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MAGNITUDE OF BREAST DISEASES IN OJHA HISTOPATHOLOGY DEPARTMENT

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ABSTRACT

Objective: This study evaluates the current status regarding spectrum of breast diseases from the data record of Dow Diagnostic Research and Reference Laboratory (DDRRL), Karachi.
Design : Descriptive study.
Place & duration of study : Conducted from October 2011 till December 2011.
Patients & Methods. : Ten months data of 2011 consisted of 829 cases of breast diseases, which were obtained from the histopathology department of DDRL, OJHA campus located in Karachi .The diseases were grouped into malignant, benign and inflammatory types. There was no limitation of age and both genders were considered. Cancers other than breast diseases were excluded from the study. Reports of missing information were not analyzed. Normal breast tissue was as well excluded.
Results : Analysis revealed 413 as malignant lesions, 322 benign and 80 inflammatory .Most numerous malignant tumours were invasive ductal carcinoma grade 2 (23.7%).Fibroadenoma (28.0%) was highest among all benign and inflammatory breast diseases. Fibrocystic change (6.1%), benign phylloides (2.4%) was the next in incidence ranking, lipoma was 1.2% and no record of lactating adenoma was found. Among inflammatory lesion breast abscess (4.0%) scored the maximum, chronic mastitis (1.7%) and granulomatous mastitis (1.7%) both presented equally, duct ectasia (1.3%) followed and fat necrosis was least diagnosed.
Conclusion : Breast diseases trend in the women of Karachi are changing. Malignant breast lesions are presenting at younger age and its occurrence is more than benign and inflammatory lesion altogether in this study.

Keywords: Breast diseases, breast neoplasm, and fibroadenoma.

INTRODUCTION

Cancer is a non-communicable disease, in this era of advanced scientific knowledge has an annual documentation of 10 million cases that would increase to 15 million by the year 2020 as stated by WHO .[1] Highest global cancer incidence is of lung, (12.7% of the total) followed by breast (10.9% of the total) and colorectal (9.7 % of the total) cancers respectively.[1] In females breast cancer is enumerated as the most frequently diagnosed and leading cause of death worldwide.[2] GLOBACAON[3] in 2008; newly developed breast tumours were 13.9 million cases (23% of all cancers) however 60% of deaths only occurred in economically developing countries. Incidence rates of breast diseases varied from 19.3 per 100,000 in East-Africa, 89.7 per 100,000 in Western Europe, 80 per 100,000 in developed countries except Japan and less than 40 per 100,000 in developing regions[2] According to Surveillance Epidemiology and End Result (SEER) [5] data Pakistani and Indian ethnic groups in United States when compared with

Caucasians had a higher frequency of breast neoplasm with age range below 40 years.[5]

WHO [1] age standardized deaths in Pakistan by breast cancer are 28 per 100,000 yearly.[6] Women were mostly diagnosed in advanced stages of the disease in III or IV when in 4th or 5th decade of their life near to menopause stage.[6, 10] Karachi has the highest incidence of breast cancer in women in Asia apart from the Jews of Israel.[7]

Associated risk factors for developing breast cancer are related with reproduction, breast-feeding and diet.[6, 9,11] Hormonal mainly estrogen related; menarche occurring at an early age, late age of child birth and nulliparity have a higher risk of developing breast neoplasm as in the urbanized regions but decrease intake of hormonal replacement therapy especially of menopausal hormones lead to decrease in incidence. High socioeconomic status also contributed in reduced mortality rates when compared to developing nations.[8, 9, 11] Increased dietary fat intake after 18 years in postmenopausal women are prone to breast tumours.[10, 11] High consumption of alcohol and mutations in BRCA 1 and BRCA 2 genes are also considered associated risk factors.[11]

This study evaluates the spectrum of breast diseases from the data record of Dow Diagnostic Research and Reference Laboratory (DDRRL), Karachi. This research will facilitate to develop a quality data stating the histologic types of breast cancer and breast diseases occurring in this metropolitan city. This study will add a data to approximate prevalence of spectrum of breast diseases in this part of the country so that feasible preventive programmes can be initiated to improve the morbidity and mortality of breast diseases patients.

MATERIAL AND METHOD

This descriptive study was done in a period of three months starting from October 2011 till December 2011. Data of various breast diseases was obtained from the histopathology department of Dow Diagnostic Research and Reference Laboratory (DDRRL), OJAH campus located in Karachi. Previous reports of patients were analyzed from January 2011 to October 2011.A total of 829 mastectomy and biopsy samples have been included which were received from different hospitals throughout the city and from collection point of Dow laboratory. The samples were received immersed in formalin containers and processed by routine laboratory method and embedded in paraffin for preparation of blocks. The sections were stained with hematoxylin and eosin and special stains were applied as per required. Diagnoses of the different breast diseases were grouped into benign, malignant and inflammatory lesions. All breast diseases reports were included only from DDRRL. There was no limitation of age. Both genders were considered .Cancers other than breast diseases were excluded from the study. Reports of missing information were not analyzed. Normal breast tissue was as well excluded. Modified Bloom Richardson's classification is used to grade malignant tumours, which range from grade 1 to grade 3 with increasing severity. The data was entered in the statistical software of IBM for windows SPSS version 16. Descriptive data was computed.

RESULTS

The total breast lesions analyzed were 829 out of which 413 (49.8%) were malignant, 322 (38.8%)were benign and 80 (9.65%) were inflammatory. Invasive ductal carcinoma grade 2 was the

TABLE I

Breast Lesion Type	Number of patients	Percentage	Age groups
Inflammatory lesion			
Breast abscess	33	4.0	31-40
Chronic mastitis	14	1.7	21-30
Granulomatous mastitis	14	1.7	31-40
Duct ectasia	11	1.3	41-50
Fat necrosis	7	0.8	41-50
Total inflammatory lesion	**80 9.65%**		
Benign lesion			
Fibroadenoma	232	28	10-20
Fibrocystic changes	51	6.1	41-50
Lactating adenoma	0	0	0
Intra ductal Papilloma	9	1.1	21-30
Lipoma	10	1.2	31-40
Benign Phylloides Tumour	20	2.4	31-40
Total Benign lesions	**322 38.8%**		
Malignant Lesions			
Invasive ductal carcinoma Grade 1	145	17.5	31-40
Invasive ductal carcinoma Grade 2	197	23.7	41-50
Invasive ductal carcinoma Grade 3	54	6.5	41-50
Invasive lobular carcinoma	1	0.1	41-50
Ductal carcinoma in situ	4	0.5	41-50
Medullar Papillary carcinoma	9	1.1	21-30
Mucinous carcinoma	3	0.4	31-40
Total malignant lesion	**4 13 49.8%**		

Breast diseases classified with age group

TABLE II

Gender	Age Range	Mean Age	Diagnosis	
Female	***Male***			
32	1	31-40	28	**Breast abscess**
14	0	21-30	30	Chronic mastitis
14	0	31-40	20	Granulomatous mastitis
11	0	41-50	45	Duct ectasia
7	0	41-50	42	Fat necrosis
230	2	10-20	18	**Fibroadenoma**
50	1	41-50	45	**Fibrocystic changes**
0	0	0	0	Lactating adenoma
9	0	21-30	30	Intra ductal Papilloma
10	0	31-40	28	Lipoma
20	0	31-40	20	Benign Phylloides Tumour
145	**0**	**31-40**	**40**	Invasive ductal carcinoma Grade 1
197	**0**	**41-50**	**40**	Invasive ductal carcinoma Grade 2
53	**0**	**41-50**	**40**	Invasive ductal carcinoma Grade 3
1	**0**	**41-50**	**55**	Invasive lobular carcinoma
4	**0**	**41-50**	**50**	Ductal carcinoma in situ
3	**0**	**21-30**	**28**	Medullar Papillary carcinoma
3	**0**	**31-40**	**60**	Mucinous carcinoma
3	**5**	**21-30**	**20**	**Gynecomatasia**

Frequency of **of breast diseases in males and females with age range.**

FIGURE 1
Graphical presentation of all the breast diseases

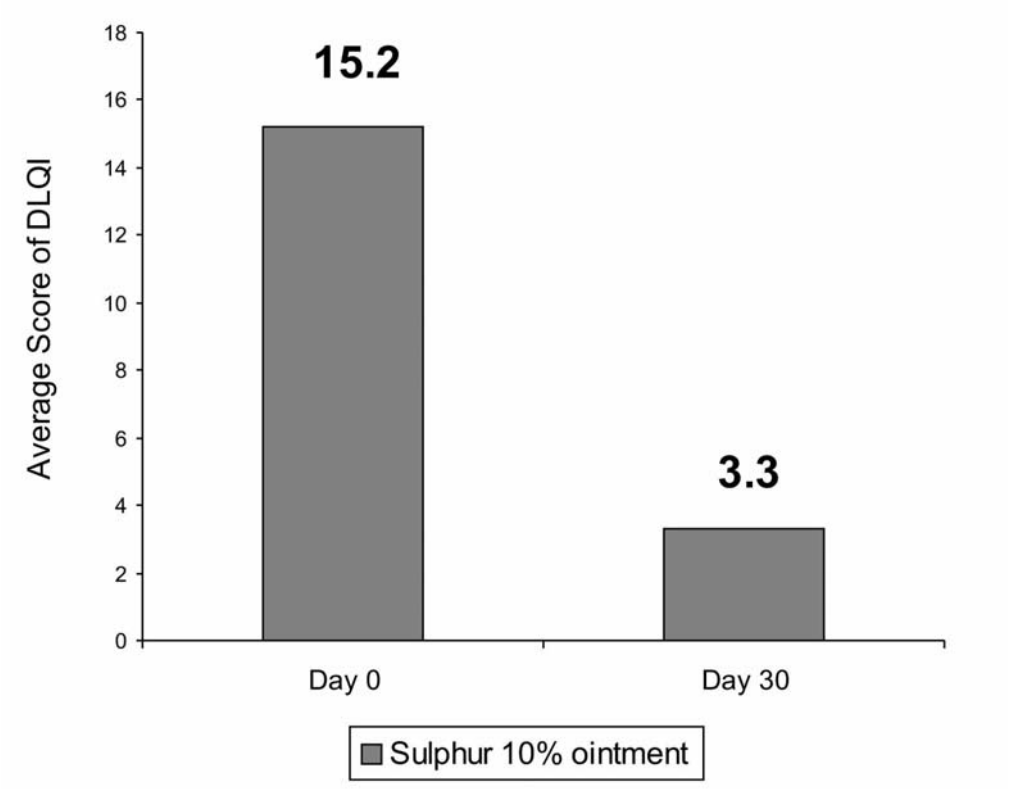

FIGURE 2
Groups indicating percentage of breast diseases

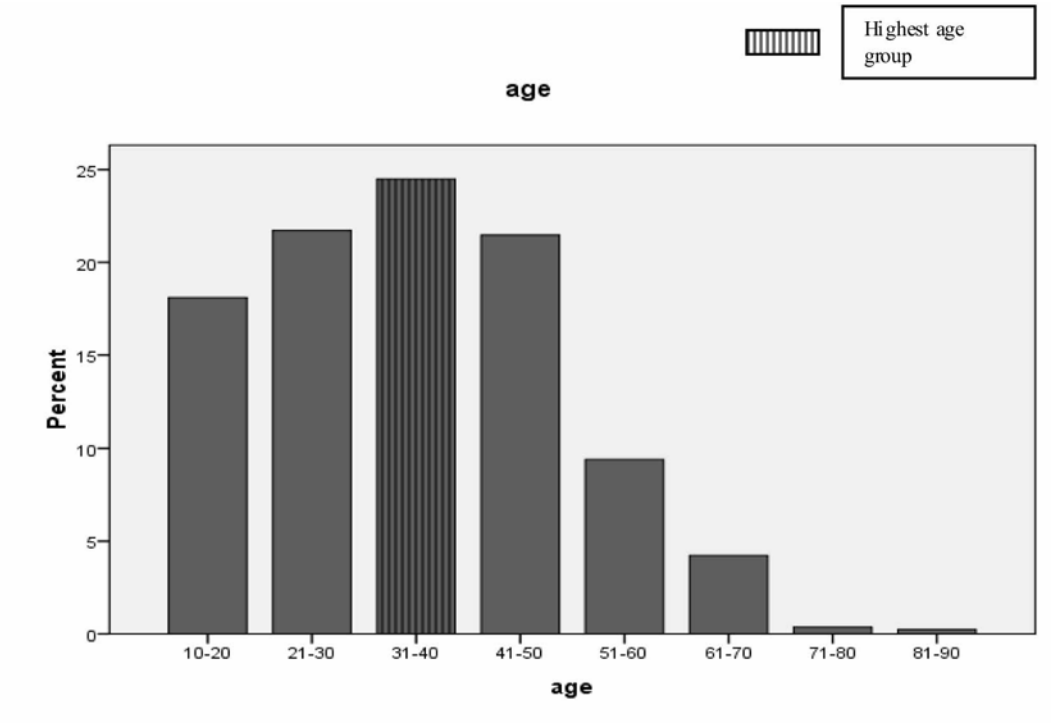

CHART 1
Gender comparison Chart 1

most frequent malignant lesion occurring in the age group of 41-50 where as the benign lesion fibroadenoma was most repeated finding at 18 years (10-20 age range) and the most common inflammatory finding was breast abscess in the age range of 31-40. These diseases presented at the mean ages 40,18 and 28 years respectively.

Most numerous malignant tumours reported comprised of invasive ductal carcinoma grade 2 (23.7%) followed by invasive ductal carcinoma grade 1(17.5%). However the least recorded cancer was invasive lobular carcinoma (0.1%). Incidence of fibroadenoma (28.0%) was the highest among all the types of benign breast diseases. Second most common benign tumour was fibrocystic changes (6.1%), benign phylloides (2.4%) was the next in incidence ranking, lipoma had a percentile incidence of 1.2% and no record of lactating adenoma (0.0%) was found. Among the category of inflammatory lesion breast abscess (4.0%) scored the maximum, chronic mastitis (1.7%) and granulomatous mastitis (1.7%) both presented equally, duct ectasia (1.3%) followed and fat necrosis was least diagnosed.

In the age range of 41-50 majority of the malignant breast tumours had developed and in the age range of 21-30 minimum malignant breast disorders develped.10-20 age group had the most common benign lesion however other benign lesions appeared in different age groups. Inflammatory lesions were present mostly in two age groups 31-40 and 41-50.

Table **À** summarizes the specific type of breast lesion associated with their age ranges and the total number of patients diagnosed with a particular breast disease.

In females the largest record of malignant diseases was of invasive ductal carcinoma grade 2 presenting at the age of 40 years. Among the benign spectrum, fibroadenoma at 18 years had highest record in females. Breast abscess at the mean age of 28 years was the most common inflammatory disease in women. However the predilection of breast disease among men was low in comparison to females. A total of 9-breast diseases in men were diagnosed in the laboratory reports. At a mean age of 20 years men had gynectomatasia only five patients were recorded. One patient of breast abscess and fibrocystic changes was found at a mean age 28 and 45 years respectively. Fibroadenoma, which has the utmost prevalence in women merely 2 patients were present in the male gender. Table **Á** summarizes predilection of gender and breast diseases.

DISCUSSION

Our study was planned to evaluate the magnitude of different breast diseases in DDRL OJHA, Karachi. The total malignant breast cases in this study are 413 (49.8%). Invasive ductal carcinoma considering all three grades (48.58 %) is a malignant lesion with aggressive potential of metastases was the most prominent histological variety among all the types of breast lesions reported in DDRL.[15] Grade 2 invasive ductal carcinoma (23.7%) was the most common malignant lesion present at a mean age of 40 years in this study. However the mean age was 47 years in a research conducted in Karachi 2005 but yet when compared to other worldwide researches malignant invasive ductal carcinoma was found at an older age; at a mean age of 61 years with a five year survival rate in America.[13, 14] Ductal carcinoma in situ was the second most common malignant breast disease in this current study and presented at the mean age of 50 years and is similar to results conducted locally and internationally.[15, 16] Global statistics of incidence of breast cancer overall in United States of America, United Kingdom, Australia and France had increased between the years 1980 to late 1990 but theses trends changed and decreased between the period 1990-2006 .In Africa, Asia including Japan incidence rates are increasing.[11]

Benign tumours, fibroadenoma had the highest occurrence at the peak age of 18 years and fibrocystic changes were the next benign subtype with elevated prevalence and presented in the mean age of 45 years in this research. There is variation of age distribution of these diseases noticed when compared with previous studies.[17] Fibroadenoma is the second most dominant breast lesion among all the histological breast types in this study and the total numbers of patients were 232 who were diagnosed of this disease. When this research is compared to a similar study performed 7years ago in Karachi in which fibroadenoma had a percentage of 35.17 making its occurrence even more than invasive ductal carcinoma (21.84 %). [13, 24] The difference in changing trends of breast tumours can be noticed in geographical locations also.[13, 14, 29] In this data compilation fibroadenoma is now appearing in younger girls at the mean age of 20 and not 23 years .A recent study held in Nigeria in 2011 by Echelon et al [28] indicates fibroadenoma as the most frequent benign lesion followed by fibrocystic changes, similar results are obtained in this study with expectation of age range which is 21 and 40 years in the Nigerian population where as it is 18 and 45 years respectively in our study. Conversely when results are compared with western societies incidence rate of fibroadenoma is more frequent than malignant lesions.[21] Further literature review of local data, which is available, a study of breast imaging performed in the civil hospital Karachi also had higher incidence of benign tumours then malignant ones. Khanzada et al [30] in another study of benign breast spectrum reported increase fibroadenoma then fibrocystic change incidence but again the age range showed slight variation, which was 21-30 and 31-40 in the Hyderabad locality of Pakistan. Further investigation are still required to inquire the reason for age and demographic disparity of the spectrum of breast diseases at national and international level.

This study resulted in 80 inflammatory cases out of which 33 comprised of breast abscess while the distribution of chronic mastitis and granulomatous mastitis was same of 14 lesions. Duct ectasia an inflammatory lesion had 11 reports in this laboratory. Only 7 cases of fat necrosis lesion were found. When these results were compared with other articles only slight dissimilarity was observed in mean age and frequency of breast abscess and chronic mastitis which is 27 and 30 years for Hussain et al [13] and 26 years in Khanzada et al [30] along with 28 and 30 years for this investigation. A major discrepancy of was compared in duct ectasia in the above-mentioned study, which was 38 years, and 45 years now in this analysis.

There were no malignant male diseases existing in this study making it a rare entity in this set up and comparable to international literature which state various histological types of malignant breast diseases in men as only 1%. [31] There were 5 reports of gynecomatasia in males in this research presenting at a mean age of 20 years within the age range of 21-30 years. However in a study conducted in Karachi in 2006 gynectomatasia mostly occurred between the age range of 11-20 years and at 16years was its peak incidence among men.[32] Conversely a study conducted in Jamshoro in 2009 maximum percentage of gynectomatasia was also in the age range 21-30years.[33] Among benign lesions in

men, 2 cases of fibroadenoma were recorded occurring at a mean age of 18years.In an African city Eritrea [34]; similar low incidence of fibroadenoma was reported in 2006 among men when compared to women. [34]

CONCLUSION

In conclusion we can say that magnitude of breast diseases in the women of Karachi is alarming as trend of malignant breast lesions presenting at younger age and its occurrence is more than benign and inflammatory lesion altogether in this study.

It can be suggested that much effort is required and is a challenge to increase the level of awareness for earlier diagnosis of breast diseases in this society as social pressure and financial restrictions prevents women from visiting health professionals. Detection of this type of cancer at a pre-clinical stage is the only way to save lives and better prognosis of this urban society.

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