Original research article

A Retrospective Study on Carcinoma of Breast in Young Females

Dr. Abdul Hakeem Attar1, Dr. Shahid Iqbal2

[1]Associate Professor, Department of Pathology, ESIC Medical College, Kalaburagi, Karnataka, India

2 Consultant Pathologist, Kalaburagi, Karnataka, India.

Corresponding Author: Dr. Abdul Hakeem Attar

Abstract

Introduction

Breast cancer is the most common cancer in women and the second most common cancer worldwide. It is also the second leading cause of death due to cancer. Breast cancer is less frequent in the younger age group but have a poorer outcome in contrast to the breast cancer arising in the older age groups. There is a lack of awareness and due to this, majority of patients present late. The aim of this study is to know the incidence and clinicopathological features of breast cancer in young females under the age of 40 years.

Methods: This is a retrospective study done over a period of one year (2018) at ESI medical college and hospital, Kalaburagi, Karnataka. The hospital and lab records were searched for histologically confirmed breast cancer cases in female patients under the age of 40 years. A total of 14 breast cancer cases were identified and hematoxylin and eosin stained histopathology slides were retrieved from the histopathology archives and were reviewed. The available slides of immunohistochemistry markers were also reviewed.

Results: The most common histological type was infiltrating ductal carcinoma (IDC) seen in 13 (92.8%) cases with 1 case of invasive lobular carcinoma. Half of cases were of stage III at the time of diagnosis. 4 (28.57%) cases presented as stage II and 3 (21.4%) cases were stage I. There was a predominance of higher grade with 7 (50%) cases having grade II and 5 (35.7%) of cases were grade III. On IHC, 4 cases (28.57%) were negative for estrogen receptor, progesterone receptor and Her 2 neu

Conclusion: Young breast cancer patients present with higher stage, higher tumor grade and hormonal receptor negative status. More studies are needed to investigate survival and post treatment recurrence in young females with breast cancer.

Keywords: Breast cancer, infiltrating ductal carcinoma

Introduction

Breast cancer is the most common cancer in the women and the second most common cancer worldwide [1]. It is also the second leading cause of death due to cancer [2]. Every year there are 1.00.000 new cases of breast cancer occurring in Indian women. There is a lack of awareness and due to this, majority of Indian patients present late [3]. Breast cancer is less frequent in the younger age group but have a poorer outcome in contrast to the breast cancer arising in the older age groups [4, 5]. The proportion of breast cancer cases in young varies according to the geographical region and socioeconomic status [6]. There is a significant increase in the incidence and cancer associated morbidity and mortality in Indian subcontinent. Breast cancer in young females is more common in the metropolitan cities whereas in rural areas the incidence is low [7]. Younger women are often less likely to seek medical advise leading to a more advanced stage at the time of presentation of breast cancer [8]. The diagnosis of breast cancer in young has more implications than in the elderly women as higher mortality is associated with the younger age [9].

We undertook this retrospective study to know the incidence and clinicopathological features of breast cancer in young females under the age of 40 years.

Material and Methods

This is a retrospective study done over a period of one year (2018) at ESI medical college and hospital, Kalaburagi, Karnataka. The hospital and lab records were searched for histologically confirmed breast cancer cases in female patients under the age of 40 years. All other breast cancer cases in patients above 40 years of age, male breast cancer and in-situ cancers where not included. A total of 14 breast cancer cases were identified and hematoxylin and eosin stained histopathology slides were retrieved from the histopathology archives. The demographic and clinical details were recorded from the hospital files. The available slides of immunohistochemistry markers were also retrieved for review. The slides were reviewed by a senior histopathologist to confirm the diagnosis. The data collected includes demographics, clinical presentation and stage at the time of diagnosis. Other details like lymph node status, tumor grade, presence of lymphovascular invasion, perineural invasion, hormonal receptor and human epidermal growth factor receptor 2 (Her 2) status were also recorded and confirmed by reviewing the slides by the histopathologist.

Results

There were 14 cases of breast carcinoma during the one year of study period. Majority of the cases were in the age group of 30-40 years. Two cases were reported in the age group of 20-25 years. None of the patients had a family history of breast cancer.

The tumors were equally distributed with 7 (50%) cases in the right breast and 7 (50%) in the left breast of the 14 patients. There was no bilateral disease. The most common histological type was infiltrating ductal carcinoma (IDC) seen in 13 (92.8%) cases with 1 case of invasive lobular carcinoma. In this study, half of cases were of stage III at the time of diagnosis. 4 (28.57%) cases presented as stage II and 3 (21.4%) cases were stage I. None of the cases were stage IV at the time of diagnosis. There was a predominance of higher grade with 7 (50%) of cases having grade II and 5 (35.7%) of cases were grade III. Only 2 (28.5%) cases were of grade I. Immunohistochemistry data for hormonal receptors and Human epidermal growth factor receptor (Her 2 neu) was not available for 4 cases. In the remaining cases, 4 cases (28.57%) were negative for estrogen receptor, progesterone receptor and Her 2 neu. (Table1). Microscopic examination showed the characteristic histological features of infiltrating ductal carcinoma in 13 cases and one case showed features of invasive lobular carcinoma. One case of IDC showed significant desmoplasia. (Figure 1)

Table 1: Demographics and characteristics of breast cancer in young females

Number of cases	14
Age Distribution (*in years*)	
21-25	02
26-30	02
31-35	06
35-40	04
Histological type	
Infiltrating ductal carcinoma	13 (92.8%)
Invasive lobular carcinoma	01 (7.14%)
TNM Stage	
Stage I	03 (21.4%)
Stage II	04 (28.57%)

Stage III	07 (50%)
Stage IV	0
Grade	
Grade I	2 (28.5%)
Grade II	7 (50%)
Grade III	5 (35.7%)
Immunohistochemistry	
ER Positive/PR Positive Her 2 neu Positive	2 (28.5%)
ER Positive/PR Positive Her 2 neu Negative	3 (21.4%)
ER Negative/PR Negative Her 2 neu Negative	4 (28.57%)
ER Positive/PR Positive Her 2 neu Positive	1 (7.14%)
Not Available	4 (28.57%)

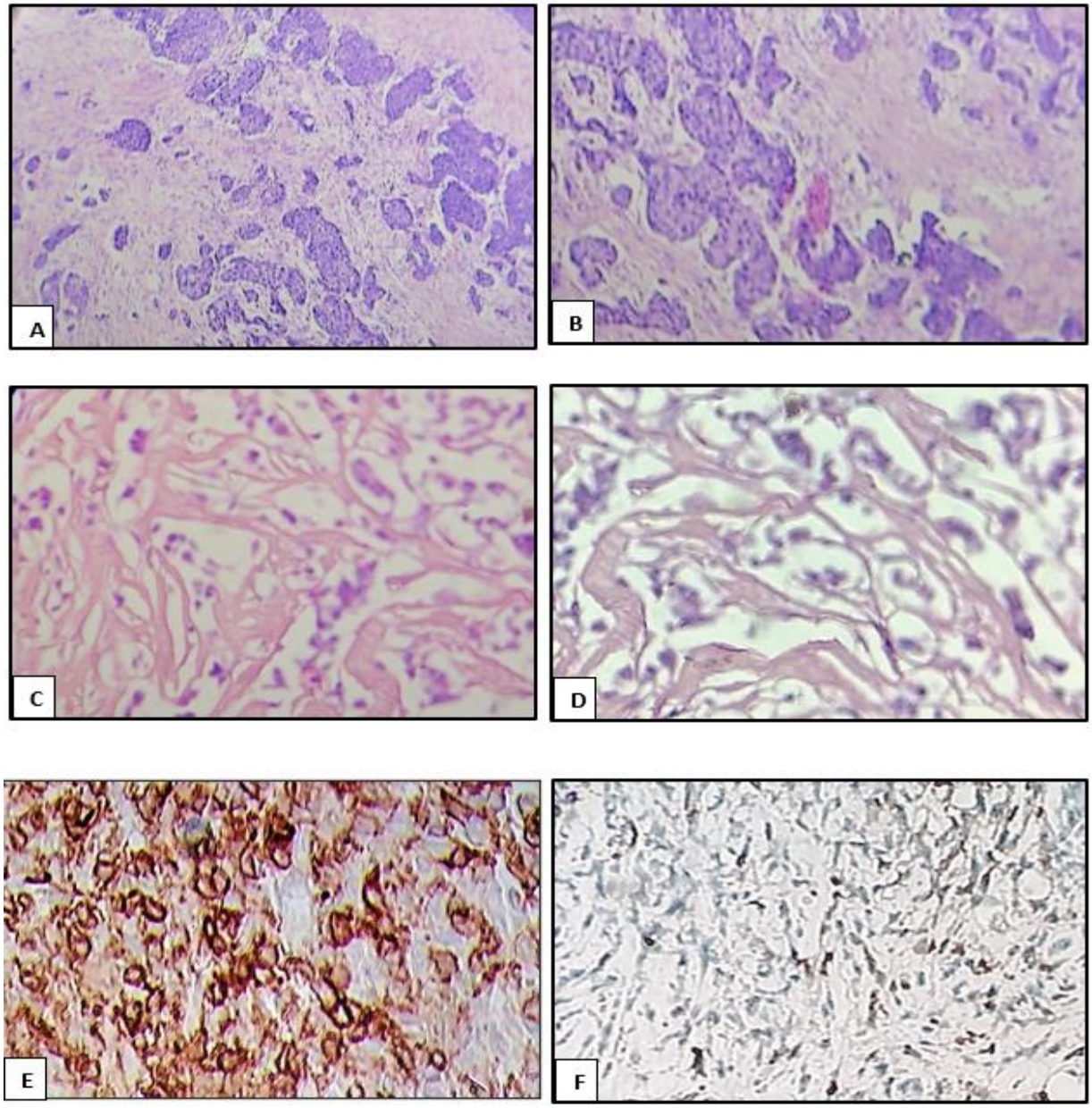

Figure 1: A. Tumor cells infiltrating the stroma (H & E, 10X); B. Tumor cells infiltrating the stroma (H & E, 20X); C and D. Tumor cells scattered in the desmoplastic stroma (H&E, 20X); E. Her 2 neu positive tumor cells (40X); F. Her 2 neu Negative (20X)

Discussion

We present here 14 histologically confirmed cases of breast carcinoma in the young female under 40 years of age. Clinically and histologically the breast cancer in the young patients are different from those reported in elderly patients. In our study, the most common histological type was infiltrating ductal carcinoma, a finding reported by other studies as well (Table 2). The predominant stage of presentation in young patients with breast cancer was stage III, a finding also reported by others [3, 8, 10, 11, 12, 13, 14].

There is an increase in prevalence of female breast cancer in young patients in India and is more likely to present at higher stage and grade. Genome wide association studies have identified numerous single nucleotide polymorphism that are associated with an increased risk of breast cancer [15]. Tumors in young patients are more endocrine unresponsive [16]. The main factors associated with breast cancer development in young women would be hormonal and reproductive status [17]

Table 2: comparison of breast cancer characteristics in young females

Study	Number of cases < 40 year)	Most common histological type	Predominant TNM Stage	Grade
Present study	14	IDC 13 (92.8%)	Stage III 7 (50%)	Grade II 7 (50%)
Bakkach J et al[10]	82	IDC 95.2%	Stage II 65.8%	Grade II 47.6%
Zimmer AS et al[11]	1139	Not available	Stage II 45.4%	Grade III 49.5%
Wang K et al[12]	2682	Not available	Stage II 31.92%	Grade II 26.88%
Thapa et al[8]	263	IDC 93.1%	Stage III 55.1%	Grade II/III 55.9%
Manilal B et al[3]	100	IDC 87%	Stage III 54.8%	Grade III 43%
Sivakumar P[13]	47	IDC 93.61%	Stage III 53.19%	Not available
Thangjam S[14]	160	IDC 85.62%	Stage III 47%	Not available

Breast cancer is the most common malignancy among females in developed countries and 12% of the carcinoma are reported to arise in the age group of 20-34 years [13]. Delay in diagnosis is one of the challenges in managing breast cancer in young patients. Infiltrating ductal carcinoma is the most common histological type reported in young patients. Poor histological grade with presence of necrosis has shown to be having a worse prognosis in young women [13]. Young females also has a greater incidence due to their carrying of BRCA1 and BRCA2 in germline and which has established the biologic basis of disease related to young age. The important prognostic factors include tumor size, lymph node status, hormone receptor and Her 2 neu status as well as histological grade. Breast cancer in young is hormone receptor negative when compared to the breast cancer in older patients [18]. There is a possibility that in future, the younger age group breast cancer patients will be separated as a distinct category of breast cancer. Our findings are similar to the almost universal reported findings of a worse prognosis for young breast cancer patients with higher stage, higher tumor grade and hormonal receptor negative tumors [11].

Modified lifestyle and westernization has been reported as a reason for increasing trend of breast cancer in young. In India, the incidence of breast cancer in young females under the age of 35 has been reported to be ranging from 5.5% to 11.3%. Breast cancer shows irregularities in between the developed and developing countries with higher incidence reported in developed countries but a higher mortality rates in developing countries. Younger age breast cancer is associated with a large sized tumor, higher number of metastatic lymph nodes, higher grade and poorer outcome [2].
Hence there is necessity to detect this at an early age.

Conclusion

Educating the young adults about breast cancer, organizing breast cancer detection camps can help in creating awareness of the disease. Analysis should be done for other genetic biomarkers to explain the high prevalence of breast cancer in young women. There is a need to identify molecular subtypes of breast cancer and their risk factors in young Indian women in order to develop targeted strategies for prevention and control. We recommend starting breast cancer screening at an early age. More studies are needed to investigate survival and post treatment recurrence in young females with breast cancer.

Acknowledgement: Nil
Conflict of Interest: Nil

References

1. Fabiano V, Mandó P, Rizzo M, et al. Breast Cancer in Young Women Presents With More Aggressive Pathologic Characteristics: Retrospective Analysis From an Argentine National Database. JCO Glob Oncol. 2020;6:639-646. doi:10.1200/JGO.19.00228
2. Kumar, M.Bala Vikas, G.Jagdishwar Goud, and Harika Tirunagari. "Breast Cancer-Rising Trend in Young!." Global Journal of Surgery 5.1 (2017): 6-8.
3. Manilal, B. et al. “Breast cancer in young: Experience at a tertiary care centre in Tirupati, Andhra Pradesh.” Journal of Clinical and Scientific Research 5 (2016): 93 - 100.
4. Das P, Khuntia PK, Das R, Nayyar AS. A Retrospective Clinico-pathologic Analysis of 100 Breast Cancer Cases: Experience from a Tertiary Care Hospital of Coastal India. Int J Med Public Health. 2020;10(2):81-4.
5. Shah AN, Metzger O, Bartlett CH, Liu Y, Huang X, Cristofanilli M. Hormone Receptor-Positive/Human Epidermal Growth Receptor 2-Negative Metastatic Breast Cancer in Young Women: Emerging Data in the Era of Molecularly Targeted Agents. Oncologist. 2020;25(6):e900-e908. doi:10.1634/theoncologist.2019-0729
6. Romieu I, Biessy C, Torres-Mejía G, et al. Project profile: a multicenter study on breast cancer in young women in Latin America (PRECAMA study). Perfil de Proyecto: Un estudio multicéntrico sobre el cáncer de mama en mujeres jóvenes en América Latina (estudio PRECAMA). Salud Publica Mex. 2019;61(5):601-608. doi:10.21149/10466
7. Malvia S, Bagadi SA, Dubey US, Saxena S. Epidemiology of breast cancer in Indian women. Asia Pac J Clin Oncol. 2017;13(4):289-295. doi:10.1111/ajco.12661
8. Thapa B, Singh Y, Sayami P, Shrestha UK, Sapkota R, Sayami G. Breast cancer in young women from a low risk population in Nepal. Asian Pac J Cancer Prev. 2013;14(9):5095-5099. doi:10.7314/apjcp.2013.14.9.5095
9. Ntekim A, Nufu FT, Campbell OB. Breast cancer in young women in Ibadan, Nigeria. Afr Health Sci. 2009;9(4):242-246.
10. Bakkach J, Mansouri M, Derkaoui T, et al. Clinicopathologic and prognostic features of

breast cancer in young women: a series from North of Morocco. BMC Womens Health. 2017;17(1):106. Published 2017 Nov 9. doi:10.1186/s12905-017-0456-1

11. Zimmer AS, Zhu K, Steeg PS, et al. Analysis of breast cancer in young women in the Department of Defense (DOD) database. Breast Cancer Res Treat. 2018;168(2):501-511. doi:10.1007/s10549-017-4615-8
12. Wang K, Ren Y, Li H, et al. Comparison of Clinicopathological Features and Treatments between Young (≤40 Years) and Older (>40 Years) Female Breast Cancer Patients in West China: A Retrospective, Epidemiological, Multicenter, Case Only Study. PLoS One. 2016;11(3):e0152312. Published 2016 Mar 31. doi:10.1371/journal.pone.0152312
13. Sivakumar P, Ravi C, Rodrigues G. Breast cancer in young women: The effect of age on tumor biology and prognosis. Clin Cancer Investig J 2015;4:165-9
14. Thangjam S, Laishram RS, Debnath K. Breast carcinoma in young females below the age of 40 years: A histopathological perspective. South Asian J Cancer 2014;3:97-100.
15. Rath M, Li Q, Li H, et al. Evaluation of significant genome-wide association studies risk - SNPs in young breast cancer patients [published correction appears in PLoS One. 2020 Mar 12;15(3):e0230529]. PLoS One. 2019;14(5):e0216997. Published 2019 May 24. doi:10.1371/journal.pone.0216997
16. Kataoka A, Tokunaga E, Masuda N, Shien T, Kawabata K, Miyashita M. Clinicopathological features of young patients (<35 years of age) with breast cancer in a Japanese Breast Cancer Society supported study. Breast Cancer. 2014;21(6):643-650. doi:10.1007/s12282-013-0466-2
17. Slaoui M, Mouh FZ, Ghanname I, Razine R, El Mzibri M, Amrani M. Outcome of Breast Cancer in Moroccan Young Women Correlated to Clinic-Pathological Features, Risk Factors and Treatment: A Comparative Study of 716 Cases in a Single Institution. PLoS One. 2016;11(10):e0164841. Published 2016 Oct 19. doi:10.1371/journal.pone.0164841
18. Kroman N, Jensen MB, Wohlfahrt J, Mouridsen HT, Andersen PK, Melbye M. Factors influencing the effect of age on prognosis in breast cancer: Population based study. BMJ 2000;320:474-8.