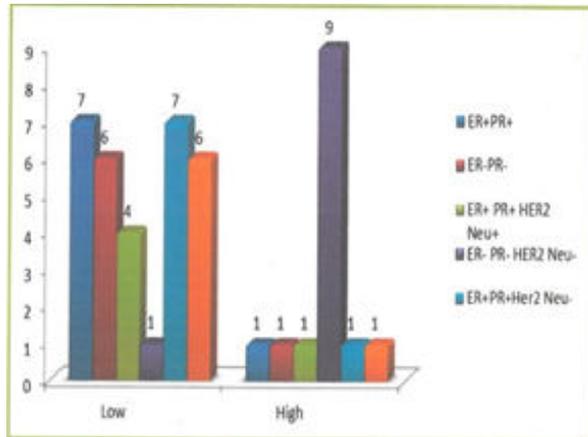
DISCUSSION
In our study we found out majority of patients 50% (n=15) are above 50 years (post-menopausal) where as 23.3% (n=7) patients are below 40 years (pre- menopausal) and 26.7% (n=8) are present in 40-50 years of age (perimenopausal).

90% (n=27) the patients are female and 10% (n=3) are males.

Histopathological examination showed that 76.6% (n=26) were diagnosed with IDC, where as only 6.7% (n-2) were diagnosed with medullary and papillary carcinoma. Majority of patients i.c. 30% (n=9) are in stage IIB and stage IIIA each.

10% (5) are in stage IIA, 13.3% (n=4) are in stage IIIB.

ER expression was positive in 43.3% (n=13) similarly even PR expression a positive in 43.3% (n=13), 40% (n=12) of the patients were Her 2 Neu positive. Among all the patients 63.3% (n=19) expressed low Ki67 index where is the rest 36.7% (n=11) expressed high Ki67 index.

In a study conducted by Ranvijay Singh et al 44.6% of patients were ER positive 40.4% are PR positive and 34.2% are Her 2 Neu positive,[14]

In our study Hormone receptor (ER & PR) positive cancers comprised of 30% (n=8) of the patients.Majority of the patients i.e. 33.3% (n=10) are triple negative (ER- PR- Her 2 Neu-).

According to Parise CA, et al[15] majority of patients are i.e. 80 percent were ER+PR+ where as only 13 percent of patients are triple negative.

In our study Her 2 was over expressed in 40% (n=12) patients (Table -5 & Graph 5) of these 5 patients were ER+ PR+ and 7 patients were ER-PR-.

According to Parise CA et al,[15,16] Her 2 Neu was over expressed in 23 percent of patients with majority of them i.e. 67% of patients are ER+ PR+ and 32 percent were ER- PR- .

In our study we observed luminal 'A' subtype comprised of 23.33% (n=7) of cases. Whereas luminal 'B' subtype comprised of 20% (n=6) of cases.

Majority of cases i.e. 33.33% (n=10) were basal like / triple negative. Using Fisher's exact test p<0.000 which is highly signficiant. And Her 2 Neu amplified cases comprised 23.33% (n=7) of total study population.

Whereas the least number of cases i.e. 10-15% were Her2 amplified,[17,18] In our study we observed triple negative which comprised of majority of patients was more common in 40-50 years of age group. Whereas Her 2 Neu amplified was more common in >50 years (post-menopausal) age.

CONCLUSIONS
In our study majority of the patients are triple negative (33.33%) which is a very poor prognosis and has low overall survival rate compared to western population studies where triple negative consisted on only 15-20 % cases only.

In our study luminal 'A' subtype comprised of only 23.33% which has got a very good prognosis in terms of overall high survival rate and less recurrence were as compared to western population studies which is 40% incidence.

The incidence of Her 2 Neu amplified are more in our study compared to western population and luminal 'B' cancers are almost of same incidence.

So, we recommend that Estrogen Receptor (ER), Progesterone Receptor (PR), Her 2 Neu and Ki67 index analysis should be performed routinely on all breast cancer patients which changes the treatment plan and impact on the overall survival rate.

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