Magnitude of Breast Diseases in OJHA Histopathology Department

**1. Mehvish Vakil 2. Tazeen Mustanser 3. Naseem Ahmed Shaikh 4. Salik Rasool
5. Talat Mirza 6. Anwar Ali**

1. Lecturer, Oral Pathology, Dr. Ishrat-ul-Ebad Khan Institute of Oral Health Sciences, (DUHS),Karachi
2. Asstt. Prof. of Pathology, DIMC, DUHS, Karachi 3. Asstt. Prof. of Pathology, DMC, Karachi
4. Asstt. Prof. of Oral Pathology, Dr. Ishrat-ul-Ebad Khan Institute of Oral Health Sciences, (DUHS),Karachi
5. Prof. of Pathology, DIMC, DUHS, Karachi 6. Prof. of Oral and Maxillofacial,
Dr. Ishrat-ul-Ebad Khan Institute of Oral Health Sciences, (DUHS),Karachi

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.
Study Design: Descriptive study.
Place and Duration of Study: This study was carried out on obtaining Data of various breast diseases was obtained from the histopathology department of Dow Diagnostic Research and Reference Laboratory (DDRRL), OJAH campus located in Karachi from October 2011 till December 2011.
Patients and Methods: Ten months data of 2011 consisted of 829 cases of breast diseases. 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 .In malignant tumours invasive ductal carcinoma grade 2 was (23.7%). Fibroadenoma (28.0%) ,fibrocystic change (6.1%), benign phylloides (2.4%), lipoma was 1.2% and no record of lactating adenoma was found. Inflammatory lesion breast abscess (4.0%), chronic mastitis (1.7%) ,granulomatous mastitis (1.7%), duct ectasia (1.3%) 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.
Key Words: Breast diseases, breast neoplasm, and fibroadenoma.

INTRODUCTION

Cancer is a non-communicable disease has an annual documentation of 10 million cases . [1] Females breast cancer is frequently diagnosed and leading cause of death worldwide.[2] GLOBACAON [3] 2008; newly developed breast tumours were 13.9 million (23% of all cancers) however 60% of deaths occurred in economically developing countries.[4] 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] SEER[5] data states; Pakistani and Indian ethnic groups in United States when compared with Caucasians had a higher frequency below 40 years.[5] WHO [1] age standardized deaths in Pakistan by breast cancer are 28 per 100,000 yearly.[6] Women were diagnosed in advanced stages of III or IV in 4th or 5th decade of their life near to menopause .[6,10] Karachi has the highest incidence of breast cancer in women in Asia.[7]
High consumption of alcohol and mutated genes BRCA 1 and BRCA 2 genes are associated risk factors.[10] Risk factors related with reproduction, breast-feeding ,diet.[6,11] 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 reduced mortality rates when compared to developing nations.[8, 9]
This study evaluates the spectrum of breast diseases and will facilitate to develop a quality data stating the histologic types of breast cancer occurring in this metropolitan city so that feasible preventive programmes can be initiated to improve the morbidity and mortality of breast diseases patients.

PATIENTS AND METHODS

This descriptive study was conducted 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 were analyzed from January 2011 to October 2011. A total of 829 mastectomy and biopsy samples were included .Diagnoses of the different breast diseases were grouped into benign, malignant and inflammatory lesions. 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 excluded. Modified Bloom Richardson's classification was used to grade malignant tumours, which range from grade 1 to grade 3 with increasing severity. Statistical analyses was computed with IBM software for windows SPSS version 16.

RESULTS

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 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.

Table No.1: Breast diseases classified with age group

Breast Lesion Type	No. of patients		
Inflammatory lesion			
Breast abscess	33	4	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	20-Oct
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%**	

Most malignant tumours 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.

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

Table No.2: Frequency of breast diseases in males and females with age range

Gender		Age	Mean	
Female	Male	Range	Age	Diagnosis
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	20-Oct	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

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 ‖ summarizes predilection of gender and breast diseases.
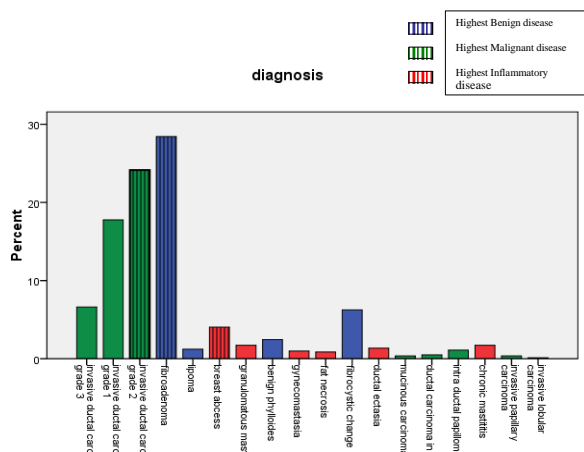

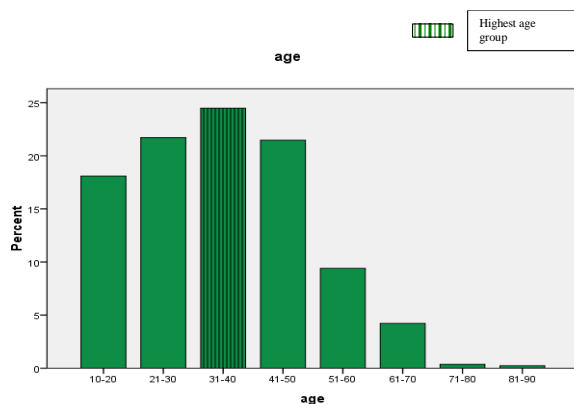**Figure No.1: Graphical presentation of all the breast diseases**

Figure No.2: Groups indicating percentage of breast diseases
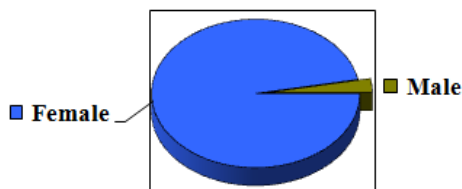

Chart No.1: Gender comparison

DISCUSSION

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 was the most prominent histological variety among all the types of breast lesions reported in DDRL.[14] 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.[12, 13] 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.[14, 15] Global statistics of incidence of breast cancer overall in United States, 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.[11,19]

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..These diseases indiacte variation in age when compared with previous studies.[16,21] Fibroadenoma is the second most dominant breast lesion among all the histological breast types in this study and the total numbers of patients were . 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 %). [5,22] The difference in changing trends of breast tumours can be noticed in geographical locations also.[13,23,, 25] 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[17, 24] 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. [24] Conversely when results are compared with western societies incidence rate of fibroadenoma is more frequent than malignant lesions.[18,20] 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 [26] 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 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 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 [12] and 26 years in Khanzada et al [26] 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%. [27] 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.[29] Conversely a study conducted in Jamshoro in 2009 maximum percentage of gynectomatasia was also in the age range 21-30years.[28],[29] Among benign lesions in men, 2 cases of fibroadenoma were recorded occurring at a mean age of 18years.In an African city Eritrea [30]; similar low incidence of fibroadenoma was reported in 2006 among men when compared to women. [30]

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.

REFERENCES

1. WHO Cancer control programmes policies and managerial guideline. National Cancer Control Programmes. 2nd ed.

2. Yasmin B, Asif B, Hassan Sheema H, Abdul R, et al. Maxwell Cancer incidence in Karachi, Pakistan: First results from Karachi Cancer Registry, Int J C 2000;85:325-329.

3. Breast Cancer Incidence, Mortality and Prevalence Worldwide in 2008. Summary Globocan. Cancer fact sheet 2008.

4. Freddie B, Peter M, Maxwell PD. The changing global patterns of female breast cancer incidence and mortality Breast Cancer Res 2004;6:229-239.

5. Fakeha R, Nagi AH, Mahwish H. Immuno-histochemical expression and correlation of mammaglobin with the grading system of breast. carcinoma 2010;53:4:619-623.

6. Madhuri K, Laura R, Michele C, Samadhi L, Brenner DE. Breast cancer histology and receptor status characterization in Asian Indian and Pakistani women in the U.S. - a SEER analysis Kakarala et al. BMC Cancer 2010;10:191.

7. Riyaz B, Srinivasa S, Tzu-Chieh YU, David M, Andrew GH. Systematic Review of Breast Cancer Biology in Developing Countries (Part 2): Asian Subcontinent and South East Asia Cancers 2011;3: 2382-2401.

8. Riyaz B, Srinivasa S, Tzu-Chieh YU, David M, Andrew GH. Systematic Review of Breast Cancer Biology in Developing Countries (Part 1), Africa, the Middle East, Eastern Europe, Mexico, the Caribbean and South America Cancers 2011; 3(2): 2358-2381.

9. Ahmed F, Mahmud S, Hatcher J, Khan SM. Breast cancer risk factor knowledge among nurses in teaching hospitals of Karachi, Pakistan: a cross-sectional study BMC Nurs 2006; 5: 6.

10. Jemal A, Bray F, Ferlay J, Forman D. Global Cancer statistics. ca cancer J Clin 2011; 61:69–90.

11. Joseph N. Breast Mammography: Correlated Ultrasound, MRI, CT, and SPECT-CT ceessentials. net

12. Nazar H, Bushra A, Nadia N, Zulfiquar A. Pattern of female breast diseases in Karachi. Biomedica 2005;21.

13. Bandi P, Brinton L, Buchert S, Cokkinides V, et al. Breast Cancer Facts & Figures 2011-2012 American Cancer Society.

14. Harris M, Howell A, Chrissohou M, Swindell RIC, Hudson M, Sellwood RA. A comparison of the metastatic pattern of infiltrating lobular carcinoma and infiltrating duct carcinoma of the breast. Br J Cancer 1984;50, 23-30.

15. Histological Factors Associated with Initial Bone Metastasis of Invasive Ductal Carcinoma of the Breast. Jpn J Cancer Res 1999;90, 294-300.

16. Hafsa A, Saira I, Hafeez WN, Andleeb K, Rukshshan K. Importance of physical examination in early detection of lump in breast in women of

different age groups. J Ayub Med Coll Abbottabad 2010; 22(2).

17. Akhigbe A, Omuemu V. Knowledge, attitudes and practice of breast cancer screening among female health workers in a Nigerian urban city. BMC Cancer 2009;9:203.

18. Bhoo PN, Har YC, Aishah TN, Mikael H, Nakul S, Philip I, et al, Breast cancer in a multi-ethnic Asian setting: Results from the Singapore Malaysia hospital-based breast cancer registry 2011;20(2).

19. Center M, Siegel R, Jemal A. Global Cancer Facts & Figures 2nd Edition, Atlanta: American Cancer Society; 2011, 2008 (http://globocan.iarc.fr).

20. Gokce T, Karadogan I, Akçay C. A long-term survival pattern for breast cancer treated in a single institution Socioeconomic Status and Breast Cancer Survival in Pakistani Women. Indian J Cancer 2011;48:187-93.

21. Beth A. Virnig, Todd M. Tuttle, Tatyana Shamliyan, Robert L. Kan. Ductal carcinoma in Situ of the Breast: A Systematic review of incidence, treatment, and Outcomes. J Natl Cancer Inst 2010;102:170–17.

22. Aziz Z, Sana S, Saeed AA. Socioeconomic Status and Breast Cancer Survival in Pakistani Women, JPMA 2004.

23. SiewYim Loh, Packer TL, Yip CH. A Pass more Targeting Health Disparity in Breast Cancer: Insights into Women's Knowledge in Malaysia Targeting Health Disparity in Breast Cancer: Insights into Women's Knowledge of their Cancer Profile in Malaysia. Asian Pac J Cancer Prev 2009;10(4): 631-6.

24. Godwins E, David D, Akeem J. Histopathologic analysis of benign breast diseases in Makurdi, North Central Nigeria Int J Med Med Sci Med Sci 2011;3(5), 125-128.

25. Memon A, Parveen S, Sangrarasi AK, Malik A, Laghari A, Hussain KA. Talpur Changing Pattern of Benign Breast Lumps in Young Females World. J Med Sci 2007;2(1):21-24.

26. Khanzada et al Spectrum of breast diseases. Pak J Med Sci 2009;25,265-268.

27. Foerster, Foerster FG, Wulff V, Schubotz B, Baaske D, Wolfgarten M, et al, Matched-pair analysis of patients with female and male breast cancer: a comparative analysis. BMC Cancer 2011; 11:335.

28. Syed N. Gynecomazia: a study of 46 cases Department of Surgery, Dow University of Health Sciences & Civil Hospital, Karachi. PJS 2007 ;1:23

29. Ambreen M, Zameer HL, Abdul SR, Laghari QA. Department of Surgery Liaquat University of Medical and Health sciences, Jamshoro, Pakistan Gynaecomastia: management in a developing country. J Ayub Med Coll Abbottabad 2009; 21:3.

30. Tesfamariam A, Parilla F, Paulos E, Mufunda J, Gebremichae A. Clinicohistopathological evaluation of breast masses and profile of breast diseases in Eritrea: a case of poor concordance between clinical and histological diagnosis. JEMA 2005; 140: 1008-9.

Address for Corresponding Author:
DR Mehvish Vakil
Lecturer Oral Pathology
Oral Pathology,
Dr. Ishrat-ul-Ebad Khan Institute of Oral Health Sciences, (DUHS),Karachi
Address for correspondence:
5-C, 7/9.Nazimabad, Karachi
Email:mehvishv@yahoo.com
Cell No.: 03002268056