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Original Research Article

Ten years of survival among early-stage breast cancer patients: a hospital-based study

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ABSTRACT

Background: The incidence rate of breast cancer is gradually increasing all over the world. In Bangladesh, we have very little research-based information regarding the survival of patients with early-stage breast cancer. The aim of this study was to determine the survival outcome of early-stage (Stages I- IIIA) breast cancer among female patients in respect to their age group, stage of the disease, tumor grade, nodal status, and hormone receptor status
Methods: This was a prospective observational study focused on the survival outcome conducted in the department of clinical oncology, Bangabandhu Sheikh Mujib medical university (BSMMU), Dhaka, Bangladesh during the period from December 2011 to December 2021. One hundred and five (105) female patients with early-stage (Stages I-IIIA) breast cancer were selected following the inclusion and exclusion criteria as the study subjects. Properly informed written consent was taken from all the participants before starting data collection. All data were processed, analyzed, and disseminated by MS office and SPSS programs as per need.
Results: The survival rate was found 79% (n=83). We observed stage-wise 10-year overall survival among the participants where 51.60%, 36.10%, and 12.30% survived from tumor stage I, II, and III respectively. We also observed that 29%, 60% and 11% of patients had survived from tumor grade I, II, and III respectively (Out of 83 survival cases). On the other hand, among the 83 10-year survival patients, 53.8% were of negative nodal status whereas 34.20% were of positive nodal status patients. Among the survived 83 patients, 86% were from >40 years' age group whereas the rest 14% were from <40 years of age group.
Conclusions: Early detection and treatment of breast cancer provide a definitive survival benefit. The results of the study showed that comprehensive screening and early detection of breast cancer is required to improve the survival outcome.

Keywords: Survival, Outcome, Mortality, Early-stage breast cancer, Oncology

INTRODUCTION

Breast cancer is the most common malignant neoplasm among women globally. The prevalence is rising, particularly in low- and middle-income nations. Several prognostic markers influence a patient's survival, including the number of positive lymph nodes, tumor size, hormone receptor status, histopathological type and grade, and age of patients.[1] Worldwide, breast cancer is one of the major public health problems, since is the most frequent cancer among women, with an estimated incidence rate of 43.3 per 100,000 women as well as a mortality rate of 12.9 per 100,000 women.[2] Since the 1990s, mortality of breast cancer has been falling in North America, Europe, and

Australasian countries. This reduction has been frequently credited to the combined effect of mammographic screening and the improvements in treatment as well as in the efficiency of health care systems.[3,4] Over the past 50 years, the long-term prognosis for patients with breast cancer has improved significantly. One example would be Spain, where 10-year survival rates estimations are greater than 80%.[5] This progress could be described by the combination of earlier diagnoses and the developments with enhanced treatments.[6] Concerning the developing countries like India, the approximations indicate that 5-year survival is approximately 77%, which was similar to the Latin American countries like Porto Rico (71.2%).[7,8] Breast cancer-specific hospital-based survival studies developed in southern and southeastern Brazil reported an increased 5-year survival rate varying from 75% in Rio de Janeiro, RJ to 87.7% in Santa Maria, RS.[9,10] On the other hand, in a Brazilian study, classical prognostic factors like age (< 50 / > 50 years), tumor size (T2-3 vs T1), stage (III-IV vs I-II), number of nodes, immunohistochemical markers (HER-2, ER, PR receptors, and p53), and the treatment (surgery, radiation, immunotherapy, chemotherapy, and combinations of each) were statistically associated with breast cancer survival.[11] The major objective of this current study was to determine the survival outcome of early-stage (Stages I- IIIA) breast cancer among female patients with respect to their age group, stage of the disease, tumor grade, nodal status, and hormone receptor status.

METHODS

This was a prospective observational study focused on the survival outcome conducted in the department of clinical oncology, Bangabandhu Sheikh Mujib medical university (BSMMU), Dhaka, Bangladesh during the period from December 2011 to December 2021. A total of one hundre and five patients with proper documentation following the inclusion and exclusion criteria were confirmed as the study population. Properly informed written consent was taken from all the participants before starting data collection. As per the inclusion criteria of this study, only female patients aged above 18 years, with early-stage (Stages I-IIIA) breast cancer (World health organization (WHO) performance status 0-2), histo-pathologically diagnosed duct cell carcinoma, with good hepatic, renal and cardiac function and without any co-morbidities were included as the study population. Proper documents of all types of diagnosis and histopathological examinations were taken. A self-constructed data form consisting of details of history, clinical examination, investigations, stages, treatment plan, and periodic follow-up was used in data collection. All data were processed, analyzed, and disseminated by Microsoft office and SPSS programs as per need.

Inclusion criteria

Patients with age >18 years, tumor stages I to IIIA and HPR-duct cell carcinoma were included in the study.

Exclusion criteria

Patients with age <18 years and >70 years, tumor stage IV, patients with severe diseases (Diabetes mellitus and hypertension) and if not given consent were excluded from the study.

RESULT

Among the histopathological status of the total 105 participants, all were duct cell carcinoma according to the exclusion and inclusion criteria. Mean age of the participants was 39.89 years, and majority belonged to the age group of 31-40 years. The majority of the participants were with stage II tumor, which was found in 60% of participants. The remaining 27% and 13% of patients were with stage I and stage III cancer receptors respectively. In this study, as per the grade distribution, we found that majority of the patients were with grade 1 carcinoma. N1 node status was found among 63% of patients. Then N0 status was found in 24% and N2 status was found in the rest 13% of participants. At the follow-up, finally, the total survival rate was found 79% (n=83). At that time, the death rate was found 21%. Among the surviving 83 patients, 86% were over 40 years of age, whereas the remaining 14% were 40 years or younger. In this study, in analyzing the stage-wise 10-year overall survival among the participants we observed that 51.60%, 36.10%, and 12.30% survival rates were found from tumor stage I, II, and III patients respectively. In this study, in analyzing the tumor grade-wise 10-year overall survival among the participants we observed that 60%, 29%, and 11% survival rates were found from tumor grade I, II, and III patients respectively (Out of survived 83). Among the 83 surviving patients, 53.80% had positive node status while the remaining 34.20% had negative node status, as well as the data regarding remaining patient's node status was missing.

Table 1: Distribution of the participants by age groups, (n=105).

Age groups (Years)	N	Percentage (%)
21-30	18	17.1
31-40	47	44.8
41-50	31	29.5
51-60	8	7.6
>60	1	1
Mean age	39.89±8.94	
Age range	23-70	

Table 2: Distribution of the participants by tumor stage, (n=105).

Tumor stage	N	Percentage (%)
Stage I	28	27
Stage II	63	60
Stage III	14	13

Table 3: Distribution of the participants by tumor grade, (n=105).

Tumor grade	N	Percentage (%)
Grade 1	63	60
Grade 2	25	24
Grade 3	17	16

Table 4: Distribution of the participants by node status, (n=105).

Node status	N	Percentage (%)
N0	25	24
N1	66	63
N2	14	13

Table 5: Distribution of the participants by immunochemistry characteristics, (n=105).

Characteristics	N	Percentage (%)
ER/PR status		
ER/PR (+)	50	48
ER (+)/PR (-)	27	26
ER (-)/PR (+)	9	9
Not Done	19	18
HER±status		
HER2+	12	11
HER2-	35	33
Not done	58	55

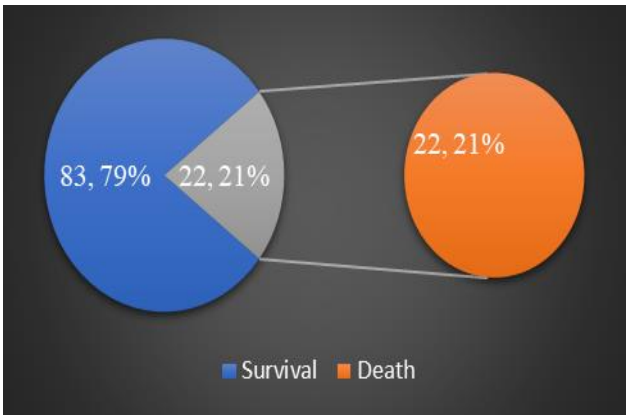

Figure 1: Survival among the participants, (n=105).

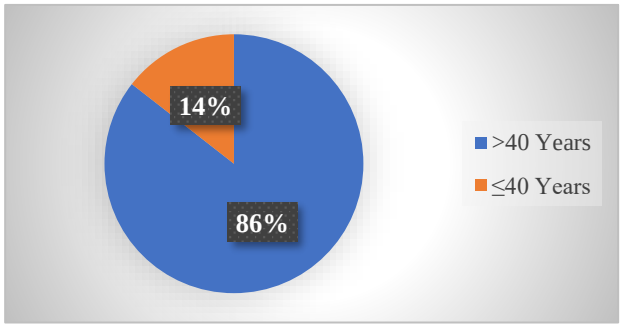

Figure 2: Age distribution of surviving participants, (n=83).

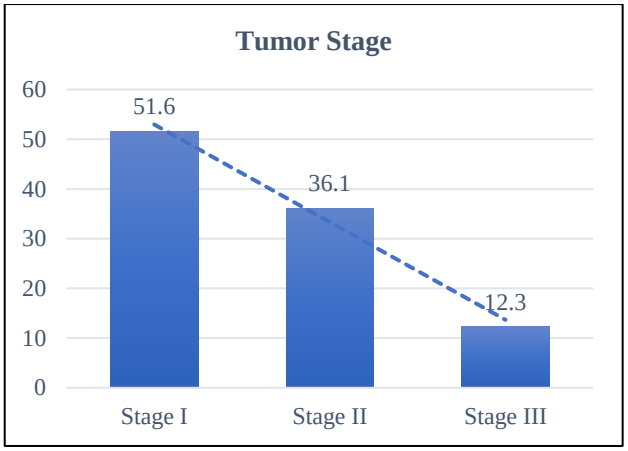

Figure 3: Distribution of surviving participants by tumor stage at 10-year follow-up, (n=83).

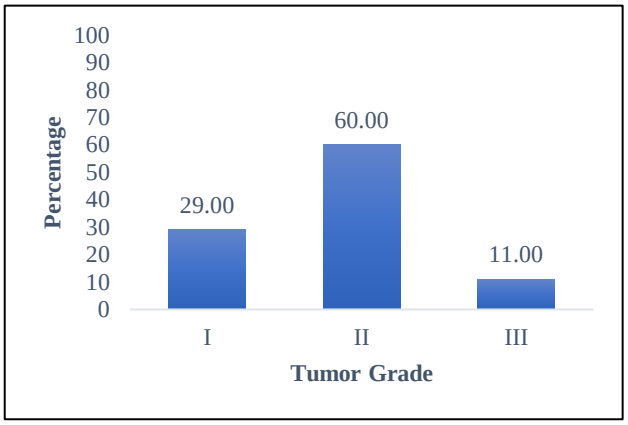

Figure 4: Distribution of surviving participants by tumor grade at 10-year follow-up, (n=83).

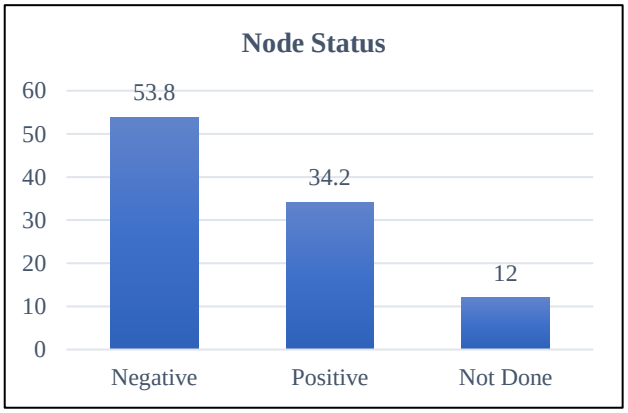

Figure 5: Distribution of surviving participants by nodal receptor status at 10-year follow-up, (n=83).

DISCUSSION

The aim of this study was to determine the survival outcome of early-stage (Stages I- IIIA) breast cancer among female patients with respect to their age group, stage of the disease, tumor grade, hormone receptor status and node status. In our study, 100% of the participants

were duct cell carcinoma cases by selection. In the current study, a 10-year breast cancer-specific survival rate was found 79% (n=83), which was about similar to that found in some European countries like Spain (>80%), and even higher than what was found in some other developing countries like India (77%) and Porto Rico (71.2%).[5,7,8] Compared to more developed areas in Brazil, the findings of our study were similar to the survival rate which was found in Santa Maria, SC, (87.7%) and even higher than those found in Belo Horizonte (78.5%), Barretos (74.8%) and Florianópolis (76.2%).[10-13] In the present study, the majority of breast cancer was observed in the early-stages (I-IIIA) at diagnosis, which was very closer to the frequencies found in some developed countries and more developed areas in Brazil.[13] The majority of the subjects in our study had stage II cancer, which was detected in 60% of the cases. The remaining 27% and 13% of patients had stage I and stage III cancer, respectively. According to the findings of several research, late stage at diagnosis is related with lower survival rates worldwide.[13,14] In this study, it was discovered that 86% of the 83 patients that survived were over 40 years of age, while the remaining 14% were of 40 years or under. Breast cancer in women under the age of 40 is uncommon, accounting for around 7% of all instances identified, and it is often associated with a worse prognosis when compared to women over the age of 40.[15] Only younger women with early-stage illness have been found to have different prognoses in some studies.[16] Despite the fact that breast-conserving surgery has become the therapy of choice for patients with early-stage breast cancer, the importance of surgical margins is still unknown and debated.[17,18] As a result, early detection treatments for breast cancer can reduce the disease's fatality rate.

Limitations

This was a single-centered study with a small-sized sample. So, the findings of this study may not reflect the exact scenario of the whole country.

CONCLUSION

Early detection and treatment of breast cancer provides a definitive survival benefit. The results of the study showed that comprehensive screening and early detection of breast cancer is required to improve the survival outcome. For getting more specific findings we would like to recommend for conducting similar more studies with larger sized samples in several places.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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