

ORIGINAL RESEARCH

## Assessment Of Hormone Receptor Status In Breast Carcinoma And Its Relation To Lymph Node Status

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### ABSTRACT

**Background:** The present study was undertaken for assessing hormone receptor status in breast carcinoma and its relation to lymph node status.

**Materials & methods:** 20 breast cancer patients were enrolled. Complete demographic and clinical details of all the patients were obtained. Patient and tumor characteristics of age, tumor size and number of nodes involved was recorded. Estrogen receptor (ER), progesterone receptor (PR) (positive and negative) were noted separately. All the necessary investigations were carried out (Core cut biopsy/FNAC). Intraoperative details were recorded in each patient. Histopathology examination of lymph nodes was done.

**Results:** Lymph node involvement was seen in 75 percent of the patients. PR positivity was seen in 50 percent of the patients while ER Positivity was seen in 45 percent of the patients. While assessing the correlation of lymph node status with PR and ER status, significant results were obtained. All the breast cancer patients with lymph node involvement were PR and ER positive.

**Conclusion:** Majority of the patients were diagnosed with breast cancer in their 40s. Most of the women in the younger age groups were estrogen receptor (ER) and progesterone receptor (PR).

**Key words:** Breast cancer, ER Status, PR status

### INTRODUCTION

Breast cancer (BC) is most common type of cancer affecting women worldwide. Recent research conducted in Mumbai, India, found that clinical breast exams performed every two years by health professionals significantly reduced the stage of breast cancer at diagnosis and reduced breast cancer all-cause mortality by fifteen percent but it was not significant. Breast cancer has various risk factors. Age, age at menarche/menopause, maternal history, duration of lactation, breast changes, genetics, diet, environment, and hormonal factors are all significant risk factors. Estrogen receptor (ER) is an important diagnostic factor, as approximately three-fourth of patients of invasive breast cancer have markedly increased ER expression. According to current guidelines, both primary invasive tumours and recurrent lesions should be measured for ER expression.<sup>1-3</sup>

ER-positive breast cancer patients show significant PR expression, whereas ER-negative breast cancer patients do not express PR at all. Since the ER regulates PR expression, the physiological properties of PR reveal whether the ER pathway is activated. However, both the breast cancer biomarkers ER and PR are widely distributed in breast cancer cells and are used for both diagnosis and prognosis. Higher PR expression correlates better with overall survival, time to recurrence, and time to treatment failure or progression, whereas lower PR values are usually associated with more severe disease progression, leading to prognostic and Lower recurrence rate. As a result, the determination of PR expression has a significant impact on the treatment of breast cancer patients.<sup>4-6</sup> ER and PR are critical in breast cancer therapy as they are essential for breast cancer growth and development. It has already been established that cases with high ER positivity respond better to endocrine therapy alone than those with low to moderate values.<sup>7</sup> Hence; under the light of above-mentioned data, the present study was undertaken for assessing hormone receptor status in breast carcinoma and its relation to lymph node status.

## MATERIALS & METHODS

The present study was undertaken for assessing hormone receptor status in breast carcinoma and its relation to lymph node status. 20 breast cancer patients were enrolled. Complete demographic and clinical details of all the patients were obtained. Patient and tumor characteristics of age, tumor size and number of nodes involved was recorded. Estrogen receptor (ER), progesterone receptor (PR) (positive and negative) were noted separately. All the necessary investigations were carried out (Core cut biopsy/FNAC). Intraoperative details were recorded in each patient. Histopathology examination of lymph nodes was done. All the results were recorded in Microsoft excel sheet and were analyzed using SPSS software.

## RESULTS

Mean age of the patients was 43.8 years. Right side involvement occurred in 60 percent of the cases. Lymph node involvement was seen in 75 percent of the patients. PR positivity was seen in 50 percent of the patients while ER Positivity was seen in 45 percent of the patients. While assessing the correlation of lymph node status with PR and ER status, significant results were obtained. All the breast cancer patients with lymph node involvement were PR and ER positive.

**Table 1: Distribution of patients according to lymph node involvement**

Lymph nodes involvement	Number of patients	Percentage
Positive	15	75
Negative	5	20
Total	20	100

**Table 2: Distribution of patients according to ER/PR status**

ER/PR status	Number of patients	Percentage
ER Positive; PR Positive	7	35
ER Positive; PR Negative	2	10
ER Negative; PR Positive	3	15
ER Negative; PR Negative	8	40
Total	20	100

**Table 3: Correlation of lymph node status with PR status among breast carcinoma patients**

Lymph node status	PR Positive		PR Negative		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Involved	10	100	4	40	14	70
Not involved	0	0	6	60	6	30
Total	10	100	10	100	20	100
p- value	0.000 (Significant)					

**Table 4: Correlation of lymph node status with ER status among breast carcinoma patients**

Lymph node status	PR Positive		PR Negative		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Involved	9	100	4	36.67	13	65
Not involved	0	0	7	63.33	7	35
Total	9	100	11	100	20	100
p- value	0.000 (Significant)					

## DISCUSSION

Breast cancer is among the major cause of mortality among females aged between twenty years and sixty years. It is estimated that breast cancer is responsible for approximately thirty percent of all new malignant diagnoses among females in the year 2019. Breast cancer is associated with multiple variables of tumor heterogeneity. Among females, it is the 2<sup>nd</sup> most common factor responsible for mortality across the globe. Evolution of breast cancer is silent in majority of the cases. Hence; its detection occurs usually during screening. At the same time, few proportion of patients might demonstrate breast lump, alteration in breast morphology, or nipple discharge. Few patients might also show mastalgia.<sup>6-10</sup> Hence; under the light of above-mentioned data, the present study was undertaken for assessing hormone receptor status in breast carcinoma and its relation to lymph node status.

Mean age of the patients was 43.8 years. Right side involvement occurred in 60 percent of the cases. Lymph node involvement was seen in 75 percent of the patients. PR positivity was seen in 50 percent of the patients while ER Positivity was seen in 45 percent of the patients. In a study conducted by Senel F et al, authors identified the hormone receptor status in breast cancers and looked into the associations between HER2 status, single hormone receptor positivity, double hormone positivity, double hormone negativity, and some clinicopathological features. The rate of ER and PR positivity was lowest in high-grade tumours. When taking into account the four subtypes, cases older than 45 years old were, at most, double hormone receptor-positive (75%) and ER-positive/PR-negative (56%), respectively. Most high-grade tumours lacked at least one double hormone receptor and were double hormone receptor negative.<sup>11</sup>

In the present study, while assessing the correlation of lymph node status with PR and ER status, significant results were obtained. All the breast cancer patients with lymph node involvement were PR and ER positive. In women with breast cancer who were seen at a public hospital, Shah Aet al 2022 examined the relationship between age and hormonal receptor status (HRS). The average age of females with breast cancer at the time of presentation was 46.57 11.45 years. 180 females out of 317 had positive ER (oestrogen receptor) expression (56.8%), 173 had positive PR (54.6%), and 121 had positive HER2/neu (human epidermal growth factor receptor) expression (38.2%). The age group of 41–50 years showed the highest proportions of positive ER (36.7%), PR (38.2%), and HER/2 neu (37.2%) expression, respectively. While there was no correlation between age and HER/2 neu

expression, there was a statistically significant correlation between age and ER expression and age and PR expression. According to the current study, the majority of patients received their breast cancer diagnoses when they were in their 40s. While the older aged women were more frequently ER, PR, and HER2/neu positive, the association between age or HER2/neu was not statistically significant. The majority of the women in the younger age groups were ER, PR, and HER2/neu negative.<sup>12</sup>

## CONCLUSION

Majority of the patients were diagnosed with breast cancer in their 40s. Most of the women in the younger age groups were estrogen receptor (ER) and progesterone receptor (PR).

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