Clinicopathological profile of breast cancer in young females at tertiary cancer center in Nepal.

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Abstract

Background: Breast cancer is one of the commonest cancer in females globally. The scenario in Nepal is also similar. Breast cancers are now not only limited to older age group but younger females are also visiting hospital with breast malignancies. An increase in trend of breast cancer in young females have been noticed. They are reported to have a more aggressive clinical and pathological features. **Material and methods**: We conducted a retrospective study of breast cancers in mastectomy specimen with focus on young females of less than or equal to forty years of age. The data collection period was from January 1st to December 31st 2021. Data were collected from the records of department of pathology. All those cases of post neoadjuvant chemotherapy with no residual masses microscopically and cases of male breast carcinoma were excluded. **Results:** A total of 273 cases of mastectomies were analyzed. 75 cases were from patients of ≤40 years of age and 198 belonged to age group of >40 years. Invasive breast carcinoma of no special type and histological (Nottingham Histological score) grade of Grade 2 was common in both groups. However grade 3 was more prevalent in younger group. Left breast was most frequent laterality for the cancer. Perineural invasion was found more in older females. **Conclusion:** Breast cancer is no longer a disease of older females only. More and more cases are being diagnosed at younger age group and they are more aggressive in them. Hence there is a greater need to spread awareness regarding breast cancer in the younger population as well.

Keywords: Breast Cancer, Incidence, Young patients, Nepal

Introduction

According to Globocan 2020, breast cancer in females constitutes 17.1% of all female cancers in Nepal. It constitutes third common cancer in Nepal occurring as a new case each year.[1]The global data shows that breast cancer are not so common in young women as compared to older group. However in young; they are more aggressive and said to have an unfavorable prognosis. [2]Worldwide approximately 7% of the young females are

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diagnosed with breast cancer among all cases of breast cancer.[3]

The aim of this study was to evaluate the clinicopathological features of breast carcinoma in young females of ≤40 years in tertiary cancer center of Nepal and compare the data with females of >40 years age group. Thus giving an overview of breast cancer in young females in our country.

Material and methods

This is a retrospective study of all the modified radical mastectomies specimen which were received, processed and analyzed at Department of Pathology at B.P. Koirala Memorial Cancer Hospital from January 1st to December 31st 2021. Those cases with no residual tumor post chemotherapy were excluded from the study. The data were retrieved from the Department of Pathology. They were entered in Microsoft excel.

Results

A total of 273 specimen of modified radical mastectomies were analyzed, among which there were 75 cases of females of ≤40 years group(27.4%)and 198 cases of >40 years group (72.6%) (Table 1) .The distribution of different histological types of cancer among different age groups and their frequencies is given in table 2. Invasive breast carcinoma of no special type was the most common tumor type. When classified as per the AJCC staging eighth edition, pathological stage pT2 was the most common stage in both age groups (Fig 1). Histological grade 3 was 30.67% in younger group and 26.8% in other group (Table 3). Most common site among all the age groups was left breast (Fig 2). Tumor size ranged from 3mm to 10 cm. The mean size of the tumor is 3.721cm with standard deviation of 1.79cm. Perineural invasion was common in older age group as compared to younger age (Table 4). Lymph node was present in more than 50% cases in young females (Table 5).

Table 1. Age-distribution of breast cancer in both groups

SN	Age-group (years)	Frequency	Percentage (%)
1	20-30	11	4
2	30-40	64	23.4
3	40-50	86	31.5
4	50-60	73	26.7
5	60-70	28	10.3
6	70-80	10	3.7
7	80-90	1	0.4
	Total	273	100

Table 2. Histological types of breast cancer according to age

Histological type	Age ≤ 40 years	Age > 40 years	Total
Invasive NST	73 (97.4%)	182 (91.9%)	255 (93.3%)
Medullary	1 (1.3%)	6 (3.04%)	7 (2.5%)
Mixed	-	1 (0.5%)	1 (0.4%)
Lobular	-	3 (1.5%)	3 (1.1%)
Metaplastic SCC	-	2 (1.02%)	2 (0.8%)
Mucinous	-	3 (1.5%)	3 (1.1%)
IPC	1(1.3%)	1(0.5%)	2 (0.8%)
Total	75 (100%)	198 (100%)	273 (100%)

Discussions:

Breast cancer is the most common cancer affecting women globally, accounting for 25.4% of all new cases of cancer diagnosed in year.[4] According to Globocan data 2020 breast cancer constitutes 9.6% of all new

cancers in Nepal . Breast related malignancies are rare in early childhood and adolescence.[5]

Table 3*: pTNM staging according to age*

*p*TNM staging	Age ≤ 40 years	Age > 40 years	Total
0	-	1 (0.5%)	1 (0.4%)
1	13 (17.3%)	27 (13.6%)	40 (14.6%)
2	49 (65.4%)	130 (65.6%)	179 (65.6%)
3	13 (17.3%)	30 (15.2%)	43 15.8%)
4	-	10 (5.1%)	10 (3.6%)
Total	75 (100%)	198 (100%)	273 (100%)

Table 4: Perineural status according to age

Perineural invasion	**Age ≤ 40 years**	**Age > 40 years**	**Total**
No	70 (93.3%)	169 (85.3%)	239 (87.5%)
Yes	5 (6.7%)	29 (14.7%)	34 (12.5%)
Total	**75 (100%)**	**198 (100%)**	**273 (100%)**

Table 5: Lymph node status of breast cancer according to age

Lymph node involvement	**Age ≤ 40 years**	**Age > 40 years**	**Total**
No	34 (45.33%)	75 (37.88%)	109 (39.9%)
Yes	41 (54.67%)	123 (62.12%)	164 (60.1%)
Total	**75 (100%)**	**198 (100%)**	**273 (100%)**

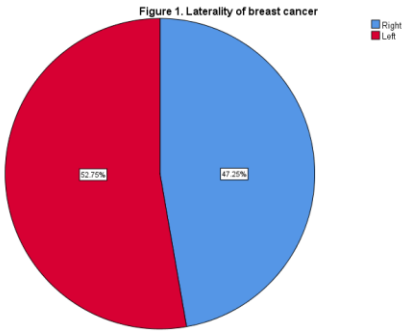

Figure 1. Overall laterality of the tumor Right vs Left

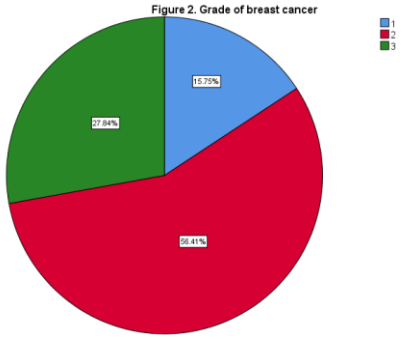

Figure 2. Overall grade of the tumor in young and older group .

In western world breast cancer in females of younger age group is rare and it constitutes around 2% of all the breast cancer cases.[5] Our study shows 27.5% breast cancer seen in young females. We designated 40% as cut – off age limit as many articles in the literature consider either 35 or 40 as "young females" .This value is similar to the study done by Nepal B et al where young breast cancer comprises 27% of total breast cancer in their study.[6] There are many reasons for breast cancer in young females, the familial risk with harboring of BRCA1 germline mutation is an important cause. Oral contraceptive is also responsible in early onset breast cancer. Prior history of irradiation for Hodgkin lymphoma is also a contributing factor as well as early age of menarche.[7] Common

Breast lesion in young and adolescence is fibroadenoma whereas malignancy is rare in these population. Stromal tumors like phyllodes are noted in this age group.[8] Incidence of breast cancer is young age is low in developed countries corresponding to around 5-7% whereas incidence is high in developing countries comprising to 25% of young patients diagnosed at less than 40 years which is comparable to our study.[9]

In present study most common age group was between 40 to 50 years in overall breast related data which was similar to the age group encountered in study by Pun at al.[10] Invasive breast carcinoma of no special type was common in both >40 and ≤40 age groups. However histomorphologically, there were variable number of different subtypes of breast carcinoma in older population. In younger group predominate cases were invasive ductal carcinoma and there were 1 case of medullary carcinoma and 1 case of invasive papillary carcinoma.[2,11]

Histopatholgical grading is an important prognostic factor in breast cancer and is vital to include in the pathology report. The majority of the cases in this study showed tumors of Histological grade 2 in overall data of >40years and of ≤40 group. However the percentage of Grade 3 tumors was more in the younger age group accounting to 30.7% in younger group and 26.8% in other group. Hence the younger age group had higher percentage of aggressive tumors as compared to the older age group. [12,13]

Most common pathological T stage in pT2 which is similar to article by Dinesh S et al. In this study further pT3 was noted in 17.3% of younger age group and 15.2% in other group. However cases with pT4 was noted in >40years age group. In study by Dinesh et al pT3 was more in younger population.[2]

Lymph node involvement was more in older population than younger population. However N3 status ie more number of lymph nodes were involved by the tumor ;was present in 17% of the young females as compared to other group to be only 7%. This is similar to other articles as well were nodal status was more aggressive in young patients.[14]

In our study left sided breast cancer was common compared to cancer in right sided breast when the whole spectrum of age was taken. This is comparable with other data from different studies .Laterality is a very well recognized fact in breast cancer. However the exact cause has not seen clear.[15] Though breast cancer was common in left side of breast, more aggressive disease was found in right sided cancer as compared to left sided disease with higher stage. There was no statistically significant difference between age, site and histological type of BC when compared with laterality.[16]

Perineural invasion is a poor prognostic factor in variety of cancers. Perineural invasion is the process of nerve invasion by cancer cells. In our study a total of 12.5% cases had perineural invasion which is similar to study which showed a 14.1% perineural invasion. Perineural invasion could be useful in predicting aggressive phenotypes in breast cancer patient. Perineural invasion was present in 6.7% of young females and higher percentage 14.7% in older age group.[17]

The role of Estrogen receptor (ER), Progesterone Receptor (PR) and Her-2 /neu Immunohistochemistry are very important for prognosis and treatment . ER receptor plays an important role in the pathophysiology of human breast cancer. PR is its surrogate marker. ER positive present benefit from targeted hormonal therapy in adjuvant or palliative settings. Lack of ER receptor is associated usually with poor prognosis. ER positivity is less in < 40 years females in many studies. Her-2/neu is another proliferative marker in breast cancer and is associated with poor disease free survival rate in lymph node positive cancer. Triple negative breast cancer are common in young females in many studies.[6]

Breast Cancer in younger women is often diagnosed in more advanced stages of disease. The main reason for that is the lack of screening in the young female population and hence late presentation to the hospital and thus delay in diagnosis when compared with older age(11). Mammography is widely used to diagnose breast cancer but dense breast in young age hinders the use of this technique for early diagnosis. Also, there is no evidence of a mortality benefit from mammographic screening of women under the age of 35 years. TNBC and HER2-positive disease are more prevalent in younger patients than in older women.[18]

The limitation of this study is the absence of correlation with the ER, PR, Her-2/neu status and other is the characterization of the cases on the basis of genetic studies like BRCA mutation.

Conclusion:

Breast cancer is one of the commonest cancer in females. The most common age group is 41 to 50 years. It is on increasing trend in young females. Cases are also seen in 20-30 years of age. The younger females have higher tumor (T) stage and nodal (N) status compared to older groups. Hence we should increase the awareness of breast cancer in young females. Invasive breast carcinoma is the most common subtype. Inclusion of ER, PR, Her-2, ki67 immunohistochemistry stain is very crucial in breast cancer pathology .

Conflict of Interest: None

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