



## CLINICOPATHOLOGICAL FEATURES OF HER2-NEU ENRICHED BREAST CANCER (HEBC) - A RETROSPECTIVE ANALYSIS

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### ABSTRACT

**Aim :** The aim is to study various clinicopathological features of Her2-neu enriched Breast cancer (HEBC) in Northern part of INDIA.

#### Background:

- Molecular classification of breast cancer is based on gene expressing profile.
- The subgroup [luminal A, luminal B, Her2-neu enriched Breast cancer (HEBC), and basal like] have distinct gene expression pattern and phenotypical characteristics.
- Her2-neu enriched Breast cancer (HEBC) tumors are of more aggressive variety, hence associated with poor prognosis
- Her2-neu enriched Breast cancer (HEBC) usually present with larger tumor size, more advanced tumor grade and TNM stage. The higher positive rate in lymph node metastasis is also observed..
- The pathological complete response (pCR) rate is consistently lower when compared with other subtypes

#### Material And Method:

Study Design: Hospital based retrospective, descriptive type of observational study. Study place: Dept. of general surgery SMS hospital Jaipur. Study population: 402 cases of diagnosed breast cancer. Statistical Analysis: Descriptive statistics

#### Result:

Total breast cancer patients studied = 402 46 patients [11.44 %] were found to have Her2-neu enriched Breast cancer (HEBC) Maximum number of cases were in age group >50 years i.e. 27 (58.69 %). Most of the cases (32, 69.57 %) cases were postmenopausal. Her2-neu enriched Breast cancer (HEBC) cases [84.78 %] had histological features of IDC

#### Conclusions :

- Her2-neu enriched Breast cancer (HEBC) cases represents around 12 % of total breast cancer.
- Her2-neu enriched Breast cancer (HEBC) cases is commonly associated with postmenopausal status, mostly seen in patient of age >50 years.

Common mode of presentation is usually advanced disease i.e. T2 ,N1 or more Her2-neu enriched Breast cancer (HEBC) cases most commonly have Grade III presentation. Her2-neu enriched Breast cancer (HEBC) cases most commonly occurs in UOQ and infiltrative duct carcinoma (IDC) is the most common histopathological variety.

### KEYWORD

Her2-neu Enriched Breast Cancer, Her2-neu, Post-menopausal

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#### I. Introduction

Breast carcinoma is one of the most common malignancies affecting the female population accounting to approximately 1.67 million cases diagnosed in the year 2012, coming to an estimate of 25% of all cancers [1]. It is a heterogeneous disease entity encompassing numerous distinctive histological, immunohistochemical and gene profile-based subtypes. The cell of origin of breast tumours is of utmost significance, since they hold subsequent associations with aetiology, pathogenesis and selective treatment outcomes. However, the classification of BC intrinsic subtype based on some biomarkers was suggested as a common method to provide prognostic and predictive information for specific

therapies [2] which classified BC into luminal breast cancer (LBC), HER2-enriched breast cancer (HEBC) and triple negative breast cancer (TNBC). Different intrinsic subtypes of BC had distinct biological behaviour, prognosis, survival rate and risk of death [2-4].

Here, an attempt is made to study the clinicopathological features of HER2-enriched breast cancer (HEBC) by assessing histomorphological features of HER2-enriched breast cancer (HEBC); analysing various parameters such as the age, site, tumour size, clinical features and treatment outcomes in HER2-enriched breast cancer (HEBC) in Northern part of INDIA..

II. Patients And Methods

**Study Design:** Hospital based retrospective, descriptive type of observational study.

**Study Place:** Dept. of General Surgery SMS hospital Jaipur Rajasthan.

**Study Population:** 402 cases of diagnosed breast cancer.

**Statistical Analysis:** Descriptive statistics-

This analysis included women with diagnosed breast cancer at SMS hospital Jaipur. Patient demographics were obtained.

Tumors were staged according to the TNM criteria. The data on ER, PR, andHER2/neu was obtained through standard clinical testing. We further categorized the patients as Her2-neu enriched if they were negative for estrogen receptor, progesterone receptor and positive for Her2/neu receptor.

III. Statistical analysis:

**Table 1: Characteristics of Her2-neu enriched Breast cancer patients**

| Clinical          | Groups         | No. of cases | %       |
|-------------------|----------------|--------------|---------|
| AGE               | <40 Years      | 6            | 13.04 % |
|                   | 40 – 50 Years  | 13           | 28.26 % |
|                   | >50 Years      | 27           | 58.69 % |
| MENOPAUSAL STATUS | PRE-MENOPAUSE  | 14           | 30.43 % |
|                   | POST-MENOPAUSE | 32           | 69.57 % |
| LATERALITY        | RIGHT          | 20           | 43.47 % |
|                   | LEFT           | 26           | 56.52 % |
| LOCALITY          | UOQ            | 27           | 58.69 % |
|                   | REST           | 19           | 41.30 % |
| PARITY            | parity ≥3      | 14           | 30.43 % |
|                   | parity <3      | 32           | 69.56 % |
| OCP USE           | Yes            | 8            | 17.39 % |
|                   | No             | 38           | 82.60 % |
| smoking history   | Yes            | 5            | 10.86 % |
|                   | No             | 41           | 89.14 % |

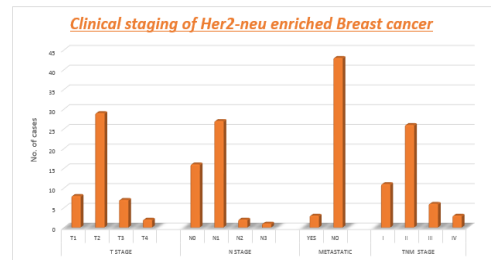
**Table 2: Histological Pattern of Her2-neu enriched Breast cancer patients:**

| CHARACTERISTIC    |       | N  | %       |
|-------------------|-------|----|---------|
| HISTOLOGICAL TYPE | IDC   | 39 | 84.78 % |
|                   | OTHER | 7  | 15.22 % |
| Grade             | I     | 2  | 4.34 %  |
|                   | II    | 10 | 21.73 % |
|                   | III   | 32 | 69.56 % |
|                   | IV    | 2  | 4.34 %  |

**Table 3: Tumor characteristics**

| CHARACTERISTICS |    | N  | %       |
|-----------------|----|----|---------|
| T STAGE         | T1 | 8  | 17.39 % |
|                 | T2 | 29 | 63.04 % |
|                 | T3 | 7  | 15.21 % |
|                 | T4 | 2  | 4.3 %   |

|            |     |    |         |
|------------|-----|----|---------|
| N STAGE    | N0  | 16 | 34.78 % |
|            | N1  | 27 | 58.69 % |
|            | N2  | 2  | 4.34 %  |
|            | N3  | 1  | 2.17 %  |
| METASTATIC | YES | 3  | 6.52 %  |
|            | NO  | 43 | 93.47 % |
| TNM STAGE  | I   | 11 | 23.91 % |
|            | III | 6  | 13.04 % |
|            | IV  | 3  | 6.52 %  |



IV. Discussion

The demographic, clinical and pathological features of the patients with Her2-neu enriched Breast cancer patients are different from other molecular type of cancer breast.

The prevalence of Her2-neu enriched Breast cancer patients in the northern part of India [Rajasthan] is 11.44 % as shown in our study, in American study prevalence was 13.6 % [5].

In our study the average age of Her2-neu enriched Breast cancer presentation was 53.8 year. Which is comparatively higher than American study (average age was 47.6 year) [5] and china study (average age was 50.2 year) [6]

In our study 69.57 % patients were Post-menopausal as compare to study done in America (58.3%) [5] and china (62.8 %) [6].

Though aggressive tumor , Patients of Her2-neu enriched Breast cancer presents late (>50 years) History of oral contraceptives do not have any statistical significance.

In our study 84.78 % patients were of IDC which is comparable to other studies found in literature (3,4).

At diagnosis, Her2-neu enriched Breast cancer are commonly presents with tumor size ranging from 2 - 5 cm (T2). In our study, the mean tumor size was 3.8 cm in Her2-neu enriched Breast cancer group, 63.04 % patients of Her2-neu enriched Breast cancer had tumor size of 2 – 5 cm. (in American study 61 % and in china study 56 %).

At diagnosis, 65.2 % patients of Her2-neu enriched Breast cancer had clinically palpable lymph nodes which shows aggressive behavior of tumor.

In our study 69.56 % patients of Her2-neu enriched Breast cancer were in histological grade III which is comparable to other studies (in American study 66.2 % and in china study 68.4 %).

In our study 63.05 % patients had lymph node positive disease on Histopathological examination which shows aggressive behavior of tumor.

V. Results

Total 402 breast cancer patients were studied, out of them 46 patients [11.44 %] were found to have Her2-neu enriched Breast cancer. Usual age of presentation of Her2-neu enriched Breast cancer is late despite its aggressive behaviour. Postmenopausal women who had aggressive behavior of tumor are more likely to have Her2-neu enriched Breast cancer. More than 60 % patients presents with lymph node involvement which shows aggressive behavior of Her2-neu enriched Breast cancer.

#### **They are mainly of IDC type .**

Smoking, OCP intake and parity do not have any extra impact on Her2-neu enriched type of breast cancer.

The presentation in UOQ is more as compared to other quadrant which is same with other group of breast cancer.

Her2-neu enriched Breast cancer is a different entity than other breast cancer and is an area for further research to develop novel treatment.

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