e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2025; 17(1); 905-911

Original Research Article

A Retrospective Observational Study Analyzing Demographic Profile and Therapeutic Option in Breast Cancer Patient Treated in Tertiary Cancer Hospital in the District of Barpeta, Assam

Bhaskarjyoti Thakuria[1], Thamizholi Selvaraju[2], Shirsendu Roy[3]

[1]MBBS, MD, Assistant Professor, Department of Pharmacology, FAAMCH, Barpeta, Assam

[2]MBBS, MD, Consultant Radiation Oncologist, Assam cancer care Foundation, Barpeta Cancer Hospital, Barpeta, Assam

[3]MBBS, MD, Demonstrator, Department of Pharmacology, FAAMCH, Barpeta, Assam

Received: 25-10-2024 / Revised: 23-11-2024 / Accepted: 26-12-2024

Corresponding Author: Dr. Bhaskarjyoti Thakuria

Conflict of interest: Nil

Abstract:

Objectives: To assess the demographic profiles and therapeutic options in breast cancer patients based on their hormone receptor status and assess the treatment outcomes in breast cancer patients being treated in our institute.

Methods: A retrospective, observational, non-interventional study was conducted among breast cancer patients in the Barpeta Cancer Centre linked to Fakhruddin Ali Ahmed Medical College & Hospital, Barpeta, Assam. Ethical clearance was obtained from the Institutional Ethics Committee prior to the study. The data was collected and entered in specially designed patient data entry forms and the prescription parameters necessary for the study were recorded.

Results: Of the 128 patients studied a majority (68%) was between 45 to 70 years of age, the majority (91.5%) were multiparous women, while a majority (61%) presented with left sided cancer. Under staging a majority (43%) belonged to T2, majority (29.5%) belonged to N2 stage, while a majority (78%) belonged to M0 stage. A majority (40.5%) of cases belonged to luminal subtype B. Most patients (66.5%) underwent Modified Radical Mastectomy (MRM) while 19% patient did not undergo any surgical treatment. A majority (54.6%) did not receive neoadjuvant chemotherapy. 54% of cases received adjuvant chemotherapy, 59.4% of cases received adjuvant radiotherapy and 58% of cases did not receive any hormonal therapy.

Conclusion: Breast cancer is still an emerging epidemic in a third world country like India. What makes the situation more challenging is the social stigma associated with malignancy and the hesitation to show a male doctor. Campaigns to increase breast cancer screening and increase awareness of breast self-examination is the need of the hour. This is because in our study, as in most others, most of the cases presented with the disease at an advanced stage. In our study we attempted to identify the disease burden and presentation as this aids in understanding and planning specific measures to target this disease. Only through these and other concentrated efforts it will be possible for early detection and more effective treatment for breast cancer patients.

Keywords: Breastcancer, MRM, screening, demography, treatment outcomes.

Introduction

Breast cancer (BC) is one of the most commonly diagnosed cancers worldwide[1]. It is a heterogeneous disease that affects one anatomic site, yet is phenotypically variable[2,3]. Invasive breast cancer accounts for 29% of all cancer diagnoses among women in the United States and 23% of all cancer diagnoses among women worldwide[4].

It remains the leading cause of cancer related deaths among women worldwide, representing 14% of all cancer related deaths among women[4]. A significant proportion of new breast cancer cases and deaths occur in economically developing countries[5].It is important to define the biological characteristics of breast cancer as it facilitates (1) characterization of different tumor histologic types, (2) understanding of disease prognosis, and (3) systemic treatment planning.

The identification of different biological subtypes of breast cancer occurs primarily through the use of techniques including immunohistochemistry[6] and gene expression profiling[2]. Gene expression profiling can be costly, time-consuming, and, depending on the platform, may require a fresh tumor biopsy sample that has not been fixed in formalin[7,8]. Due to these constraints, gene expression profiling can be difficult to implement on a broad scale. Instead, efforts have been made to use immunohistochemical analysis to create approximated subtypes to facilitate the implementation of breast cancer subtype classification. It has been shown through molecular analysis of breast cancers with gene expression profiling that breast cancer could be sub classified into different subtypes, and these include luminal ER positive (luminal A and luminal B), HER2 enriched, and basal-like (Table 1)[2,3].

Table 1: Classification of molecular subtypes and correlation with biomarker staining on immunohisto-chemistry

Molecular Subtype	ER		PR	HER 2
Luminal A	Positive	and/or	Positive	Negative
Luminal B	Positive	and/or	Positive or negative	Negative
Luminal B	Positive	and/or	Positive or negative	Positive
HER2	Negative		Negative	Positive
Triple negative or basal-like	Negative		Negative	Negative

Abbreviations: ER, estrogen receptor; HER2, human epidermal growth factor receptor 2: Pr, progesterone receptor

In the current study, from a demographic perspective, we intend to examine the temporal trends in the use of different treatment options for the treatment of breast cancer based on hormone receptor and HER2 receptor status and also the corresponding survival rates. We also aim to seek the commonly prescribed cytotoxic and hormonal agents according to receptor status and demographic variables, and also analyse the prescribing indicators in a tertiary hospital in the district of Barpeta, Assam in the north east of India.

Methodology:

A retrospective, observational, non-interventional study was conducted in the Barpeta Cancer Centre linked to Fakhruddin Ali Ahmed Medical College & Hospital- one of the government, tertiary care hospitals in the state of Assam, India. The study was performed after receiving the necessary ethical clearance from the Institutional Ethics Committee.

The study was tentatively carried out over a period of six months. The data was collected and entered in specially designed patient data entry forms and the prescription parameters necessary for the study was recorded. The data was entered in Microsoft Excel. Collected data was analyzed by frequency, percentage, mean, and by using non-parametric statistical methods.

Number of patients: 128

Inclusion criteria:

- Aged 18-75 years.
- Histologically proven Breast cancer planned as per institutional protocol.

Exclusion criteria:

- Patients who received prior chemotherapy/radiotherapy
- Past history of surgery for the same
- HIV positive patients

Duration of study: 6 months.

Ethical Consideration:

The study was approved by the Institutional Ethics Committee of FAAMCH, Barpeta, Assam (FAAMC&H/P.Est./I.E.C./26/Pt.-I/2022/**13270**).

Results: Of the 128 cases studied 36 (28%) were below 45 years of age, 87 (68%) were between 45 to 70 years of age, and 5 (4%) were above 70 years of age. (See Figure 1)

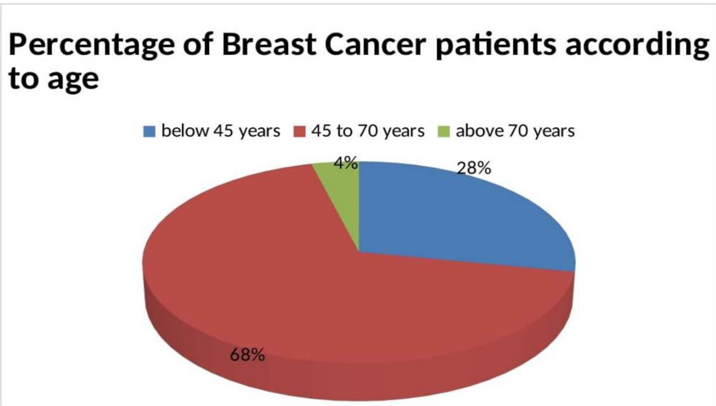

Figure 1: Percentage of breast cancer patients according to age

117 (91.5%) cases out of 128 were multiparous women while the remaining 11 (8.5%) were nulliparous women. 78 (61%) cases presented with left sided breast cancer, 48 (37.5%) cases with right sided breast cancer, and the remaining 2 (1.5%) cases presented with bilateral breast cancer. (See Figure 2)

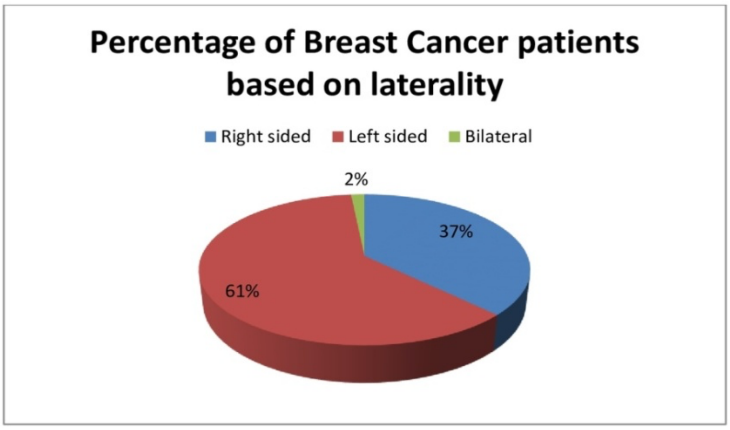

Figure 2: Percentage of breast cancer patients based on laterality

Under the number of cases according to T staging 7 (5.5%) cases belonged to T1 stage, 55 (43%) cases belong to T2 stage, 30 (23.5%) cases belonged to T3 stage and the remaining 36 (28%) cases belonged to T4 stage. Then according to N staging 37 (29%) cases belonged to N0 stage, 35 (27.5%) cases belonged to N1 stage, 38 (29.5%) cases belonged to N2 stage while the remaining 18 (14%) cases belonged to N3 stage. Finally, according to M staging 100 (78%) cases belonged to M0 stage while the remaining 28 (22%) belonged to M1 stage. (See Figures 3,4,5)

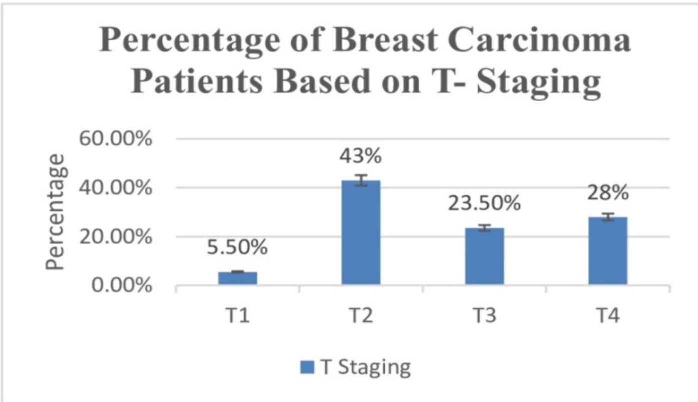

Figure 3: Percentage of breast cancer patients based on T-Staging

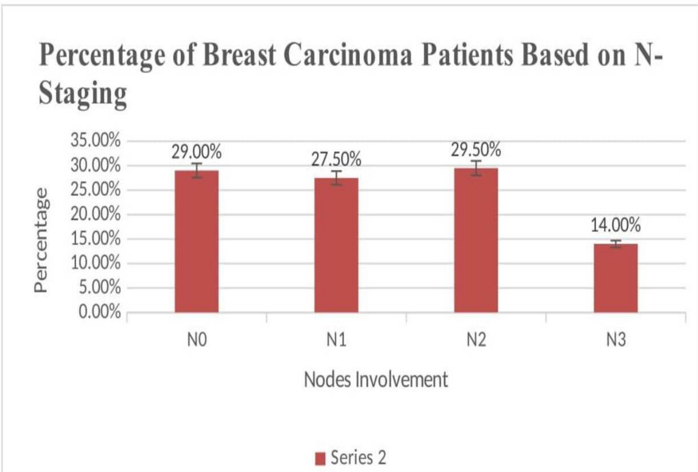

Figure 4: Percentage of breast cancer patients based on N-Staging

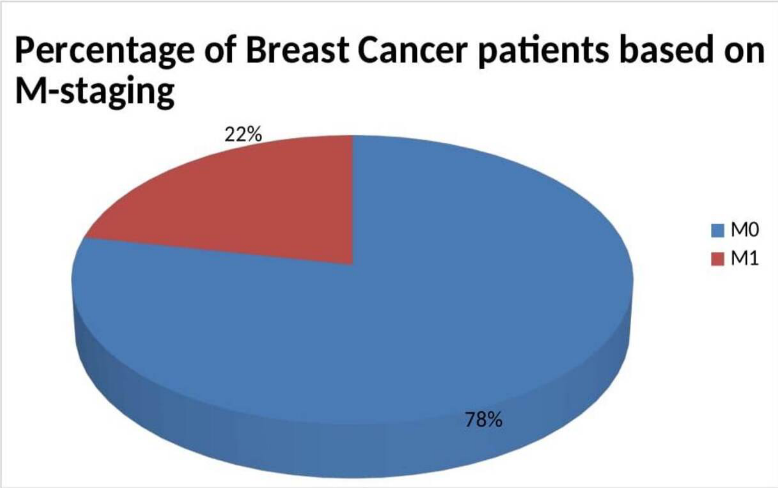

Figure 5: Percentage of breast cancer patients based on M-staging

When it came to intrinsic subtypes of breast cancer 14 (11%) cases belonged to Luminal subtype A, 52 (40.5%) belonged to Luminal subtype B, 25 (19.5%) belonged to Her 2 enriched subtype and the remaining 37 (29%) belonged to Triple negative subtype. (See Figure 6)

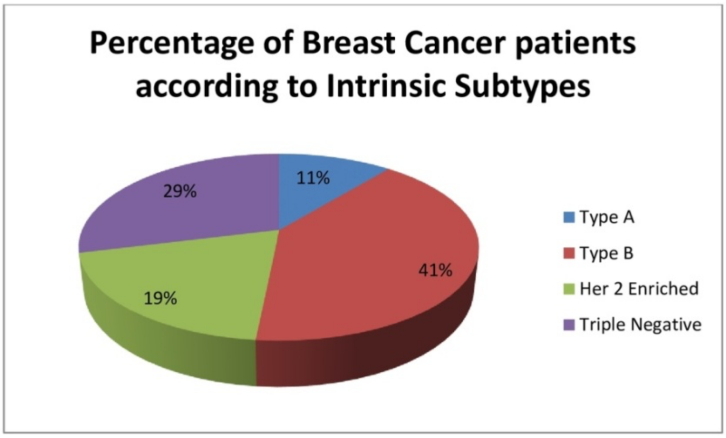

Figure 6: Percentage of breast cancer patients according to intrinsic subtypes

Under the treatment plan the cases were subjected to 24 (19%) cases were not subjected to any of the surgical options available. Out of the remaining 104 cases 85 (66.5%) were subjected to Modified Radical Mastectomy (MRM), 11 (8.5%) underwent breast constructive surgery (BCS) while the remaining 8 (6%) were subjected to other surgical options like simple or toilet mastectomy, wide local excision (WLE), etc. (See Figure 7)

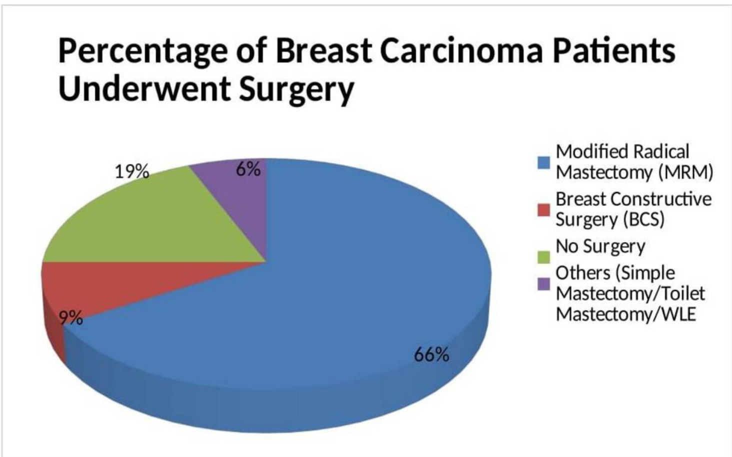

Figure 7: Percentage of breast carcinoma patients underwent surgery

Continuing with the treatment options 58 (45.4%) cases out of 128 received neoadjuvant chemotherapy while the remaining 70 (54.6%) did not receive it. When it came to adjuvant chemotherapy 69 (54%) cases out of 128 had received it while the remaining 59 (46%) cases did not. 76 (59.4%) cases out of the 128 received adjuvant radiotherapy while the remaining 52 (40.6%) did not receive it. 54 (42%) cases out of the 128 received adjuvant hormonal therapy while the remaining 74 (58%) cases did not receive it.

Discussion

In the study, we analysed the demographic and treatment pattern of newly diagnosed breast cancer patient of Barpeta district.

Majority of our patients were peri & post-menopausal at diagnosis and this finding is comparable with previous studies[9].

Mean age group is 52 years and it is in comparable with previous studies, with majority of left sided Breast cancer. A rapidly ageing population combined with rising breast cancer among older women will likely increase breast cancer incidence exponentially among these women who are more likely to have comorbidities with a poor survival from breast cancer[10,11].

With our TNM staging and data it is evident that majority of our patients are locally advanced is comparable to observation and findings found in other parts of India[12,13,14]. The proportion of advanced breast cancer reported in this study is substantially greater than reported from developed countries[15,16]. Staging is an important factor in prognosis of breast cancer patients for determining survival. Hence, we need to promote early diagnosis of breast cancer with active screening programmes. With regards to Intrinsic subtypes, Luminal Type A (11%), Luminal Type B (40.5%) Her2 neu enriched (19.5%) and Triple Negative (29%). Luminal A molecular subtype is generally associated with a highly favourable prognosis and typically shows less frequent and less extensive lymph node involvement. Luminal B molecular subtype is associated with more intermediate prognosis when compared with the Luminal A molecular subtype.

Luminal molecular subtypes have lower local regional recurrence (LRR) rates, with both conservative surgery and mastectomy[16]. In the study by Lowery et al., it was estimated that rate of LRR for both luminal A and B subtypes after BCS and radiation was approximately 5% [23]. Historically, Her2 Neu over expression has been associated with a higher frequency of LRR based on studies in which patients were not treated with Her2 Neu targeted therapy, ranging between 4-15%.[17,18,19,21,22,24] TNBC (Triple Negative Breast Cancer) is associated with an unfavourable prognosis when compared with the other breast cancer subtypes secondary to a higher risk of disease recurrence. For TNBC, the involvement of regional lymph node is associated with a poor prognosis, without a direct connection to number of involved nodes.[20,24,25,26]

We identified considerable lapses in the concordance between recommended guidelines and treatment delivery. For Instances, only 60% of breast cancer patient received adjuvant radiation. Further, patients could not afford to complete 1 year maintenance Trastuzumab and Her2 Neu equivocal patients could not afford to perform FISH (Fluorescence In Situ Hybridization) for Her2 Neu and some centres failed to perform IHC (immunohistochemistry) which we have identified and this observation was comparable to other regions in south Asia. Although treatment lapses were not identified in this study, it is evident that breast cancer care has potential for improvement.

Government of Assam has initiated several strategies with the aim of improving access to treatment and the quality of care for cancer patients, by setting up cancer care model at every district with advanced linear accelerator and day care chemotherapy centre along with community outreach programme to focus on health education and screening methods to detect cancer at earliest.

Conclusion

Our study aimed to assess the demographic profile and therapeutic options in breast cancer patients based on their hormone receptor status and, furthermore, the treatment outcomes in these set of patients. In third world countries like India breast cancer is still an emerging epidemic. In such a conservative society, the social stigma associated with malignancy and the hesitation to show a male doctor are some of the more challenging encounters when providing medical care. Breast cancer screening is still less effective in a country like India and therefore most of the cases present at an advanced stage. Campaigns to raise awareness for breast self-examination plays a crucial role in our society for early detection and more effective treatment. In our study too we found a majority of patients presenting at an advanced stage. Our study, like a few others, attempted to identify the disease burden and presentation which aids in understanding and planning specific measures to target this disease. Only through such and other concentrated efforts the lives of breast cancer patients can be uplifted to a better level.

Acknowledgements: We wish to acknowledge hereby all the staff and doctors of the Barpeta Cancer Centre for their help and support during the data acquisition process.

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