Original Article

Breast Cancer in Young Women: Experience from a Tertiary Care Hospital of Coastal India

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Abstract

Context and Aim: Breast cancers are relatively rare among young women amounting up to 6% of all breast carcinoma cases reported in that age group. In younger age groups, breast cancers, though, have a more aggressive behavior and poorer outcome in comparison to patients in the elderly age groups. The aim of the present study was to evaluate the histopathological characteristics of breast carcinomas reported in patients lesser than 40 years of age. **Materials and Methods:** Mastectomy specimens of carcinoma breast received at the Department of Pathology in a tertiary care hospital for a period of 2 years from January 2014 to December 2015 were included in the study. The histopathological slides were reviewed and clinical data was collected from the archival records and compared. **Statistical Analysis:** Statistical analysis was done using IBM SPSS statistics 17 (Chicago, USA). Various tumor characteristics were correlated with the morphological features and the other clinico-pathologic data using Chi-square value ($\chi 2$), paired t-test and Fischer's test. $p<0.05$ was considered to be statistically significant. **Results:** IDC-NOC: Infiltrating Ductal Carcinoma-Not otherwise specified was found to be the most common variant of breast carcinoma in the younger age groups followed by invasive lobular carcinoma and mucinous carcinoma while stage III was the commonest stage reported in the younger age groups as against the elderly age groups wherein stage II was found to be commoner ($p=0.006$). **Conclusion:** The results of the present study revealed a more aggressive and advanced stages of breast carcinomas cases reported in the younger age groups.

Keywords: Breast cancer; Tertiary care settings; Younger age groups; TNM staging; Histopathology

Introduction

The most common cancers diagnosed in women are the breast cancers. These account for the second most common cause of cancer-related deaths in the affected women. Breast cancer is a relatively rare occurrence in the young women amounting to up to 6% of all breast carcinoma cases reported in that age group. [1] In younger age groups, breast cancers, though, have a more aggressive behavior and poorer outcome in comparison to patients in the elderly age groups. [2-5] Recently, a phenomenal change has been noticed in the behavior of breast carcinoma cases wherein more of the young women have been found to be more commonly getting afflicted and being diagnosed with breast carcinomas. [6-8] The aim of the present study was to evaluate the histopathological characteristics of breast carcinomas reported in patients lesser than 40 years of age and compare them with those reported in the elderly age groups.

Materials and Methods

A retrospective study was conducted over a period of 2 years from January 2014 to December 2015 in Department of Pathology of a tertiary care hospital of South India wherein mastectomy specimens of carcinoma breast received at the Department of Pathology were included. The histopathological slides were reviewed and clinical data was collected from the archival records and compared. All data including the clinical presentation, pathological type and TNM staging of the tumor were compared between the two groups. Carcinoma-*in-situ*, male breast carcinomas and inadequate biopsy samples were excluded from the study. The study was subjected for Ethical Approval from the Institutional Ethical Committee and clearance was obtained before the start of the study.

Statistical Analysis

Statistical analysis was done using IBM SPSS statistics 17 (Chicago, USA). Various tumor characteristics were correlated with the morphological features and the other clinico-pathologic

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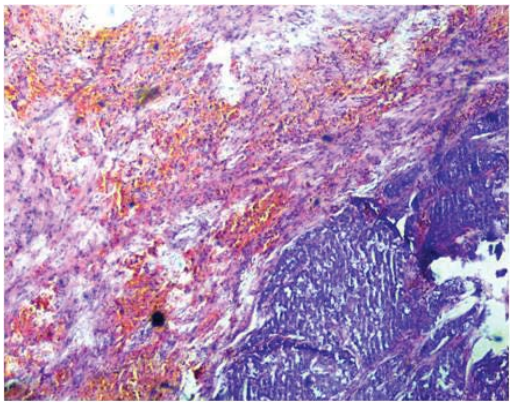

Figure 1: Tumor cells (H&E, 40x).

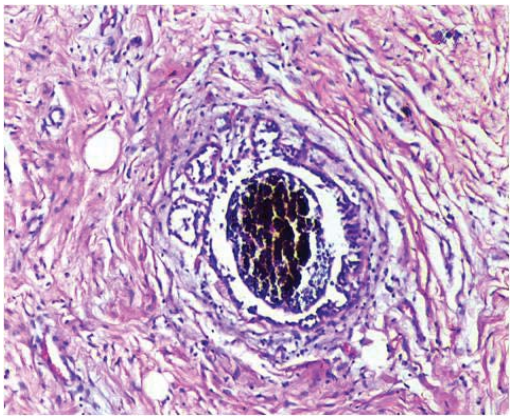

Figure 2: Tumor cells showing areas of fibrosis and calcification (H&E, 200x).

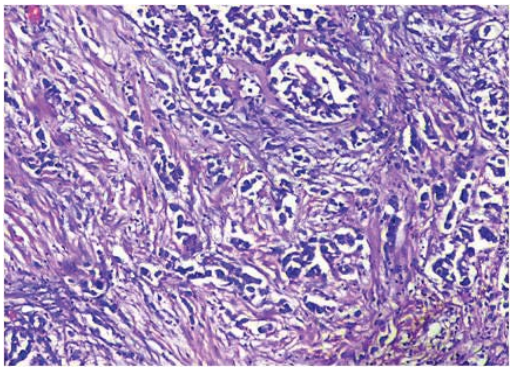

Figure 3: Tumor cells showing areas of fibrosis and calcification (H&E, 100x).

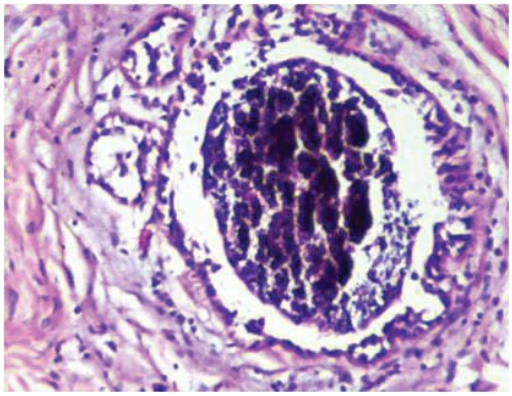

Figure 4: Tumor cells showing areas of fibrosis and calcification (H&E, 200x).

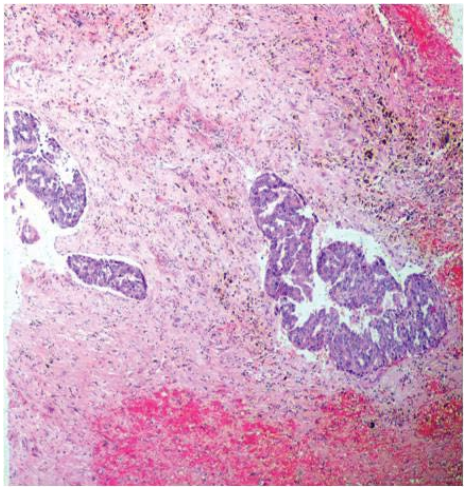

Figure 5: Tumor cells showing hemosiderin laden macrophages along with areas of fibrosis (H&E, 40x).

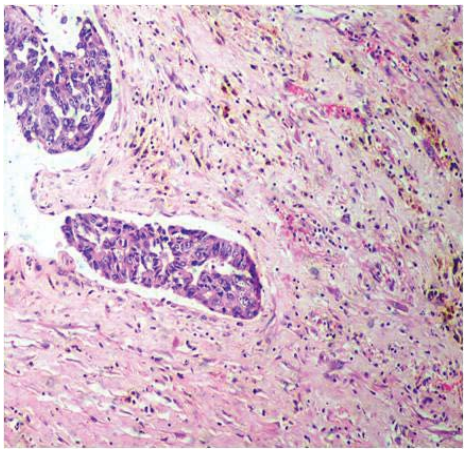

Figure 6: Tumor cells showing hemosiderin laden macrophages along with areas of fibrosis (H&E, 100x).

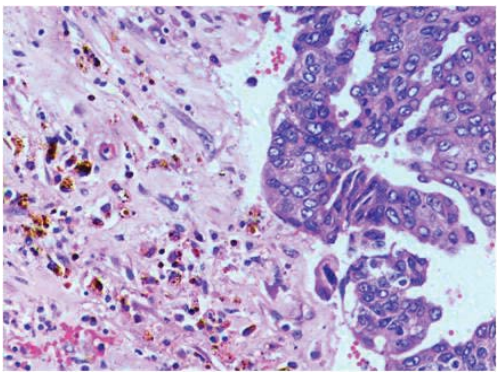

Figure 7: Tumor cells showing hemosiderin laden macrophages along with areas of fibrosis (H&E, 200x).

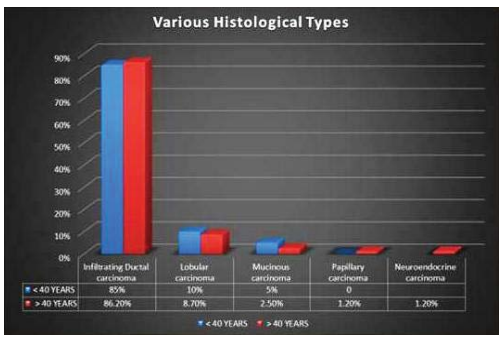

Figure 8: Various histological types of breast carcinomas in the younger and elderly age groups.

data using Chi-square value ($\chi 2$), paired t-test and Fischer's test. $p<0.05$ was considered to be statistically significant.

Results

A total of hundred female mastectomy specimens were evaluated out of which 20 cases were reported in patients below 40 years while 80 mastectomy specimens were from cases above 40 years of age [Table 1]. IDC-NOC: Infiltrating Ductal Carcinoma-Not otherwise specified [Figures 1-7] was found to be the most common variant of breast carcinoma in the younger age groups followed by invasive lobular carcinoma and mucinous carcinoma. [Table 1 and Figure 8] Larger tumor size of T3 (diameter > 5 cm) was, also, found to be more common in the younger age groups while in the elderly age groups, a tumor size of T2 (diameter 2-5 cm) was found to be more common (p=0.017) [Table 1]. Furthermore, younger patients had greater number of nodes [Figures 9-11] which were found to be positive as compared to the elderly age groups (p=0.042) [Table 1]. In the younger age groups, stage III was the commonest stage reported as against the elderly age groups wherein stage II was found to be commoner (p=0.006) [Table 2 and Figure 12].

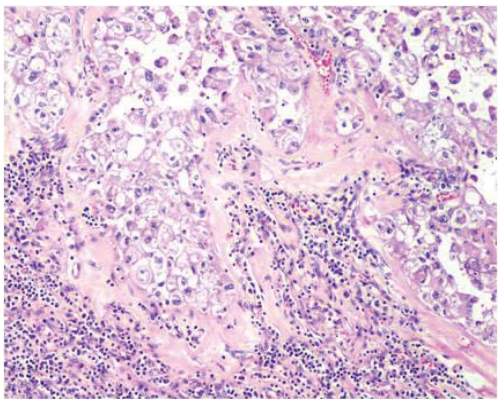

Figure 9: Lymph nodal tissue showing tumor cells with areas of fibrosis and hyalinization (H&E, 100x);

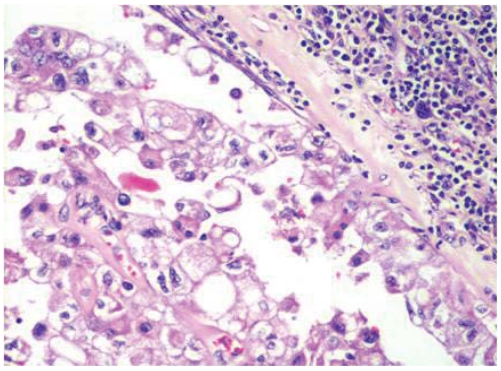

Figure 10: Tumor cells in lymph nodal tissue (H&E, 200x).

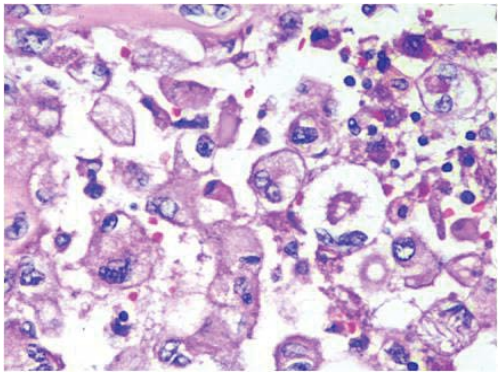

Figure 11: Tumor cells in lymph nodal tissue (H&E, 400x).

Figure 12: TNM staging of breast carcinomas in the younger and elderly age groups.

Table 1: Tumor characteristics in breast carcinoma cases reported in the 2 age groups.

Tumor Characteristics	<40 years	>40 years	p-value
n (No. of cases)	20	80	
Histological Type			
Infiltrating ductal carcinoma	17	69	p>0.05
Lobular carcinoma	2	6	
Papillary carcinoma	0	2	
Mucinous carcinoma	1	2	
Neuroendocrine carcinoma	0	1	
Tumor size			
T1	2	4	
T2	9	51	p<0.017*
T3	9	23	
T4	0	2	
Nodal status			
N0	8	41	
N1	7	24	p<0.042*
N2	3	10	
N3	2	5	
TNM Staging			
Stage 1	2	4	
Stage 2	12	55	p<0.006*
Stage 3	6	20	
Stage 4	0	1	
Immuno-histochemistry			
ER/PR Positive, Her2 Negative	3 (15%)	14 (17.5%)	
ER/PR Positive, Her2 Positive	4 (20%)	21 (26.2%)	
ER/PR Negative, Her2 Negative	8 (40%)	15 (18.8%)	p<0.043*
ER/PR Negative, Her2 Positive	2 (10%)	14 (17.5%)	
Not done	3 (15%)	16 (20%)	

p<0.05* Statistically Significant

Discussion

Although breast carcinomas are recognized to occur more commonly in the post-menopausal age, they can occur in the relatively young age, too. In younger age groups, breast cancers, though, have a more aggressive behavior and poorer outcome in comparison to patients in the elderly age groups. [9-11] The incidence of breast cancers is less by 2% to 3% in the west as compared to the Indian population. [12] As per Mohanti BK et al. [7] in young Indian women, the incidence of breast cancers is around 5.5% similar to the study conducted by Das U et al. [8] which reported an and incidence of 8%. The results of the present study showed a relative incidence of 20% of the cases

Table 2: Clinico-pathologic data correlated with tumor characteristics in breast carcinoma cases reported in the 2 age groups in the previous studies.

Studies	N (No. of cases)		Most common histological type of the tumor		Predominant tumor grade and TNM staging	
Age	<40 years	>40 years	<40 years	>40 years	<40 years	>40 years
Manilal B et al. [6]	100 (23.8%)	420 (72.2%)	IDC-NOS- 87%	IDC-NOS- 81%	T3 (43.1%) TNM Stage-III (54.8%)	T2 (41%) TNM stage-II (47%)
Sidoni A et al. [11]	50	50 (50 Randomly selected matched cases)	IDC-NOS- 80 %	IDC-NOS- 90%	TNM stage-III (58%)	TNM stage-II (75%)
Zhang Q et al. [14]	181 (37%)	488 (63%)	IDC-NOS- 77.3%	IDC-NOS- 84.4%	T2 (69.3%) TNM stage-III (49.2%)	T2 (77.7%) TNM stage-II (52.2%)
Thapa B et al. [16]	263 (27.9%)	681 (72.1%)	IDC-NOS- 93.1%	IDC-NOS- 86%	T3 (55.9%) TNM stage-III (55.34%)	T2 (54.2%) TNM stage-II (57.9%)
Thangjam S et al. [18]	160 (31%)	347 (68%)	IDC-NOS- 85.6%	IDC-NOS- 83.5%	T3 (58.13%) TNM stage-III (55.34%)	T2 (69.45%) TNM stage-II (64%)
Present study	20 (20%)	80 (80%)	IDC-NOS- 85%	IDC-NOS- 86.2%	T3 (60%) TNM stage-III (60%)	T2 (63%) TNM stage-II (68.7%)

IDC-NOS: Infiltrating Ductal Carcinoma-Not Otherwise Specified

reported in the younger age groups as per the data retrieved from the archival records of the hospital set-up. Clinically and histopathologically, breast cancers in the young are different from that reported in the elderly age groups. [13] In the present study, too, the average age at presentation was found to be 64.5 years based on the archival records of the hospital which was similar to the previously reported studies. [14-17] The oldest patient reported was of 78 years of age in the present study as against the youngest patient being just 33 years of age. Lump in the breast was the most common presenting complaint of the patients (83%) in the present study followed by mastalgia (6%) while most of the cases had a history of 5 months duration. In addition, tumor size of T3 (diameter > 5 cm) was found to be more common in the younger age groups while in the elderly age groups, a tumor size of T2 (diameter 2-5 cm) was found to be more common (p=0.017). On histopathological examination, stage III was the commonest stage reported in the younger age groups as against the elderly age groups wherein stage II was found to be commoner (p=0.006). Similar results were found in various other studies conducted in the past including the one conducted by Manilal B et al. [6] Sidoni A et al. [11] Thapa B et al. [16] and Thangjam S et al. [18] wherein stage III was the predominant stage reported in the younger women (<40 years) while stage II was the most common stage reported in the elderly age groups (>40 years). This was in relative contrast to the results of the study conducted by Zhang Q et al. [14] which reported stage II to be the predominant stage in both the younger and elderly age groups. As per Colleoni M et al. [19] more aggressive behavior of the disease was seen in 48% of the young patients. In the present study, too, young patients had advanced stage of the disease with concomitant higher rate of lymph node positivity reported and greater number of nodes (25%) involved in the younger age groups as compared to the elderly patients (6.2%) (p=0.042). Also, IDC-NOC: Infiltrating Ductal Carcinoma-Not otherwise specified was found to be the most common variant of breast carcinoma reported in the younger age groups followed by invasive lobular carcinoma and mucinous carcinoma. This was, also, in agreement with the results of most of the studies conducted previously wherein IDC-NOC has been the most common histological type of breast carcinoma in both the younger and the elderly age groups. [9-11,13-18] Furthermore, the number of cases with triple negative breast carcinomas was found to be more in the younger age groups in the present study compared to the elderly age groups (40% vs. 18.8%) (p<0.043), a finding which was in agreement with most of the previous studies which reported triple negative breast carcinoma cases and high grades of tumor with lymph nodal involvement and poorer prognosis to be commonly seen in association with patients in the younger age groups. [20-24]

Conclusion

Breast cancer diagnosed at young age has an aggressive behavior and poorer outcome in comparison to patients in the elderly age groups. Young women often tend to present with advanced stage of the disease and high grades of tumor with lymph nodal involvement and metastasis conferring an inferior prognosis. This illustrates the need for more clinical trials to be conducted on younger patients with breast cancers with an aim to improve the overall outcome in this age group. Breast cancer awareness and screening programs and easy access to health care delivery systems may help to increase the awareness and detect breast cancer in early stage. Thus, women in this age group must be educated for regular self-examination and early medical attention on discovery of any breast lump that is persistent for more than certain duration. Also, clinical breast examination at health care delivery systems during routine check-ups should be encouraged to facilitate an early intervention if at all needed.

Conflict of Interest

The authors disclose that they have no conflicts of interest.

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