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A PROSPECTIVE STUDY OF "CORRELATION OF PATHOLOGICAL RESPONSE AND HORMONE RECEPTOR STATUS AFTER NEOADJUVANT CHEMOTHERAPY IN CARCINOMA BREAST".

General Surgery

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ABSTRACT

AIM : To know the association between hormone receptor status and pathological response in carcinoma breast after neo adjuvant chemotheraphy.
Methods: Pts with LABC(Locally advanced breast cancer) stageII and stage III treated with PC(Primary Chemotherapy) including A(anthracycline) and T(taxane) were grouped according to ER(estrogen receptor), PR(progesterone receptor) and HER2 status, and the pCR(pathological complete response) rate were analyzed using the chi-squared test and correlations with a p value of ≤0.05 were considered statistically significant.
Conclusion: We conclude that neoadjuvant chemotheraphy is recommended for patients with hormone receptor negative status , which gives pCR Thereby enhances patients OS(overall)& DFS(disease free survival).

KEYWORDS

Hormone Receptor Status, Pathological Response, Carcinoma Breast, Neo Adjuvant Chemotheraphy.

ELIGIBILITY CRITERIA :

- **INCLUSION CRITERA :**
- **1.**Patients Of Reproductive Age Group(20-60 Yrs) Diagnosed As Carcinoma Breast
2. Lump Size More Than 5cms
3. No Distant Metastasis
4. Patients Consented For Inclusion In The Study

EXCLUSION CRITERIA :

1.All The Patients Presenting With Lump Size Less Than 5cm
2.Age More Than 60 Years
3.With Metastasis Patients
4.Pregnancy

INTRODUCTION

Breast cancer is the most common malignancy found in women worldwide, with a relatively high incidence of 20% of all malignancies [1]. Neoadjuvant chemotherapy (NAC) has been a relatively standard treatment for locally advanced and initially inoperable breast cancer. This strategy allows patients to undergo breast-conserving surgery and provides information on the efficacy of chemotherapy [2].

Before the initiation of NAC, core-needle biopsy (CNB) is usually performed to establish the histological diagnosis. NAC for breast cancer is evolving and subsequent adjuvant systemic treatment is mainly based on the presence of the estrogen receptor (ER), progesterone receptor (PR) and human epidermal growth factor receptor 2 (HER2) statuses on the core needle biopsy. Breast cancer is a composite, and immunohistochemistry allows the definition of three main subgroups with different therapeutic responses and different outcomes, including luminal tumors, HER2-positive and triple-negative subtype [3]. The effect of NAC varies according to the intrinsic subtype of tumors. Patients with HER2-overexpressed and triple-negative breast cancer have better responses and higher pathologic complete response (pCR) rates to NAC [4]. On the other hand, HR-positive breast cancer is widely known as a subtype with favorable prognosis despite lower sensitivity to chemotherapy. Adjuvant endocrine therapy is indicated in all patients with a positive hormone receptor (HR) status, which is defined as ER positive and/or PR positive. Several retrospective breast cancer studies have suggested that NAC significantly altered estrogen receptor (ER) or progesterone receptor (PR) status [5-9], however, it is not well known whether these receptors change after NAC, requiring a change in further adjuvant systemic treatment, and whether an HR switch may identify patients who would benefit from adjuvant endocrine therapy and impact the long-term outcome. The current study was therefore conducted with the objective of evaluating the frequency and impact of change in the HR status on the long-term outcomes in the breast cancer patients receiving NAC.

Materials and methodsWe selected 50 female patients with primary breast carcinoma treated with both NAC and surgery, which were diagnosed from 2016 to 2017 by needle core biopsy at Government Rajaji Hospital Madurai. A complete history of patient characteristics, clinical and imaging examinations (e.g., bilateral mammography, breast ultrasound), and the pathologic assessments of morphologic and biologic features were collected. Patients with metastatic diseases before surgery, bilateral breast cancer and inflammatory breast cancer were not included in this study . The clinical stages of the patients ranged from cT2N0M0 to cT3dN3M0. The mean age at the time of diagnosis of breast cancer was almost 43. Patients with positive HR status (regardless of before or after NAC) were treated with adjuvant endocrine therapy following chemotherapy.

PATHOLOGICAL RESPONSE

pCR is defined as the absence of residual invasive and in situ cancer on hematoxylin and eosin evaluation of the complete resected breast specimen and all sampled regional lymph nodes following the completion of neoadjuvant systemic therapy (ie, ypT0 ypN0 in the current American Joint Committee on Cancer [AJCC] staging system).
Evaluation of NAC response

The clinical response to NAC was evaluated by physical and imaging examinations according to RECIST. No clinical evidence of tumor in the breast and axillary lymph nodes was defined as a complete response (CR). Reduction in the greatest tumor diameter exceeded 30% was graded as a partial response (PR). Tumor reduction less than 30% or an increase up to 20% in the greatest diameter was considered as a stable disease (SD). Tumors that increase of more than 20% in the greatest diameter or appearance of new disease were considered as a progressive disease (PD). The achievement of pathologic complete response (pCR) on postoperative specimens was defined as the absence of invasive residuals in breast or nodes.

OBJECTIVES AND END POINTS

The aim of this analysis was to assess the prognostic relevance of pCR (according to the best definition as identified in the first part of this analysis) in various intrinsic subtypes.. Intrinsic breast cancer subtypes were determined according to clinicopathologic criteria .The following definitions were used:

Luminal A–like tumors.
ER positive and/or PgR positive, HER2 negative, grade 1 or 2.

Luminal B/HER2-negative–like tumors.
ER positive and/or PgR positive, HER2 negative, grade 3.

Luminal B/HER2-positive–like tumors.
ER positive and/or PgR positive, HER2 positive, all grades.

HER2-positive (nonluminal) –like tumors.
ER negative and PgR negative, HER2 positive, all grades.

TN tumors.
ER negative, PgR negative, HER2 negative, all grades.

HORMONE RECEPTOR STATUS

ER/PR	No Of Cases	Percentage
Positive	18	36
Negative	32	64
Total	50	100

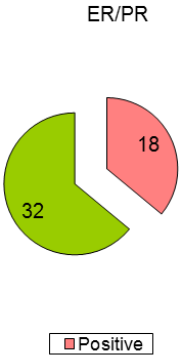


FIG.1

PATHOLOGICAL STAGE

Pathological Stage	No Of Cases	Percentage
ypT1N0M0	2	4
ypT1N1M0	1	2
ypT2N0M0	23	46
ypT2N1M0	7	14
ypT3N0M0	6	12
ypT3N1M0	3	6
ypT3N2M0	2	4
ypT4N1M0	5	10
ypT4N2M0	1	2
Total	50	100

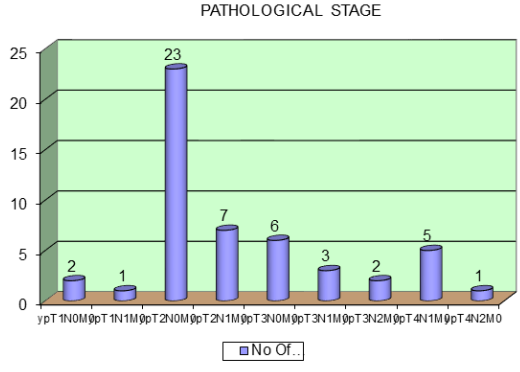
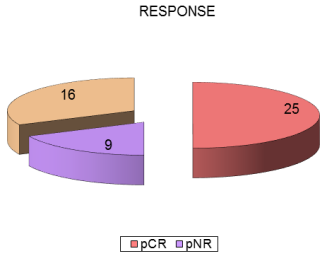


FIG.2 & TABLE 2

POST NEOADJUVANT CHEMO RESPONSE

Response	No Of Cases	Percentage
pCR	25	50
pNR	9	18
pPR	16	32
Total	50	100



HORMONE RECEPTOR VS PATHOLOGICAL RESPONSE

ER VS RESPONSE	PCR	PNR	PPR
POSITIVE (18)	1	9	8
NEGATIVE (32)	24	0	8
TOTAL	25	9	16

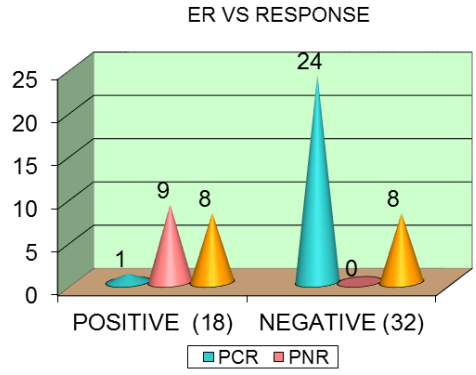


FIG.4 & TABLE 4

DISSCUSSION

Nowadays, Neo adjuvant therapy remains the most efficient adjuvant treatment for HR-negative breast cancer, with a gain in DFS of around 15% at 15 years in a meta-analysis database . It is generally accepted that an HR negative status predicts response to neo adjuvant therapy. 50 patients with breast cancer included in this study , preoperative core needle biopsy done and hormone receptor status assessed. Neoadjuvant Chemotherapy given after hormone receptor status.

Hormone receptor negativity was seen in more no of patients . ER+PR-HER2+, ER-PR+HER2+ and ER-PR+HER2-. In the neoadjuvant setting the pathological complete response (pCR) to primary chemotherapy (PC) is associated to negativity for ER and PR receptors, and in patients (pts) with HER2 + BC, the addition of trastuzumab to PC increasing the rate of pCR. The aims of this study were to determine the pCR of PC with anthracyclines (A) and taxanes (T) in pts with LABC grouped according to ER, PR and HER2 status.

CONCLUSION

We conclude that pCR is associated with highly favorable outcome. ypN+ residuals only are associated with increased relapse risk and should therefore no longer be considered as pCR. Extent of residual disease and evidence of regression provide helpful additional prognostic information. pCR is a suitable surrogate end point for patients with HER2-positive (nonluminal), TN, and luminal B/HER2-negative tumors but not for luminal B/HER2-positive and luminal A tumors.

In this study 50 post mastectomy specimens were collected hormone receptor negativity is seen in most patients .Pathological response assessed
pCR is seen 50% of patients
pPR is seen in 32% of patients
pNR is seen in 18% of patients

We conclude that neoadjuvant chemotherapy is recommended for patients with hormone receptor negative status , which gives pCR . Thereby enhances patients OS& DFS.

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