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**Dr. Sandeep Gupta**  
Assistant Professor,  
Department of Oncosurgery S.P.  
Medical College Bikaner,  
Rajasthan, India

**Dr. Surendra Beniwal**  
Associate Professor,  
Department of Medical Oncology  
S.P. Medical College Bikaner,  
Rajasthan, India

**Dr. Shankar Jakhar**  
Associate Professor,  
Department of Radiation Oncology  
S.P. Medical College Bikaner,  
Rajasthan, India

**Dr. Jitendra Acharya**  
Senior Demonstrator,  
Department of Dentistry  
& Palliative Care S.P. Medical  
College Bikaner, Rajasthan, India

## A prospective study on carcinoma breast in young Indian females

**Dr. Sandeep Gupta, Dr. Surendra Beniwal, Dr. Shankar Jakhar and Dr. Jitendra Acharya**

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### Abstract

**Introduction:** The frequency of breast carcinoma in young females is increasing globally. Breast cancer in young is known to be more destructive than in older age group.

**Materials and Methods:** This is a prospective analytical study in surgical oncology department of a tertiary hospital in past 4 years. In this study, we intended to know the incidence, tumour biology and managing of carcinoma breast in young females (<41 years age).

**Results:** We include total of 320 cases of carcinoma breast of which 84 (26%) were below 41 years of age. The most common histology was ductal invasive carcinoma-not otherwise specified. Stage IIB and grade 2 was the most common presentation. More than 50% of the cases showed ER/PR negative hormonal receptor status, which predicts poor prognosis in these young females of carcinoma breast.

**Conclusion:** We find that incidence of breast malignancies in young female ( $\leq 40$  years of age) are increasing, while tumour of young age females set up biologically aggressive as per histopathological findings and ER and PR status.

**Keywords:** Mastectomy, Carcinoma Breast, ER/PR Status, Histological Factors

### Introduction

In the western part of world approximately 7% of women with breast cancer are diagnosed before the age of 40 years<sup>[1]</sup> and this disease accounts for more than 40% of all cancer in women in this age group. In India, we are now witnessing more and more numbers of patients being diagnosed with breast cancer to be in the younger age groups<sup>[2]</sup>.

Survival rates in young females are worse when compared to those in older women and multivariate analysis has shown younger age to be an independent predictor of adverse outcome. Inherited syndromes, specifically BRCA1 and BRCA2, must be considered when developing treatment algorithms for younger women<sup>[3]</sup>. Chemotherapy, endocrine and local therapies have the potential to significantly impact both the physiologic health including future fertility, premature menopause and bone health and the psychological health of young women as they face a diagnosis of breast cancer. As incidence of breast malignancy in young females increasing promptly, the present study is aimed with evaluating incidence and prognosis of breast cancer in female's  $\leq 40$  yrs<sup>[4]</sup>.

### Materials and Methods

A prospective analytical study of 320 breast cancer patients in our surgical oncology department from December 2012 to November 2016 for a period of 4 years. 84 cases of breast cancer were identified in patients less than 41 years of age and were included in the study.

### Inclusion Criteria

All cases of breast cancer in females less than or equal to 40 years of age proven by FNAC or biopsy and mammogram.

### Exclusion Criteria

Patients with metastasis (M1 disease) and male breast cancers are excluded from the study. A detailed clinical history, thorough clinical examination and relevant investigations done. Appropriate management of each case of carcinoma breast based on stage was done.

**Corresponding Author:**  
**Dr. Sandeep Gupta**  
Assistant Professor,  
Department of Oncosurgery S.P.  
Medical College Bikaner,  
Rajasthan, India

All of 84 cases were followed up after surgery with HPE (histopathological examination) reports and IHC markers (ER/PR/Her2/neu). Unfortunately, Her2/neu couldn't be done in all cases due to economic constraints and local health policies. Her2/neu could be done only in 19 cases while ER/PR was done in all cases.

## Results

We studied total of 320 cases of breast malignancy cases during five years (from December 2011 to November 2016). Out of these, 84 cases were  $\leq 40$  years. So, the incidence of breast malignancy in  $\leq 40$  years age group patients is 26%. These patients were further divided into age groups -  $< 25$  yrs., 26 to 30 yrs., 31 to 35 yrs. and 36 to 40 yrs. No cases were found in  $< 25$  yrs. age group, six cases in 26 to 30 yrs. age group, thirty cases in 31-35 yrs. age group and forty eight cases were seen in 36-40 yrs. age group. In 84 cases, 74 were of invasive intraductal type- NOS, 4 were DCIS, 2 DCIS with microinvasive type, 2 medullary carcinoma variety, 1 lobular cancer and 1 case of intraductal papillary carcinoma. It is clear from the above table that in India most of the patients doesn't present to breast clinics when the tumour is small  $< 2$  cms in size.

Most of the young patients presented with either stage IIb or stage IIIa disease. Eight patients received neo-adjuvant chemotherapy in view of T4b disease. In rest of all the other cases, upfront surgery was done. BCS4 (breast conservation surgery) was done in total of 11 cases while rest of all the cases (73) were treated with MRM. After surgery, patients underwent chemotherapy/chemoradiation as appropriate. Hormonal therapy was constituted in ER/PR positive cases. All the patients were kept under followup. Patient apprehension and family influences were the key factors in patients choosing modified radical mastectomy (MRM) than breast conservation surgery (BCS) even when breast conservation was possible.

ER/PR testing was done in all cases while Her2/neu could be done in 19 cases only due to financial constraints and local health issues. We therefore classified our cases based on immunohistochemistry markers separately depending on the availability of Her2 report.

We got Her2 negative in 12 cases and Her2 positive in 7 cases. In those 12 cases where Her2 was negative, we found that ER and PR were also negative in 9 cases ('triple negative') while ER/PR positive in remaining 3 cases. In 7 cases where we got Her2 positive, we found ER/PR negative in 3 cases ('only Her2 positive') and both ER and PR positive in rest of 4 cases (can be termed 'triple positive'). From the above table, it is clear that ER/PR negative type of breast cancer is more prevalent in younger women, which is a poor prognostic marker.

## Discussion:

In this study, breast carcinoma in young females  $< 41$  yrs. age is seen in 26% of cases.

In our study, most common histology is invasive ductal carcinoma - not otherwise specified, which is also the most common histology worldwide.<sup>5</sup> In our study, 33% of cases presented in stage IIb and 26% of cases presented in stage IIIa. Overall, stage II was most common stage of presentation in young females with carcinoma breast.

In our study, most of the young patients presented as grade II on histology while data from western literature shows grade III as most common histology in patients of carcinoma breast  $< 40$  yrs. In other studies, I Guerra *et al* and Hanna Fredholm *et al*.<sup>6</sup> grade III is higher, which is 51.85% and 22.45%, respectively. Many studies across the globe have demonstrated that most of

the breast tumours in young women are Oestrogen Receptor (ER) and Progesterone Receptor (PR) negative indicating a poorer prognosis.<sup>13</sup> Moreover the percentage of the known aggressive triple negative (ER/PR, human epidermal growth factor receptor 2 (HER2/neu) tumours were reported to be higher in young patients<sup>16</sup>. Younger breast cancer patients have been reported to have germline BRCA-1 or BRCA-2 mutations in 15-20% of the cases<sup>17</sup>. These mutations are believed to be associated with higher grade, lack of ER receptor and a higher proliferative rate. Poorer prognosis in younger patients could be due to lack of proper screening, delayed diagnosis and advanced stage of the disease as also reported by Corpron *et al*.<sup>18</sup> Data suggests that breast carcinoma in young women have different transcriptomic profile with about 63 genes specific tumours and integrative genomic analysis can pinpoint biomarkers for the detection of disease progression in young women. Assi *et al*.<sup>19</sup> also highlighted that breast cancer in young women is associated with high-grade tumours, hormone receptor negativity and HER2/neu overexpression. All these factors finally have a significant negative impact on the prognosis<sup>110</sup>.

## Conclusion:

We conclude that Breast cancer in young females is increasing in incidence. In young females, 36 to 40 yrs. age group is most commonly affected by breast cancer. Youngest age of Presentation was 26 years in our study. The most common histology was ductal invasive carcinoma - not otherwise specified. Stage IIb and grade 2 was the most common presentation. BCS (breast conservation surgery) was done in total of 11 cases. Though, BCS is a good option, most of the patients' chosen MRM owing to various patient and family factors in spite of our counselling. Patient decision ultimately decides the management. Neoadjuvant chemotherapy was given 9.5% of cases in view of T4 disease. ER and PR negative tumours are more prevalent in the younger population suggest poorer prognosis.

**Table 1:** Percentage of Carcinoma Breast Cases in Each Age Group

Age Group	Cases (84)	Percentage
36-40 year	48	57 %
31-35 year	30	35.7 %
26-30 year	6	7.1 %
$< 25$ year	0	0

**Table 2:** Distribution of Size of the Tumour (pT) in Each Age Group

Size (T)	26-30 year	31-35 year	36-40 year
$< 2$ cm	2	3	4
2-5 cm	4	13	27
$> 5$ cm	0	14	17

**Table 3:** Grading According to Age Group

Grade	26-30 year	31-35 year	36-40 year
I	2	3	5
II	3	15	30
III	1	12	13

**Table 4:** Distribution of Carcinoma Breast Cases According to Pathological Stage

Stage	Number of cases (84)	Percentage
I	10	12%
IIa	16	19%
IIb	28	33%
IIIa	22	26%
IIIb & IIIc	8	9.5%

**Table 5:** Incidence of ER/PR

ER	PR	Number of Cases (65)	Percentage
+	+	14	21.5 %
-	+	7	10.8 %
+	-	11	17 %
-	-	33	50.8 %

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