International Journal of Clinical and Diagnostic Pathology

ISSN (P): 2617-7226
ISSN (E): 2617-7234
www.patholjournal.com
2019; 2(2): 349-351
Received: 14-05-2019
Accepted: 18-06-2019

Dr. Indudhara PB
Associate Professor, Department of Pathology, Subbaiah Institute of Medical Sciences, Shimoga, Karnataka, India

Dr. Ganga H
Assistant Professor, Department of Pathology, Subbaiah Institute of Medical Sciences, Shimoga, Karnataka, India

Dr. Suresh BP
Professor and Head, Department of Surgery, Subbaiah Institute of Medical Sciences, Shimoga, Karnataka, India

Corresponding Author:
Dr. Ganga H
Assistant Professor, Department of Pathology, Subbaiah Institute of Medical Sciences, Shimoga, Karnataka, India

A study of prognostic factors of breast cancer in relation to ER/PR/HER 2NEU expression

Dr. Indudhara PB, Dr. Ganga H and Dr. Suresh BP

DOI: https://doi.org/10.33545/pathol.2019.v2.i2f.126

Abstract
Background: Breast cancer is a disease with a wide spectrum of clinical, pathologic, and molecular features. It is one of commonest malignancy amongst Indian women. Adjuvant therapy, which helps in prolonging survival, is determined by the expression of Estrogen Receptor (ER), Progesterone Receptor (PR) and Human Epidermal Receptor (HER2/neu) on the cancer cells.
Aims and Objectives: This study is carried out to look into the association of patient age, tumor grade and lymph node stage with ER PR HER2/neu expression.
Materials and Methods: The study was conducted in the Department of Pathology of Subbaiah institute of medical sciences, Shimoga from July 1st to December 31 of 2018. The sample size is 30. Mastectomy specimens were assessed with respect to different parameters like patient age, tumour size, histological grade, lymph node stage and correlated with the ER, PR, HER2/ neu score. ER positive tumors were considered to have favourable receptor expression while triple negative followed by ER negative tumors were considered to have unfavourable receptor expression.
Results and Analysis: Our study showed that breast cancers are more common in women aged more than 40 years but younger women had more triple negative and ER negative, which are unfavourable receptor expression. Also, Compared to grade to II, grade III had more triple negative expression. Although, N1 lymph node stage was most common, unfavourable expression was more common in N3 stage. Lymphnode metastasis was more aggressive in younger people.
Conclusion: Younger women who had higher grade and aggressive nodal involvement with poor prognosis showed unfavourable expression of receptors. ER/PR/HER2 subtype is thus simple, inexpensive, easy to interpret test for clinicians. Patient survival and prognosis is helped by early diagnosis and treatment.

Keywords: Carcinoma breast, prognostic factors, ER, PR, HER2/neu

Introduction
Breast cancer is commonest malignancy among Indian women[1]. The risk factors are age, age at menarche/menopause, parity, duration of breastfeeding, changes in breast, genetic, nutritional, environmental and hormone factors [2]. Early diagnosis and appropriate treatment will prolong the survival. Management is surgery, chemotherapy and radiotherapy, followed by adjuvant therapy [1]. Expression of ER PR and her 2 neu determines adjuvant therapy. Our effort is to establish correlation between age, grade and nodal metastasis to receptor expression.

Aim and Objectives
Aim of this study is to look for association of *age*, histologic grade and lymph node stage of tumor to ER, PR, Her 2 neu expression.

Material and Methods
The study was conducted in the Department of Pathology, at Subbaiah Institute of Medical Sciences, Shimoga. Mastectomy specimens were received along with detailed patient information. Inclusion criteria was Modified radical mastectomy. The sample size in this study is 30. We excluded Phyllodes, in situ carcinomas and male breast tumours.
Patients were categorized in to two groups for age, less than 40 and more than or equal to 40. Nottinghams histological grade was considered for grading of tumours and Allred for ER PR her2 neu expression of tumours.

Lymphnode involvement was categorized into different groups N1, N2 and N3 depending on the number of nodes involved. A master chart was then prepared involving all the parameters. ER +, PR+/-, HER2/neu +/- are considered favourable receptor expression. Triple negative followed by ER-, PR+, HER2/neu - and ER-, PR-, HER2/neu + are considered unfavourable expression [3, 4].

Results and analysis

We analysed 30 patients in this study. (Table 1)

Table 1: Age and percentage of cases

Age	< 40 years	>= 40 years
Percentage of cases	23%	77%

Table 2: Receptor expression in two different group's Unfavorable receptor expression was higher in young age group.

	Unfavorable (ER-PR-HER2-, ERPR+HER2-, ER-PRHER2+)	**Favourable (ER+PR-HER2-, ER+PRHER2+, ER+PR+HER2-, ER+PR+HER2+)**
Age ≤ 40 (7)	4 (57%)	3
Age >40 (23)	8 (34%)	15

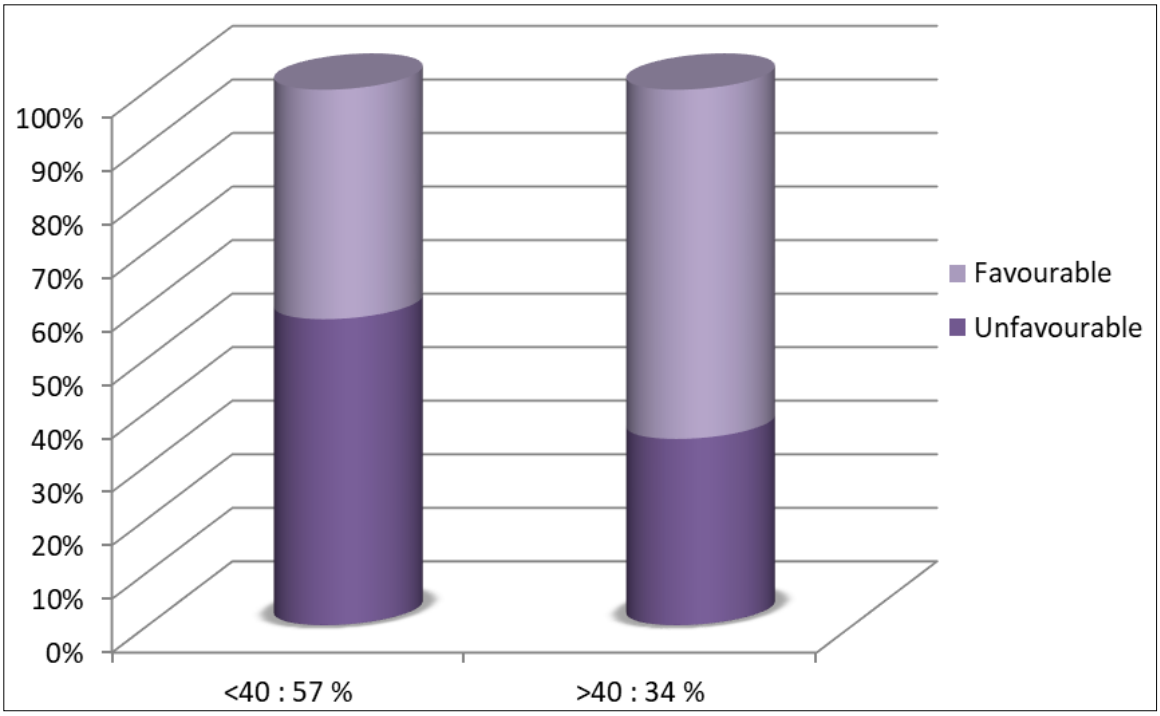

Chart 1: Age groups and receptor expression.

Table 3: Tumour grade and receptor expression. Higher the grade, more is unfavourable expression.

	Unfavourable (ER-PR-HER2-, ERPR+HER2-, ER-PRHER2+)	**Favourable (ER+PR-HER2-, ER+PR-HER2+, ER+PR + HER2-, ER+PR+HER2+)**
Tumor Grade I(n=6)	2 (33%)	4
Tumor Grade II(n=19)	10 (52%)	9
Tumor Grade III(n=5)	4(80%)	1

Table 4: Lymphnode involvement and receptor expression.

	Unfavourable (ER-PR-HER2-, ERPR+ HER2-, ER-PRHER2+)	**Favourable (ER+PR-HER2-, ER+PR-HER2+, ER+PR+HER2-, ER+PR+HER2+)**
N0 (n=14)	5 (35%)	9
N1 (n=08)	3 (37%)	5
N2 (n=6)	4 (66%)	2
N3 (n=2)	2 (100%)	0

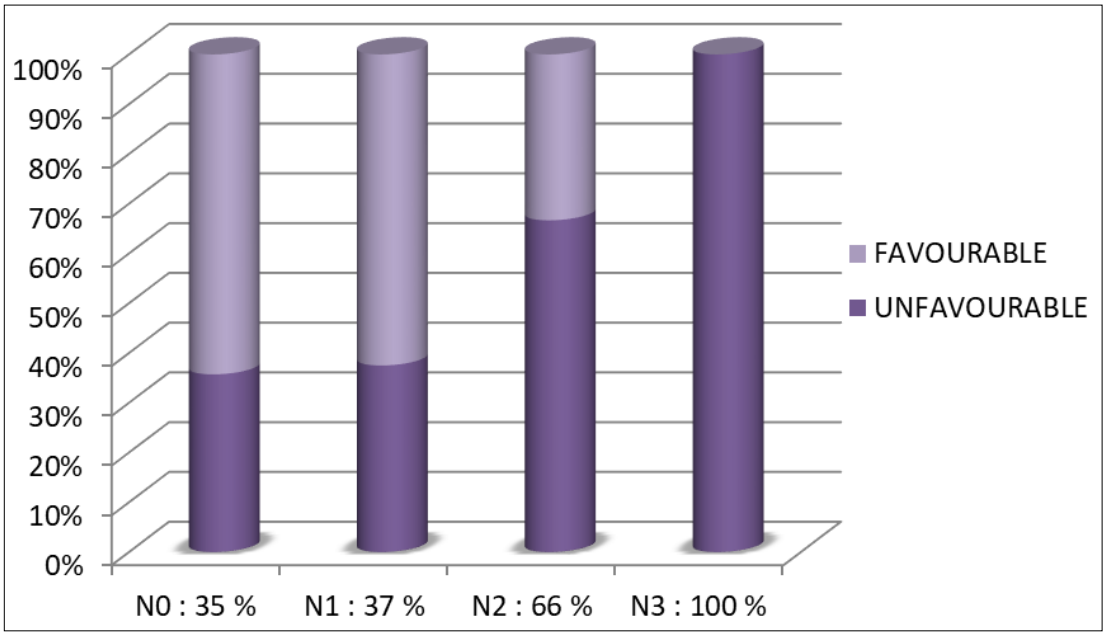

Chart 2: More is the number of nodal involvement, higher is unfavourable receptor expression.

Discussion

Breast cancer is one of the most prevalent cancers in women [5]. Management of breast cancers include adjuvant therapy which needs determination of receptor expression. This study has show incidence of carcinoma breast increases with age (Table 1) and more prevalent in age group more than or equal to 40yrs similar to Sinha *et al.* [1] Expression of receptors in this age group was more relatively favourable (Chart 1). Among younger age group (less than 40 yrs), tumour grade was high (Table 2) and also lymphnode involvement, indicating aggressive tumours. Unfavorable tumour expression was also relatively more in younger population (Chart 1). This was in support of our assertion that unafavourable expression is more in aggressive tumours (Chart 2) and more so in younger people with cancer breast, similar to findings were obtained in Rao [2] study and Shoukath [5] study.

Conclusion

Younger women with high grade and increased nodal involvement showed relatively more unfavourable receptor expression. ER/PR/Her2 neu is simple and easy to analyse parameter and assessing them in younger population helps in adjuvant therapy and improves patient survival.

References

1. Sinha S, Nath J, Mukherjee A, Chatterjee T. Predictive and Prognostic Factors in Breast Cancer and their Association with ER PR HER2/neu Expression. J Carcinog Mutagen. 2016; 7:263.
2. Rao C, Shetty J, Kishan Prasad HL. Morphological profile and receptor status in breast carcinoma: an institutional study. J Cancer Res Ther. 2013; 9:44-49.
3. Carol Parise A, Vincent Caggiano. Breast Cancer Survival Defined by the ER/PR/HER2 Subtypes and a Surrogate Classification according to Tumor Grade and Immunohistochemical Biomarkers. Journal of Cancer Epidemiology, 2014.
4. Chan M, Chang MC, González R, Lategan B, delBarco E, Vera-Badillo F *et al*. Outcomes of Estrogen Receptor Negative and Progesterone Receptor PositiveBreast Cancer. PLoS ONE. 2015; 10(7):e0132449. doi:10.1371
5. Shokouh TZ, Ezatollah A, Barand P. Interrelationships Between Ki67, HER2/neu, p53, ER, and PR Status and Their Associations With Tumor Grade and Lymph Node Involvement in Breast Carcinoma Subtypes: Retrospective-Observational Analytical Study. Medicine. 2015; 94:e1359.