International Journal of Research in Medical Sciences
Rahman MM et al. Int J Res Med Sci. 2024 Apr;12(4):1097-1100
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20240831

Original Research Article

Clinico-pathological profile of breast cancer patients in a radiation therapy centre

M. Masudur Rahman*, Mohammad Jahan Shams, Mostafa Sanaul Haque, Shourov Biswas

Department of Clinical Oncology, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

Received: 18 February 2024
Revised: 13 March 2024
Accepted: 16 March 2024

***Correspondence:**
Dr. M. Masudur Rahman,
E-mail: md.masudur.rahman.bangladesh@gmail.com

ABSTRACT

Background: The aim of the study was to evaluate the clinico-pathological characteristics of patients with breast cancer at the Radiation Center of Bangabandhu Sheikh Mujib Medical University (BSMMU), a tertiary-care cancer center in Dhaka, Bangladesh.
Methods: This descriptive study was conducted from March 2021 to February 2022 where patients receiving radiotherapy for breast cancer were included. Data were collected from face-to-face interviews with patients and from their investigation reports. Data regarding age, presenting symptoms, histological type, tumor size, involvement of regional nodes, hormonal receptor status, and human epidermal growth factor receptor 2 (HER2) amplification were recorded and then analyzed.
Results: The mean age of the patients was 52.53 years. Most of the patients (93%) were multiparous and 62.24% were postmenopausal. The most common symptom was breast lump (91.6%). Infiltrating ductal carcinoma and lobular carcinoma were seen in 136 (95.1%) and 7 (4.9%) cases respectively. The TNM stage distribution was stage I, 6 (4.2%); stage II, 52 (36.36%); stage III, 76 (53.15%); and stage IV, 9 (6.29%). Locally advanced breast cancer constituted 42.66% of the cases. Among the patients 90 (62.94%) patients were ER/PR positive and 42 (29.37%) patients were HER2 positive. Triple negative breast cancer (TNBC) constituted 25.17% (36) of the study population. All receptors were positive in 25 patients (17.48%).
Conclusions: Majority of our patients receiving breast radiotherapy at our center are middle aged and have advanced disease. TNBC and HER2 positive breast cancer are more common in our population.

Keywords: Breast cancer, Clinico-pathological, BSMMU, Breast radiotherapy

INTRODUCTION

Breast cancer is the fourth leading cause of cancer death worldwide, and the leading cause of cancer death among women.[1] Breast cancer prevalence has increased globally, including in Asian countries, over the last few decades.[2] It accounts for 25% of cancer cases and 15% of cancer deaths in women, although there is a 4-fold variation in mortality rates and over 10-fold variation in incidence rates between high-incidence areas such as the United States and Western Europe and low incidence areas such as Africa and Asia.[3]

According to Globocan 2020, the worldwide annual age-standardized incidence rate of breast cancer was 47.8/100,000 and around 45% of new the cases occurred in Asia.[4] More than 2.2 million new cases of breast cancer were diagnosed worldwide in 2020, accounting for 11.7% of all new cancer cases, with nearly 0.7 million deaths (6.9% of all cancer deaths). The age-standardized mortality rate was 13.6/100,000 worldwide.[4]

Unfortunately, there are no comprehensive statistics on breast cancer incidence and mortality data in Bangladesh.

Only institute-based studies account for the majority of demography. The outpatient department of the National Institute of Cancer Research ad Hospital (NICRH), Dhaka, saw a total of 4,998 newly diagnosed patients between 2015 and 2017.[5]

Although most patients in Western countries are diagnosed early, in less developed countries about 60% of patients have locally advanced or metastatic disease at the time of diagnosis.[6] The scenario is also somewhat similar in Bangladesh. A number of factors have been linked to an increased risk of developing breast cancer, but most of these factors only represent a minor to moderate increase in risk for any particular woman. Other than increasing age and female sex, at least half of the patients have no identifiable risk factor.[7]

Breast cancer is a heterogeneous illness with a wide range of clinical and pathologic characteristics. These features, such as age, tumor size, involvement of axillary nodes, histologic grade, hormonal receptor status, and human epidermal growth factor receptor 2 (HER2) amplification, guide the choice of therapy and help in determining the prognosis of the patient.[7] It is likely that a complex interaction of multiple factors, including genetic, environmental, and socioeconomic, contribute to the wide variability in age-adjusted incidence across populations.[8] In our demographic, data on these features of breast cancer patients are scarce and heterogeneous.

The objective of this study was to document the clinic-pathological traits of breast cancer patients at the radiation center of Bangabandhu Sheikh Mujib Medical University (BSMMU).

METHODS

This descriptive study was conducted from March 2021 to February 2022 at the Radiation Center of the Department of Clinical Oncology, BSMMU. All 143 patients with breast cancer who registered for radiotherapy were included. There were no exclusion criteria in this descriptive study. The study was carried out in line with the Helsinki Declaration. Before collecting data, each patient provided informed consent. Data were collected using a pre-made questionnaire by face-to-face interviews with patients and from their investigation reports. Age, presenting symptoms, histological type, tumor size, involvement of regional nodes, hormonal receptor status, and human epidermal growth factor receptor 2 (HER2) amplification were study variables.

Locally advanced breast cancer (LABC) was defined as: large breast tumors (>5 cm) associated with either skin/chest wall involvement or with fixed axillary lymph nodes or spread to ipsilateral internal mammary or supraclavicular nodes. Immuno-histochemical testing to determine estrogen receptor/progesterone receptor (ER/PR) and HER2 receptor status was performed using the standard procedures on 4 µm sections of paraffin embedded tissue specimens stained with the monoclonal antibodies. Nuclear staining greater than 1% of tumor cells was considered as positive for ER/PR. Patients were considered HER2-positive if they had immunohistochemistry (IHC) 3+. The patients with HER2 IHC 2+ underwent FISH to confirm HER2/neu amplification. The data were analyzed using the SPSS software program (North Castle, NY, USA) for Windows, version 21. A p value of <0.05 was considered as statistically significant.

RESULTS

A total of 143 patients with a diagnosis of invasive breast cancer were registered between March 2021 to February 2022 at the radiation center of BSMMU. The common descriptive characteristics of patients are presented in Table 1.

Table 1: Baseline demographic characteristics of the patients.

Variables	N (%)
Age (mean±SD) in years	52.53±10.27
Age groups (years)	
21-30	03 (2.1)
31-40	26 (18.18)
41-50	52 (36.36)
51-60	38 (26.57)
61-70	22 (15.38)
>70	2 (1.4)
Median age at menarche, years (range)	12.96 (10-16)
Mean age at first child birth, years (range)	21.2 (16-33)
Parity	
Nulliparous	3 (2.1)
Multiparous	133 (93)
Uniparous	7 (4.9)
Postmenopausal status	89 (62.24)

The mean age of the patients was 52.53 years. Sixty-two percent (89) cases were postmenopausal. Most of the females were multiparous (133, 93%). Table 2 presents the main disease characteristics of the patients.

Among the 143-study population, 82 (57.34%) had disease in left breast and 61 (42.66%) had in right breast. The common symptoms were breast lump 131 (91.6%) followed by nipple retraction, redness, ulcer, pain, and rarely bleeding. Infiltrating ductal carcinoma was seen in 136 (95.1%) cases whereas lobular carcinoma was present in 7 (4.9%) of cases.

Stage distribution is presented in Figure 1. Overall, 61 (42.66%) patients had LABC. Among the patients 90 (62.94%) patients were ER/PR positive and 42 (29.37%) patients were HER2 positive. Triple negative breast cancer (TNBC) constituted 25.17% (36) of the study population.

All receptors were positive in 25 patients (17.48%). This means that among the 42 patients with HER2 positive breast cancer 59.5% were hormone receptor positive. Conversely, among the 90 patients with hormone receptor positive breast cancer 27.78% were HER2 positive.

Table 2: Disease characteristics of the patients.

Variables	N (%)
Median age at diagnosis, years (range)	45.7 (26-78)
Laterality	
Left	82 (57.34)
Right	61 (42.66)
T stage (AJCC-8th edition)	
T1	13 (9.1)
T2	46 (32.17)
T3	62 (35.35)
T4	22 (15.38)
N stage (AJCC-8th edition)	
N0	47 (32.87)
N1	69 (48.25)
N2	19 (13.29)
N3	8 (5.59)
M stage (AJCC-8th edition)	
M0	134 (93.71)
M1	9 (6.29)
Hormone profile	
ER/PR positive and HER2 negative	65 (45.45)
ER/PR positive and HER2 positive	25 (17.48)
ER/PR negative and HER2 positive	17 (11.9)
ER/PR negative and HER2 negative	36 (25.17)
Overall hormone positive	90 (62.94)
Overall HER2 positive	42 (29.37)

Note: AJCC= American Joint Committee on Cancer; ER= Estrogen receptor; HER2= Human EGF (epidermal growth factor) receptor 2; PR= Progesterone receptor.

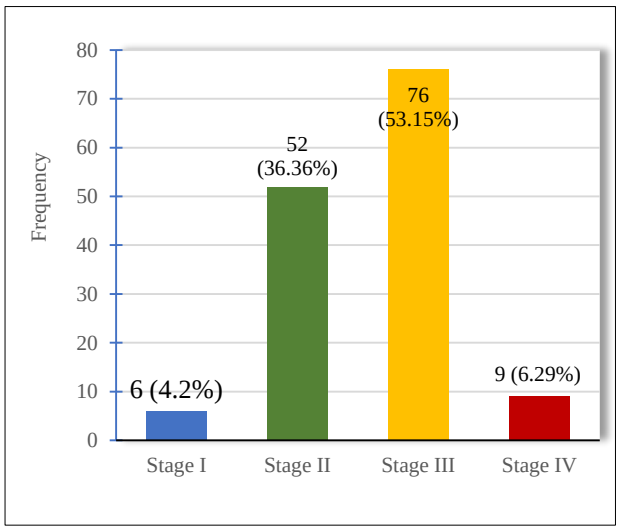

Figure 1: Distribution by clinical stage (AJCC-8th edition).

DISCUSSION

The mean age of the patients was 52.53 years, approximately one decade earlier than western population, likely due to a different age distribution pattern in Indian subcontinent.[2] However, the cancer registry report of National Institute of Cancer Research and Hospital (NICRH) reported that the mean age was around 43 years between 2015 and 2017 among the patients there.[5] These differences are indicative of a lack of a nationwide coordinated effort towards the collection of relevant data. Median age at menarche is somewhat similar to other published data. The mean age of first pregnancy (21.2 years, range 16-33years) is similar to the findings of other Indian studies but is much lower than that in western countries.[2]

The most common histological type of breast cancer in this study is infiltrating ductal carcinoma similar to that found that in other studies.[2] Although it is cited to be 70-80% we found it in more than 95% patients.[7]

The patients in our population had larger tumor size, more nodal involvement at presentation. So, a large majority of patients had advanced disease as compared to those in developed countries of western hemisphere where majority of patients present with early breast cancer.[6,9] Locally advanced breast cancer constituted 42.66% of the cases which is similar to other Indian studies.[2] Metastatic diseases was 6.29% at presentation. But it probably doesn't reflect the real scenario as most patients with metastasis are treated by chemotherapy. Patients with metastasis in our facility had bone metastases and received radiotherapy to bone for palliative purposes.

In our study 62.94% patients had ER/PR positive breast cancer that is lower than western populations.[2] The proportion of patients with HER2 positive breast cancer and TNBC was higher in our population as compared to earlier studies in patients from developed world.[10] The overall receptor expression pattern in our patients suggests a lower fraction of hormone receptor-positive and higher fraction of triple negative and HER2 positive disease. The other study from Tata Memorial Hospital has shown the same frequency of TNBC in their cohort.[11] In our study 29.37% patients had HER2 positive breast cancer that is higher than published Indian literature.[12,13]

Limitation

The limitation of the study was that it didn't reflect the scenario of the rest of the country. But it can serve as a data source for possible national or international collaborative work in the future.

CONCLUSION

In conclusion, the patients with breast cancer treated at our radiation center were middle aged. A higher proportion of the patients had HER2 positive and TNBC whereas the

proportion of patients with hormone receptor positive breast cancer is lower.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Review Board, BSMMU

REFERENCES

1. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA Cancer J Clin. 2021;71(3):209-9.
2. Gogia A, Deo SV, Shukla NK, Mathur S, Sharma DN, Tiwari A. Clinicopathological profile of breast cancer: An institutional experience. Indian J Cancer. 2018;55(3):210-3.
3. Siegel RL, Miller KD, Fuchs HE, Jemal A. Cancer Statistics, 2021. CA Cancer J Clin. 2021;71(1):7-33.
4. WHO. International Agency for Research on Cancer. Globocan Breast Fact Sheet, 2020. Available at: https://gco.iarc.fr/today/en. Accessed on 10 February 2024.
5. Habibullah TM, Islam, Kamal MM, Laila N. Hospital Cancer Registry Report, NICRH, Dhaka 2015-2017. Cancer Reg. 2020.
6. Abraham J, James GL. Bethesda Handbook of Clinical Oncology. Lippincott; 2022.
7. DeVita VT, Lawrence TS, Rosenberg SA. DeVita, Hellman, and Rosenberg's cancer: principles and practice of oncology. 11th ed. Wolters Kluwer; 2019: 1217.
8. Halperin EC, Wazer DE, Perez CA, Brady LW. Perez and Brady's principles and practice of radiation oncology. 7th ed. Wolters Kluwer; 2019.
9. Rhodes A, Jasani B, Balaton AJ, Barnes DM, Miller KD. Frequency of oestrogen and progesterone receptor positivity by immunohistochemical analysis in 7016 breast carcinomas: correlation with patient age, assay sensitivity, threshold value, and mammographic screening. J Clin Pathol. 2000;53(9):688-96.
10. Rhodes A, Jasani B, Balaton AJ, Barnes DM, Miller KD. Frequency of oestrogen and progesterone receptor positivity by immunohistochemical analysis in 7016 breast carcinomas: correlation with patient age, assay sensitivity, threshold value, and mammographic screening. J Clin Pathol. 2000;53(9):688-96.
11. Ghosh J, Gupta S, Desai S, Shet T, Radhakrishnan S, Suryavanshi P, et al. Estrogen, progesterone and HER2 receptor expression in breast tumors of patients, and their usage of HER2-targeted therapy, in a tertiary care centre in India. Indian J Cancer. 2011;48(4):391-6.
12. Vaidyanathan K, Kumar P, Reddy CO, Deshmane V, Somasundaram K, Mukherjee G. ErbB-2 expression and its association with other biological parameters of breast cancer among Indian women. Indian J Cancer. 2010;47(1):8-15.
13. Doval DC, Sharma A, Sinha R, Kumar K, Dewan AK, Chaturvedi H, et al. Immunohistochemical Profile of Breast Cancer Patients at a Tertiary Care Hospital in New Delhi, India. Asian Pac J Cancer Prev. 2015;16(12):4959-64.

Cite this article as: Rahman MM, Shams MJ, Haque MS, Biswas S. Clinico-pathological profile of breast cancer patients in a radiation therapy centre. Int J Res Med Sci 2024;12:1097-100.