

## A retrospective cross sectional analysis of histopathological distribution of breast cancer according to age at a tertiary care teaching hospital

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### Abstract

**Introduction:** As per the WHO, there were 519,000 women who died in the year 2004 and 69% of the world's cancer deaths are due to breast cancer. The present study was conducted with the aim to determine the histological variants of breast cancer amongst females reporting to the hospital.

**Materials and Methods:** The present descriptive study was conducted in retrospective fashion in the Department of Pathology, ESIC Medical College, Gulbarga, Karnataka (India). All the data was obtained from the hospital's medical records and the identity of the subjects was kept confidential. A complete family history, medical history and clinical examination of the subjects were recorded. Details of the site of histology sample and the histopathological variant were recorded. The usual technique for fixing the specimen in formalin followed by embedding in paraffin and cutting with H and E staining was followed for all the samples. All the data obtained was arranged in a tabulated form and analyzed using SPSS software. The results were expressed as frequency distribution.

**Results:** Majority of the cases occurred between 32-46 years of age followed by 62-76 years. There were only 3 cases diagnosed between 0-15 years age group. There were 93% cases of carcinomas. Out of these, majority (n=317) were infiltrating ductal carcinomas. In 210 cases, infiltrating lobular carcinomas were confirmed histologically.

**Conclusion:** Breast cancer is the most frequently seen cancer amongst women. It is most commonly seen in elder age groups and hereditary plays an important role in its causation. The most commonly seen histological variant of breast cancer is infiltrative ductal carcinoma. Sarcomas are the second most common variant of breast cancer.

**Keywords:** Breast, Carcinoma, Histology.

### Introduction

Breast cancer is the most frequently seen cancer amongst women around the world and it represents around 16% of the female cancers. As per the WHO, there were 519,000 women who died in the year 2004 and 69% of the world's cancer deaths are due to breast cancer.<sup>1</sup> It is associated with various risk factors. The risk factors not only involve genetic, environmental and demographic factors but also hormonal, lifestyle and dietary habits. Clinical manifestations include lump in breast, discharge from nipple and involvement of axillary lymph nodes in advance cases. Screening of the cases using imaging modalities and biopsy allows earlier diagnosis and better prognosis of the lesion.<sup>2</sup> In case of developing countries, this screening is poor and hence the rates are increasing at a steady rate and breast cancer is becoming a public health problem. The prognosis in most countries is poor because of lack of appropriate management strategies in most countries.<sup>1</sup> Around 15% of breast cancers occur in women with a history of disease amongst first-degree relations<sup>3</sup>, and around 5–10% of breast cancers are directly linked to heredity.<sup>4,5</sup> In a study conducted by Diomandé et al, the most commonly seen cancer amongst women was cervical cancer followed by breast cancer seen in 10.52% of the subjects.<sup>6</sup> According to another study conducted by Echimane et al every 24.5 cases per

100,000 are of breast cancer.<sup>7</sup> The present study was conducted with the aim to determine the histological variants of breast cancer amongst females reporting to the hospital.

### Materials and Methods

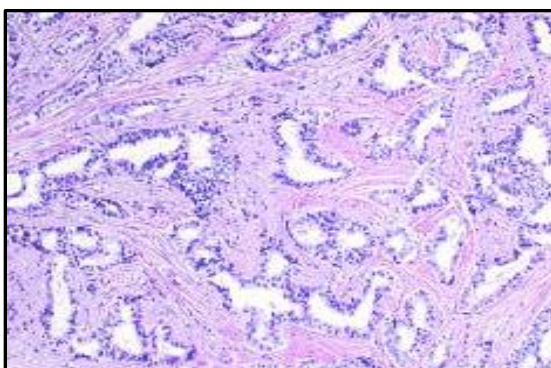
The present descriptive study was conducted in retrospective fashion in the Department of Pathology, ESIC Medical College, Gulbarga, Karnataka (India). All the subjects with breast cancer operated in the hospital were included in the study. The study was approved by the institute's ethical board. All the data was obtained from the hospital's medical records and the identity of the subjects was kept confidential. A complete family history, medical history and clinical examination of the subjects were recorded. Details of the site of histology sample and the histopathological variant were recorded. The usual technique for fixing the specimen in formalin followed by embedding in paraffin and cutting with H and E staining was followed for all the samples. Most of the subjects underwent partial or total mastectomy with or without removal of axillary lymph nodes. All the data obtained was arranged in a tabulated form and analyzed using SPSS software. The results were expressed as frequency distribution.

## Results

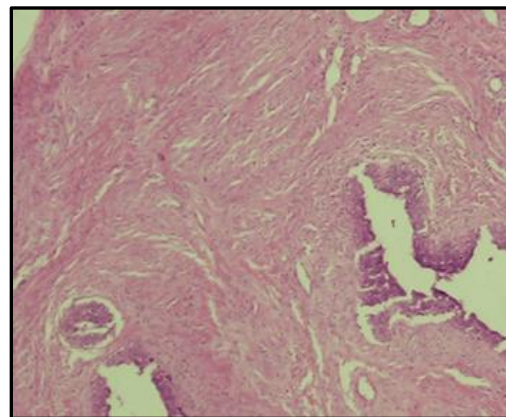
The study enrolled a total of 600 subjects with a mean age of 46.62± 9.75 years. In all the subjects diagnosis of breast cancer was confirmed.

Table 1 illustrates the age distribution of the subjects. Majority of the cases occurred between 32-46 years of age followed by 62-76 years. There were only 3 cases diagnosed between 0-15 years age group. There were 118 cases between 16-31 years of age. 224 cases were diagnosed between 32-46 years of age. There were 110 cases and 145 cases diagnosed between 47-61 and 62-76 years of age respectively.

Table 2 demonstrates the histological variation of breast cancer. There were 93% cases of carcinomas. Out of these, majority (n=317) were infiltrating ductal carcinomas. In 210 cases, infiltrating lobular carcinomas were confirmed histologically. There were only 4 cases of adenoid cystic carcinoma. In 15 cases medullary carcinomas were confirmed histologically. There were 6 cases each of ductal carcinoma in situ and lobular carcinoma in situ. In 5.1% (n=31) sarcomas were confirmed histologically. Out of these majority (n=16) occurred between 32-46 years of age. There was only 1 case of paget's disease in our study occurring between 32-46 years of age. In 1.6% (n=10) cases lymphomas were confirmed histologically.



**Fig. 1: Photomicrograph showing infiltrating duct carcinoma breast (H&E x1000)**



**Fig. 2: Photomicrograph showing fibroadenoma breast**

**Table 1: Age distribution of the subjects**

Age distribution	Frequency	Percentage
0-15 years	3	0.5
16-31 years	118	19.7
32-46 years	224	37.3
47-61 years	110	18.3
62-76 years	145	24.2

**Table 2: Various histological types of breast cancer according to age**

Histological types		0-15	16-31	32-46	47-61	62-76	Total	Percentage
Carcinoma	Infiltrative ductal carcinoma	-	72	111	61	73	317	
	Ductal carcinoma in situ	-	1	2	2	1	6	
	Infiltrating lobular carcinoma	-	40	78	31	61	210	
	Lobular carcinoma in situ	-	1	2	2	1	6	
	Medullary carcinoma	-	1	8	2	4	15	
	Adenoid cystic carcinoma	-	-	-	2	2	4	93
Sarcoma		1	2	16	10	2	31	5.1
Lymphoma		2	1	6	-	1	10	1.6
Paget's disease		-	-	1	-	-	1	0.2

## Discussion

Although breast cancer is studied as a single disorder, advances in understanding of the

epidemiology, histology, and molecular base for breast cancer have indicated that it has heterogeneous nature that can be divided into various different subtypes. Increasing age is the most important risk factor for

breast cancer. Only 2% of invasive breast carcinomas are diagnosed amongst women less than 35 years of age,<sup>8</sup> and there is an increase in the incidence rate by a factor of 100 between 30-50 years of age.<sup>9</sup> Breast carcinomas amongst younger women are associated with poor overall prognosis and high recurrence rate compared to disorder amongst older women.<sup>10</sup> This difference in survival may be due to the fact that breast cancer has lesser chances to be diagnosed at a earlier stage in young women compared to older women.<sup>10,11</sup> However, there is also a difference in molecular and histopathological types of breast cancer occurring amongst young and elder females.<sup>12,13</sup> In our study, majority of the cases occurred between 32-46 years of age followed by 62-76 years. There were only 3 cases diagnosed between 0-15 years age group. There were 118 cases between 16-31 years of age. 224 cases were diagnosed between 32-46 years of age. There were 110 cases and 145 cases diagnosed between 47-61 and 62-76 years of age respectively. The average age of diagnosis of breast cancer amongst women in developing countries is lesser than in western countries.<sup>14-16</sup> Various risk factors like genetic, environmental, demographics, hormonal levels and dietary factors have been implicated in carcinogenesis of breast. The occurrence of early menses which is associated with early and prolonged hormonal exposure are all related to dietary habits amongst westernization of urban populations.<sup>17</sup> There were 93% cases of carcinomas in our study. Out of these, majority (n=317) were infiltrating ductal carcinomas. In 210 cases, infiltrating lobular carcinomas were confirmed histologically. There were only 4 cases of adenoid cystic carcinoma. In 15 cases medullary carcinomas were confirmed histologically. There were 6 cases each of ductal carcinoma in situ and lobular carcinoma in situ. In 5.1% (n=31) sarcomas were confirmed histologically. Out of these majority (n=16) occurred between 32-46 years of age. There was only 1 case of paget's disease in our study occurring between 32-46 years of age. In 1.6% (n=10) cases lymphomas were confirmed histologically. Histologically, there is prevalence of epithelial tumors in our study similar to the studies conducted previously in literature.<sup>14,15,17,18</sup> These tumors have a poor prognosis and this has been confirmed in various literature studies.<sup>14-16</sup>

Carcinoma of the breast is a complex disease with a large intertumoral and intratumoral heterogeneity, leading to markedly variable clinical course and response to treatment modalities.<sup>20</sup> The stage at time of diagnosis, histopathological features and hormone receptor and oncoprotein expression are other prognostic factors for breast cancer.<sup>21</sup> Early detection of breast cancer is of substantial clinical importance, and it can be used to plan treatment modalities while tumor burden is low, and moreover, at initial stage patients are more likely to respond to adjuvant therapy. The serum concentration of tumor markers has been used to detect

tumor activity. Tumor markers provide a minimally invasive cost-effective source of data valuable for monitoring disease course, determining prognosis, and helping in treatment planning. However, it is important to understand the individual test characteristics and limitations for optimal use and accurate interpretation of results.<sup>22</sup>

## Conclusion

Breast cancer is the most frequently seen cancer amongst women. It is most commonly seen in elder age groups and hereditary plays an important role in its causation. The most commonly seen histological variant of breast cancer is infiltrative ductal carcinoma. Sarcomas are the second most common variant of breast cancer.

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