A CLINICOPATHOLOGICAL STUDY OF BREAST CARCINOMA AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Background and Objectives: Breast carcinoma is the most common cancer and the leading cause of death in females all over the world. In most of developing countries including Pakistan the incidence is on the increase. Although a number of studies have been conducted in Pakistan, adequate statistics about demographic and epidemiologic features of breast carcinoma are not available. The present study was designed to see the frequency, age, gender and morphological features of breast carcinoma in a tertiary care hospital.

Methods: It was a retrospective study of breast biopsies from all patients reported from January 2009 to December, 2011 at Department of Pathology FJMU, Lahore. All the available demographic and tumor related data was collected from the files of histopathology section and analyzed. Patients were divided into five age groups with an interval of ten years between each group.

Results: Out of 727 breast biopsies, 721 specimens were from females and 6 from male patients. Breast carcinoma was diagnosed in 263 (36.17%), Sarcoma in 1 (0.14%), benign tumors in 265 (36.5%) and non-neoplastic lesions in 198 (27.23%) cases. Invasive ductal carcinoma (IDC) was the commonest subtypes seen in 251 (95.44%), followed by mucinous carcinoma (1.90%) and invasive lobular carcinoma (1.14%). All the malignant tumors were seen in female patients. Males were diagnosed to have benign lesions only. The mean age of patients with IDC was 46 years. Maximum numbers of patients with IDC were between 40 – 49 years of age. Grade II tumors were found in majority of the cases (99.5%). Axillary lymph node metastases were present in 70.96% patients. Tumor size of more than 2.5 cm was found in 75% cases.

Conclusion: The breast carcinoma was quite common in our females. It occurred at a younger age as compared to western population. IDC was the commonest subtype. Most of the tumors were aggressive (grade II) and diagnosed at advanced stage with nodal metastases.

Key Words: Breast carcinoma, infiltrating ductal carcinoma, Patho-demographic.

INTRODUCTION

Breast carcinoma (BC) is the most common cancer (23% of all cancers) and leading cause of death in women, all over the world. It is the 5th main cause of death in both males and females combined.[1] Breast Cancer accounts for one third of female cancers and approximately one fourth of all malignancies.[2] Globocan worldwide estimate of 2012 showed 1.7 million new cases and 521,900 deaths due to Breast Cancer.[3]

Statistical evaluation of 2005 and 2006 by the American Cancer Society also ranked breast cancer as the leading cancer in females.[4] Saudi National Cancer Registry data, 2000 – 2004, estimated 127.8/100,000 cases of breast cancer in females and death rate of 25.5/100,000.[5] In western countries, incidence of BC is now decreasing after a sharp increase of 30% from 1980 to 1990s. However, in developing countries like South America, Africa and Asia breast cancer death rates are still increasing.[3,4]

Malignancy not only poses financial burden on the patient, their family and society but also is responsible for emotional distress.[6] In Pakistan not may statistics are available on breast disease. Hence, more studies should be carried out to evaluate the magnitude of this problem. This will help to plan educational programs for public awareness of BC and its management strategies.[1]

This study is, therefore, designed to see the frequency, age, gender and morphological features of breast carcinoma in a tertiary care hospital.

MATERIALS AND METHODS

This was a retrospective study conducted at the Department of Pathology, Fatima Jinnah Medical University

for Women, Lahore from January 2009 to December 2011.

Histopathology repots of all the breast biopsies, reported during the study period, was retrieved from the record of histopathology section of the Pathology Department. The biodata of age and gender were entered in the proforma designed for the study.

Tumor related information including biopsy type, laterality, final diagnosis; associated pathology, lymph node status, and skin / nipple involvement were recorded. All the neoplastic lesions were classified on the basis of WHO classification of tumors of the breast.[7]

Patients were divided into five age groups ranging between the ages of less than 20 to more than 60 years, with an interval of ten years between each group.
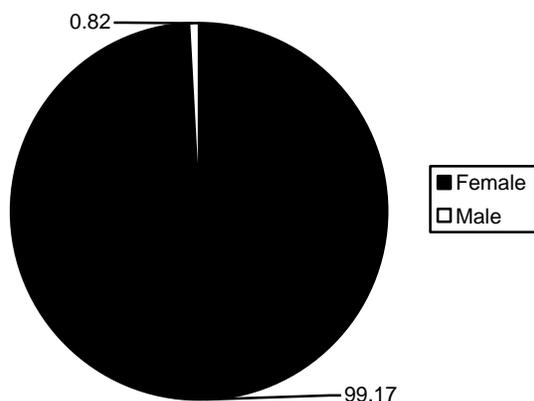
Inclusion Criteria
Breast lumps in both genders and all age groups.

Exclusion Criteria
Primary cutaneous cancers of skin overlying the breast and metastatic lesions.

RESULTS
A total of 727 breast biopsies were reported during the study period, out of which 721 (99.17%) were of female patients and 6 (0.82%) of male patients, with a female to male ratio of 120:1 (Figure 1).

Fig. 1: *Distribution of Gender in Breast carcinoma population.*

Out of 727 breast biopsies reported, 198 were non-neoplastic lesions, 265 benign tumors, 263 carcinomas and only one case of sarcoma as shown in Table 1.

All cases of breast carcinomas (263) were reported in female patients and none in the males. The most common histological subtype of BC was invasive ductal carcinoma (IDC) comprising 251 cases (95.43%), followed by mucinous carcinoma 05 cases (1.90%) and invasive lobular carcinoma 03 cases (1.14%). All the histological types of BC are given in Table 2.

Table 1: *Distribution of Gender and Breast Lesions.*

Feature	Number	Percentage
Females	721	99.17
Male	6	0.82
Non-neoplastic	198	27.23
Neoplastic:		
Benign	265	36.5
Carcinomas	263	36.17
Sarcomas	01	0.14
Total	727	100

Table 2: *Histological Types of Breast Carcinoma.*

Feature	Number of cases (%)	Mean Age
IDC	251 (95.44)	46
Mucinous carcinoma	05 (1.90)	46.6
Invasive lobular carcinoma	03 (1.14)	64.5
Metaplastic carcinoma	01 (0.38)	40
Ductal carcinoma in situ	01 (0.38)	38
Paget disease	01 (0.38)	40
Papillary carcinoma	01 (0.38)	70
Total	263	

Table 3 shows the age distribution of the most common types of BC. The age range of patients with IDC was between 24 – 85 years. The peak age occurrence was in the 4th decade (36.88%), followed by 5th and 3rd decades (23.57% and 19.05% respectively). Nine patients (3.42%) were below 30 years of age and 33 patients (12.54%) were of 60 years or above. The ages of patients with mucinous carcinoma ranged between 26 – 65 years, with peak incidence in 4th decade. Three patients of invasive lobular carcinoma were aged 39, 40 and 50 years (Table 3).

Features of advanced breast disease are given in Table 4. Tumor grade was available in 212 of 251 cases of IDC, out of which majority cases 211 (99.5%) had grade 11 tumor and only 0.47% (01 case) were of grade 111 tumors.

Out of 263 cases of BC, 186 underwent mastectomy with axillary clearance. Lymph node metastases of tumor were present in 132 (70.96%) cases. Sixty nine cases (37.09%) with LN metastases. had more than three positive lymph nodes. Fifty four patients (29.03%) had just reactive lymph node enlargement (Table 4).

Table 3: *Age distribution of Patients of Breast CA.*

Feature	Age Groups in Years, Number of Cases (%)						
	< 20	20 − 29	30 − 39	40 − 49	50 − 59	60 –> 60	Total
Females							
IDC	0	9 (3.42)	50 (19.01)	97 (36.88)	62 (23.57)	33 (12.54)	251
Mucinous CA	0	01 (0.38)	0	2 (0.76)	1 (0.38)	1 (0.38)	05
Invasive lobular CA	0	0	1 (0.38)	1 (0.38)	1 (0.38)	0	03
Males							
Carcinoma	0	0	0	0	0	0	0

Table 4: *Details of Features Indicating Advanced Breast Disease.*

Feature	Number of Cases (%)

Tumor grade:
    Grade 11
    Grade 111
	
	211/212 (99.5)
	01/212 (0.47)

LN status: Positive LN >3 positive nodes	 132/186 (70.96) 69/186 (37.09)
Size of the tumor: Tumor diameter > 2.5 cm	 150/200 (75)

DISCUSSION

In our study, female breast biopsies outnumbered the male biopsies with a Female: Male ratio of approximately 120:1. This finding is supported by various studies carried out at other institutions.[.4,5,8]

In our study, the mean age of patients with BC was 49.3 years. Most of the patients were younger than 50 years. Mean age of diagnosis is slightly higher in our study than that given in previous studies like 45.66 years,[1] 47 years,[4] 48.6 years [5] and 48 years.[9-12]

Maximum number of patients of BC was between the ages of 40 − 49 years (36.88%), followed by 50 − 59 years (23.57%) and 30 − 39 years (19.01%). The age range having higher number of BC in our study is comparable with other studies i.e. 40 − 59 years [5], 43 − 52 years,[9] 40 − 49 years,[8] and 40 − 59 years.[6] But, the studies conducted at Agha Khan University Hospital[4,13] and one at Nainital[12] shows higher frequency in a relatively older age group i.e. 4 − 6th, 5 − 6th, and 4 − 6th decades respectively. Patients in developing countries are about one decade younger than their counterparts in developed nations.[14] So our results correspond with the studies stating that BC develops at an earlier age in developing countries than the western population.

In this study, there were 727 breast biopsies, out of which 263 (36.17%) were diagnosed as BC. Review of literature shows variable frequency of BC in different studies, e.g. frequency of BC with respect to all other carcinomas, as given in multiple studies, was (38.5%),[2] (32% and 35%),[4] (23%)[1] and (22.9%).[12]

Breast carcinoma constitutes 28% of all newly diagnosed cancer in US according to the study of Aslam HM et al.[1] According to Connecticut tumor registry, there was 1% rise of BC between 1940 and 1980 and then a sharp rise of 32% between 1980 and 1987.[15] Another study[5] showed a rise in frequency of BC from 23.5% in 2000 to 34.5% in 2010. A study conducted in Karachi in different ethnic groups (like Punjabi, Sindhi, baloch etc.) showed that BC comprised 2% − 17% of all cancers.[6] When frequency of BC was studied in relation to other breast lesions, a lower value was obtained in several studies, i.e. (34.2%),[5] (11.8%),[1] and (22.4%)[8] than that revealed in the present study. But, a higher value of 40.5% is given by Albasri A et al.[16] These differences may be explained by an increased use of mammography, efficiency of breast cancer awareness programs and health education of people like self − breast examination.

In this study Invasive ductal carcinoma (IDC) was the major subtype comprising 251 (95.43%) cases, followed by mucinous carcinoma 05 (1.90%) and invasive lobular carcinoma 03 (1.14%) cases. Other studies also show that IDC is the most common subtype, e.g. (96.2%),[5] (81%),[10] and (83%).[17] The results of Mehmood H et al and Ahmed H et al[4,18] also favour this finding.

Other available parameters in our study were the tumor grade, LN status and tumor size. Grade 11 carcinoma was reported in 99.5% of cases. Lymph node (LN) status was available in 132/186 mastectomy specimens with axillary clearance. Lymph node meta-stases were present in 70.96% cases and more than 3 LNs were positive in 37.09% of cases. The finding of advanced BC at the time of diagnosis has also been shown in other studies. The study conducted by Siddiqui MS et al[13] showed grade 11 tumors in 59.17% and grade 111 tumors in 29.47% of cases. Three or more LNs were

positive in 40% cases. Another study[4] showed 75.83% and 20% of grade 11 and grade 111 carcinomas respectively. In this study tumor size was greater than 2.5 cm in 75% cases. This finding is also consistent with reports of other studies.[10,18,13]

It is ***concluded*** that breast carcinoma is quite common in our females. It occurs at a younger age as compared to western population. IDC is the most common subtype. Most of the tumors are aggressive (grade II) and diagnosed at advanced stage with nodal metastases.

Recommendation
There is a need to carry out larger studies involving various medical centers to examine environmental, genetic and dietary factors that may have an etiological role in BC. Breast cancer screening and public health education programs should be started at the hospitals. Programs should be free of cost, to encourage maximum female participation. Early detection of BC will not only help in management and better prognosis of the patients but also reduce the financial burden.

Authorship
AA was the principal researcher and collected the data, deigned the research protocol; KS did the data analysis; MHB helped is writing and finalizing the manuscript; ASS gave the final touch of the manuscript; FK supervised the project.

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