

Types, Frequency, Morphology and Risk Factors of Breast Cancer in Modified Radical Mastectomy

Saba Iqbal,¹ Farah Rehman,² Sobia Malik,³ Muhammad Abdul Rehman⁴ and Najma Naz⁵

¹Department of Physiology, University College of Medicine & Dentistry, The University of Lahore, Lahore

²Community Medicine, Central Pak Medical College, Lahore

³Department of Oral Health Sciences, Shaikh Zayed Federal Postgraduate Medical Institute, Lahore

⁴Aids Awareness Society, Lahore.

⁵Department of Pharmacology, University College of Medicine & Dentistry, The University of Lahore, Lahore

ABSTRACT

Objective: To evaluate the types, morphology, frequency and risk factors of breast carcinoma in modified radical mastectomy specimens. **Design:** Cross Sectional study. **Place & Duration of Study:** In Shaukat Khanum Laboratory Lahore, within 10 months from January 2012 to December 2012. **Patients & Methods:** By using non probability, convenient sampling technique 90 patients between 30-80 years, who underwent modified radical mastectomy, were recruited in the study from Lahore Medical University. Specimens were taken and fixed in 10% formalin. Gross and microscopic examination was done. To minimize the risk of diagnostic error slides were observed by two Histopathologists from Shaukat Khanum Laboratory Lahore. **Results:** 35.5% patients with breast carcinoma belonged to 4th to 5th decades, 50% patients (45/90) had carcinoma on right side, 66.6% (60/90) cases were infiltrating ductal carcinoma and 26.6 (24/90) cases were lobular type. Women with positive family history shows 33% (30/90) of breast carcinoma, of these samples 24% (22/90) females gives history of using oral contraceptive, whereas 22% (20/90) of them have positive history of smoking, 20% (n=18) had undergone radiation exposure. **Conclusions:** Highest frequency of breast cancer was found in 40-50 year old women. Ductal Carcinoma was the most common type. Factors highly associated with breast cancer in local population were found to be Positive family history, Oral Contraceptives and radiation exposure

Key Words: Types, morphology, frequency and risk factors of breast cancer.

INTRODUCTION

Breast cancer involves lobules, and the ducts developing lobular and ductal carcinoma. Most breast lesions are benign non-cancerous, don't spread, and are not life threatening, whereas, carcinoma in situ are confined within the ducts or lobules from where they originated. According to the American Cancer Society Lobular carcinoma in situ is 11% as compared to the percentage of Ductal Carcinoma in Situ 83%¹

There was a positive relation between race and breast cancer survival. Results suggested that 38% (n= 26,840) women are suffering from breast

carcinoma and the incidence ratio increase with increase in time.² There is a strong correlation between women with low socio-economic group and breast carcinoma.³ Study analysis shows that breast carcinoma affects very little (1.5% in 100,000) in women between 20-29 years of age.¹

About 1/3 of all malignancies are breast originated. Mortality rate in case of breast cancer is high and stands second in cancer mortality between the ages of 40 and 50 years. ⁴ In Pakistan the level of breast carcinoma is 89.3%, it's the highest level of breast carcinoma in Asia, every 1/9 (50/100,000) women is suffering with this problem as compared to the level of India 19/100,000, although the level

of poverty is similar with Pakistan.⁵ Death rates has been slowly declining, however; in case of invasive type 25-30% women will dies. Mortality rates are highest in very young (less than 35 years, with more aggressive pattern of disease) and in the very old (greater than 75 years, may not be treated aggressively or may have comorbid disease that increases breast cancer fatality).^{6, 7} Although 60-80% of recurrences occur in the first 3 years, the chance of recurrence exists for up to 20 years.⁸

Age and geographic location plays role in its pathogenesis. Asian women as compared with North American or Western European counterparts have a very low risk of developing disease in their breasts.³ However; migrated Asian who move to North-America increases the incidence of breast carcinoma. First generation of Asian-American women have life time risk of breast cancer that is identical to that of native North American Caucasian women.⁹

Results of study conducted at Nuclear Medicine, Oncology and Radiotherapy Institute hospital, Islamabad from January to July 2005, shows that dietary factors, obesity, use of oral contraceptives, parity, age and family history are considered as important cofactors in pathogenesis of breast cancer.¹⁰ Therefore the objective of present study was to assess and clarify the certainties regarding the risk factors which are associated with the prevalence of breast cancer in local population of Lahore, Pakistan.

PATIENTS & METHODS

This is an observational descriptive study conducted in the Histopathology Department Shaukat Khanum Laboratory, Lahore. Samples were recruited by convenient sampling technique. The duration of study was 10 months (January-October 2012). Patients suffering from benign neoplasm, pure insitu carcinoma and lumpectomy were excluded from the study. The data was exclusively provided under the supervision of the lab assistant and consists of the pool of 90 female patients who were above the age of 25years, had undergone Modified Mastectomy and had their respective samples sent to lab. Lab reports and Questionnaire was prepared to extract the adequate information

from each report.

The specimens were sent to Shaukat Khanum Histopathology lab and were fixed in 10% formalin. By using FNA's¹¹ staining procedure gross and microscopic examination was done. Slides were reviewed by two Histopathologists of Shaukat Khanum Cancer Hospital to minimize the possibility of risk of diagnostic error. The data was tabulated and analyzed using SPSS version 13.

RESULTS:

A total of 90 modified radical mastectomy specimens belonging to different age groups from 30-80 years were recruited in current study. Patients name, gender, family history, life style, habit of smoking, any alcoholic consumption, using contraceptives, have exposure of radiation therapy were taken as Qualitative Variables. Majority of the patients were between the ages of 40-50 (35.5%) followed by 30-40 age group (31.1%).

Patient with carcinoma on their right side accounts 50%. Out of 90 specimens collected, 66.6% cases were infiltrating ductal carcinoma in nature, while 26.6% cases were lobular type. Patients with positive family history of breast carcinoma were 33% women, 24% of them were using oral contraceptive, out of 90 patients 22% were smokers, while 20% had radiation exposure due to some cause and only 4.4% female patients of breast carcinoma used to smoke tobacco and none of them seems to be alcohol consumer. (Table 1)

DISCUSSION

Breast cancer, like other cancers, occurs because of interaction between environmental (external) factor and a genetically susceptible host.¹² Normal cells divide as needed and stop, attach to other cells and stay in place in tissues. Cells become cancerous when they lose their ability to stop dividing, attach to other cells, stay where they belong, and die at their proper time.¹³

This study provides information about the prevalence of breast cancer in females. Positive family history, use of contraceptives, radiation exposure, and smoking tobacco increases the risk of breast cancer. The first noticeable symptom of

breast cancer is typically a lump that feels different from the rest of the breast tissue. In USA more than 80% of breast cancer cases are discovered when the woman feels a breast lump which may be benign in nature in 60% of patients.⁹ Results of previous studies shows that Breast cancer is the most common cause of death in Pakistani females, however; in USA it has now been archaic by lung cancer.¹⁴

Table 1: Distribution of type, frequency of age and site and risk factors associated with female breast carcinoma.

Types of Breast Carcinoma	
Type	Percentage & Number of Women
Ductal carcinoma	66.6% (n=60)
Lobular carcinoma	26.6% (n=26)
Mixed carcinoma	6.6% (n=6)
Frequency of disease with respect to age	
Age	Percentage& Number of women
<30	2.22% (n=2)
30-40	31.1% (n=28)
40-50	35.5% (n=32)
50-60	16.5% (n=15)
60-70	11.1% (n=10)
>70	3.33% (n=3)
Frequency of side effected	
Side	Percentage& Number of women
Left side of breast	42.2% (n=38)
Right side of breast	50% (n=45)
Both sides involved	7.8% (n=7)
Risk factor association with breast cancer	
Risk factors	Percentage & Number of women
Cancer in 1 st degree relatives	33% (n=30)
Family history	33% (n=30)
Oral contraceptive use	24% (n=22)
Cigarette smoking	22% (n=20)
Radiation exposure	20% (n=18)
Tobacco use	4.4% (n=4)
Alcohol consumption	0% (n=91)

Females with a positive family history of breast cancer have high risk (1.8 times higher) of developing breast carcinoma. This risk become 3 times higher if two of her relatives are suffering from breast carcinoma and this percentage increases 4 folds when women had 3 or more relative had

carcinoma of breast.¹⁵ There were twofold increases in the percentage of breast carcinoma with positive family history.¹⁷ Same seems to be true in the results of present study showing that there were 30/90 patients (33%) with positive family history as well as 33% females had shown 1st degree of relatives with breast cancer which can be seen in the results of study conducted by Shamsi in Karachi (2013) where 55.5% (n=162/297) patients have positive family history.

Every person inherited 1 copy of BRCA1, BRCA2 and TP53 genes from their parents and if there is mutation in these inherited genes it will develops breast carcinoma. In case of 1st degree relative like from father or mother gene is defaulted there is 50% chance to develop breast carcinoma same is true if there is mutated genes of bother and/or sister the ratio of developing breast carcinoma is 50%. Whereas if I of identical twin is affected the other must be affected with breast carcinoma. This ratio decreases to 25% when Aunt or uncle is affected.¹⁶

Ten percent Pakistani women at the age of 60-70 years had shown breast cancer in present study, 66.1% (51/91) had ductal carcinoma, lobular carcinoma was observed in 26.6% (24/91) of these patients, whereas only 6.6% (6/91) patients had mixed variety of breast carcinoma. In present study 50% (45/91) patients had involvement of right sided breast, whereas; involvement ratio of the left side was 42.2% of studied samples (38/91). Only 7.8% patients (7/91) have shown bilateral breast involvement at a time. The results of the current study seems to be equal to the percentage of the results of study conducted in 2007 by Biglia N et al¹⁸, however the level of lobular carcinoma of breast was increasing (14.4%/year) than the %age this type in 1 year in current study (26.6%).

Carcinoma of breast was the most common 30% breast disease (based on the histological diagnosis of old studies carried out in Karachi Pakistan), where 17/300 patients had Carcinoma at the age of 30. The ratio of Breast Carcinoma was seems to be higher in two age groups including below 30yrs (21%) and at the age of 40-50 years of age.²⁰ This seems to be true in current study where the age of patients was in between 40-50yrs, it is correlated with the results of study done by Naeem

et al 2008 (14/46) and in 2012 by Baloch AH et al²¹ in Baluchistan where 58% (n=134) patients were above the age of 40. Studies conducted by Shamsi in 2013²² (Karachi n=297) and Norlaili 2014²³ (Malaysia, n=1,960) also verify the results of our study as the mean age observed in their studies were 46 yrs. (Shamsi 81%) and (Norlaili 98%). Another big sample size study (n=1, 90458) conducted by Christopher L in 2003²⁰ after compiling their results concluded that the level of ductal Carcinoma was constant from 1998 but lobular breast Carcinoma increases 1.52 % fold. Whereas percentage of mixed carcinoma increases 1.96 fold with a percentage 9.5 in 1987 and this percentage are still increases to 15.6% till 1999. This is due to increasing age, and the use hormone replacement therapy. Bhatti ABH also observed this fact that increase in age is a factor of increasing risk of breast carcinoma in his study conducted in 2014 that. ²⁴Gabriel in 2010 observed that only few patients (7%) below the age of 30 years were diagnosed with breast Carcinoma in between the years of 2000-2005, this is due to early child bearing at an early age and /or unawareness of mammography.²⁵

There was approximately equal distribution of carcinoma in right and left breast same as the results of study conducted by Baloch et al,²² and Fatima et al, 2013²⁶ who found 50% patients with carcinoma on right & left breast.²²

Increased level of smoking²⁷ & alcohol^{28, 29,30} is shown to be directly proportional with the increased risk of carcinoma but this was not found to be the case in the present study. This may be due to the fact that the overall prevalence of smoking and alcohol is lesser in Pakistan as compared to other countries especially in the case of females.²⁷ Carcinoma of breast can be seen in females having previous chest radiation therapy especially at an early age or in females working in Nuclear Departments, as seen in current study where there were 20% (18/90) patients with positive history of radiation due to any cause.^{31, 32}

CONCLUSION

Highest frequency of breast cancer was found in 40-50 year old women. Ductal Carcinoma was the most common type. Factors highly associated

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Farah Rehman
Senior Demonstrator
Department of Community Medicine,
Central Pak Medical College,
Lahore Pakistan

Sobia Malik
Assistant Professor,
Department of Oral Health Sciences,
Shaikh Zayed Federal Postgraduate Medical
Institute, Lahore

Abdul Rehman Muhammad,
Medical Officer,
Aids Awareness Society,
Lahore.

Najma Naz,
Associate Professor
Department of Pharmacology,
University College of Medicine & Dentistry,
The University of Lahore, Lahore

The Authors:

Saba Iqbal
Assistant Professor
Department of Physiology,
University College of Medicine & Dentistry,
The University of Lahore,
Lahore Pakistan.

Corresponding Author

Dr. Saba Iqbal,
Assistant Professor
Department of Physiology,
University of Lahore, Raiwind Road Lahore
Pakistan
E-mail: haniya2006@gmail.com
Mob No: 03013540055