



HISTOPATHOLOGICAL ANALYSIS OF BENIGN BREAST LESIONS IN TERTIARY CARE HOSPITAL

Pathology

Dr. Prashant S Murarkar

Assistant professor, Department of pathology, Government medical college and Hospital, Miraj, Maharashtra, India.

Dr. Nayan A Ramteerthakar

Associate professor, Department of pathology, Government medical college and Hospital, Miraj, Maharashtra, India.

Dr. Amit C Awale*

Junior Resident III, Department of pathology, Government medical college and Hospital, Miraj, Maharashtra, India. *Corresponding Author

ABSTRACT

Background- Lump in the breast has assumed increasing importance in recent years because of the increasing public awareness. The present study was undertaken with an aim to determine the incidence and the histopathological spectrum of various benign breast lesions at our institute.

Methods: A retrospective study was done in the department of pathology over a period of two years. Relevant clinical details obtained from requisition forms. Formalin fixed paraffin embedded tissue sections were studied and analysed. **Result:** Of the total 111 cases fibroadenoma (63.06%) was the commonest lesion followed by mammary hamartoma (7.20%) and inflammatory lesions (6.30%). Majority of the breast lesions are a heterogeneous group of disorders ranging from inflammatory to benign tumors. **Conclusions:** Fibroadenoma is the most common benign breast disease. Distinguishing these heterogeneous forms by histopathological examination is crucial for diagnostic prediction.

KEYWORDS

Breast, Benign Breast Diseases, Fibroadenoma.

INTRODUCTION

Breast diseases are showing a rising trend worldwide. This may be due to increasing public awareness of breast cancer which is presently the most common female malignancy worldwide. BBD includes all non-malignant conditions of the breast, including benign tumors, trauma, mastalgia, mastitis and nipple discharge. Benign tumors include pathologic changes that do not increase a patient's risk for developing cancer, lesions that confer a slightly increased risk and lesions that are associated with up to 50% risk of developing breast cancer. Breast is a site of a broad array of pathological alterations. Advances in imaging techniques and increased use of fine needle aspiration cytology have greatly assisted the preoperative evaluation of breast lesions. However, in a large proportion of cases differentiation between benign and malignant lesions still rests on histopathological examination. Cancer of breast is one of the most common neoplasms in females. We have studied and analyzed various benign breast lesions from the specimens received in our histopathology section and correlated the histopathology with clinical parameters.

Objectives:-

To study histopathological profile of different breast diseases presenting in tertiary care centre, frequency of individual benign breast disease and distribution of BBD with age & sex.

Material & Methods:-

The present study was conducted in the department of pathology, Government Medical College Miraj, Maharashtra, India over a period of 1 year January 2017 to December 2018.

Total 110 benign breast lesion were studied during the period. Core needle biopsy, excision biopsy, lumpectomy, modified radical mastectomy specimens were examined. Sections were processed, embedded for paraffin sectioning, stained with hematoxylin and eosin stain and detailed microscopic examination was done. The demographic characteristics of patients were presented in excel sheet and analyzed for the frequency of each lesion and their distribution in various age group.

Inclusion Criteria:-

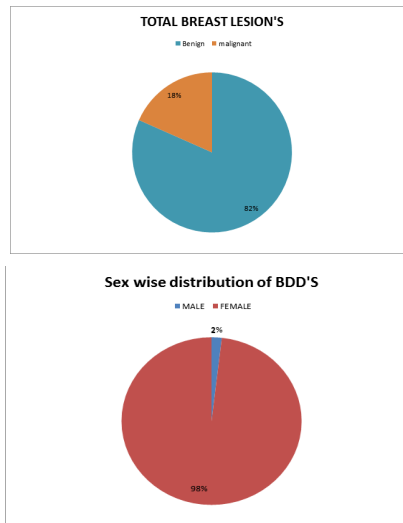
- Nonmalignant/benign breast were included in the study.
- Both male and female patients with benign breast lesion were included.
- Inflammatory lesions were also included.

Exclusion Criteria:-

- Patient with proven malignant disease and inadequate biopsies were excluded from present study

RESULTS

The total number of breast specimens received at histopathology section of the Department of Pathology was 136 from Jan 2017 to Dec 2018. This included 134 females and 02 males. Out of these 136 breast lesions, 25 were malignant cases and 111 were benign breast lesions. These 111 benign breast lesions including inflammatory lesions, benign proliferative lesions and benign tumors (Table 1). Out of 111 cases, 109 were females and 2 were males. (Table 2).



AGE DISTRIBUTION PATTERN OF BENIGN BREAST DISEASES

AGE DISTRIBUTION	DISTRIBUTION OF BBD ACCORDING TO AGE	Percentage (%)
11-20	23	20.74
21-30	46	41.44
31-40	22	19.81
41-50	14	12.61
51-60	3	2.70
61-70	1	0.90
71-80	2	1.80
TOTAL	111	100

Age distribution pattern reveals most of the 48 cases (41.44%) of benign breast lesion in the age group of 21-30 years followed by

23(20.74%) cases in age group of 11-20 years. The youngest patient was 13 year old young girl and the oldest was 65 year old lady.

AGE WISE DISTRIBUTION OF INDIVIDUAL BENIGN LESIONS

Type of lesion	11-20	21-30	31-40	41-50	51-60	61-70	71-80	Total
Fibroadenoma	22	29	15	2	1	1	0	70
Fibrocystic change	0	1	1	1	0	0	0	3
Lactating adenoma	1	2	0	0	0	0	0	3
Accessory breast	0	3	0	0	0	0	0	3
Gynaecomastia	0	1	1	0	0	0	0	2
Mammary Hamartoma	0	4	1	3	0	0	0	8
Tubular adenoma	0	0	0	1	0	0	0	1
Mixed Hemangioma	0	0	0	1	0	0	0	1
Lipoma	0	0	0	1	0	0	0	1
Benign Phyllod	0	1	0	2	0	0	0	3
Duct ectasia	0	1	0	0	0	0	1	2
Granulomatous mastitis	0	2	0	0	0	0	0	2
Breast Abscess	0	1	2	1	0	0	0	4
Fat Necrosis	0	0	0	0	1	0	0	1
Other inflammatory lesions	0	1	2	2	1	1	0	7
Total	23	46	22	14	3	2	1	111

In present study Among 111 cases, Fibroadenoma was most commonly seen benign breast lesion in the age group of 21-30 years 29 (26.12%) followed by 22 (19.81%) in the age group of 11-20 years.

DISTRIBUTION PATTERN OF BENIGN BREAST LESION

Benign Breast Lesions	Total cases	Percentage
Fibroadenoma	70	63.06%
Fibrocystic change	3	2.70%
Lactating adenoma	3	2.70%
Accessory breast	3	2.70%
Gynaecomastia	2	1.80%
Mammary Hamartoma	8	7.20%
Tubular adenoma	1	0.90%
Mixed Haemangioma	1	0.90%
Lipoma	1	0.90%
Benign Phyllod tumor	3	2.70%
Duct ectasia	2	1.80%
Granulomatous mastitis	2	1.80%
Breast Abscess	4	5.40%
Fat Necrosis	1	0.90%
Other inflammatory lesions	7	6.30%
TOTAL	111	100%

In present study, Fibroadenoma was the commonest i.e. 63.06%, followed by mammary hamartoma 7.20%. Masses of Fibroadenoma ranged from 0.5 cms to 5.5 cms. Majority of them showed slit like areas in the cut surface intracanalicular and pericanalicular pattern were seen microscopically and in some both patterns coexisted in the same tumor.

There were 8 cases of hamartoma constituting 7.20%. Microscopically, It was a well circumscribed mass of mammary ducts and lobules containing various amount of fibrous and adipose tissue.

Breast abscess were seen in 4 cases which accounted for 5.40%. Fibrocystic Disease, lactating adenoma, accessory breast and benign phyllod tumor each accounted for (2.70%). Histologically fibrocystic disease was characterized by overgrowth of both fibrous stroma and of epithelial elements i.e. ducts and lobules, in differing proportions and cyst formation. Three cases of tubular adenoma microscopically showed numerous closely packed uniform small tubules, lined by benign epithelial with very scant stroma. Most of phyllodes cases were irregular nodules. Microscopically, these tumors showed stromal hyperplasia. Mitoses were less than 2-3 per 10 high power fields.

Gynecomastia, duct ectasia and granulomatous mastitis each contribute for 1.80% in total cases. Tubular adenoma, mixed hemangioma and fat necrosis each accounted for 0.90%. Grossly, the masses of gynecomastia were well circumscribed, firm in consistency. Microscopically, the ducts showed a variable and prominent degree of epithelial hyperplasia and were surrounded by a prominent proliferating stroma. Duct ectasia was also found in 2 cases (2.5%). Microscopically, the lesions were characterized with foamy macrophages surrounding dilated ducts.

Two cases (1.87%) of granulomatous mastitis were found which microscopically showed non-caseating granulomas. Single lesion of fat necrosis was found in the patient of 60 years old female with history of trauma. Microscopically showed foamy macrophages infiltrating partially necrotic adipose tissue.

Other inflammatory lesion such as acute and chronic non specific inflammation and chronic specific lobulitis with interstitial inflammation seen in 6.30% cases.

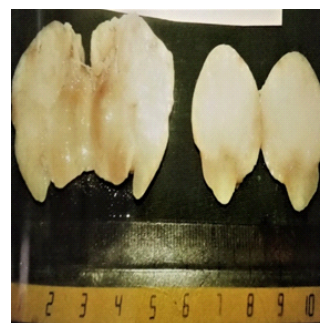


Figure 1- Gross photograph of fibroadenoma. The cut surface showing whitish appearance with slit like areas.

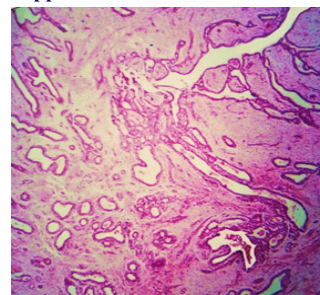


Figure 2- Photomicrograph of fibroadenoma showing pericanalicular and intracanalicular pattern (H&E x10)

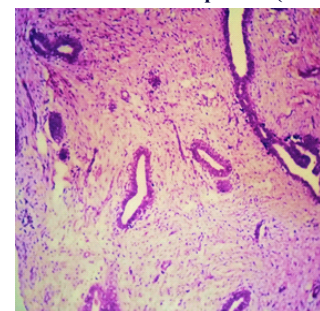


Figure 3- Photomicrograph of fibroadenoma (H&E x40)

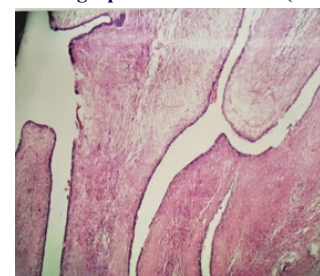


Figure 4- Photomicrograph of phyllodes tumor showing leaf like appearance. (H&E, X40)

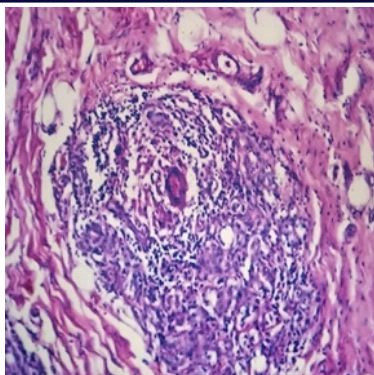


Figure 5 – Photomicrograph of lobular granulomatous inflammation centered on lobules with lymphocytes, plasma cells, epithelioid histiocytes and multinucleated giant cells (H&E x100)

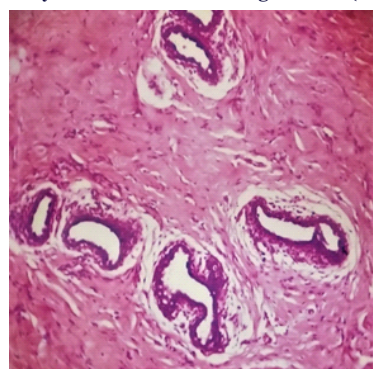


Figure 6– Photomicrograph of gynecomastia showing proliferation of ducts and mesenchymal tissue with 'Halo effect' (H&E x40)

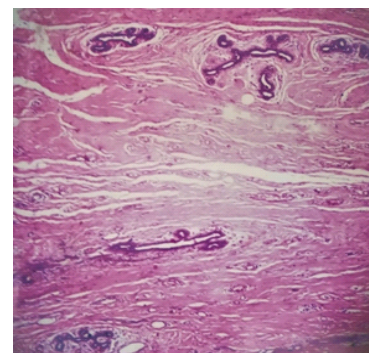


Figure 7- Photomicrograph of hamartoma showing glandular breast tissue (H&E x40)

DISCUSSION

Breast lesions are detected very commonly now days, due to awareness, Knowledge and most importantly self examination done by patients. Benign breast disease constitutes a heterogeneous group of disorder which is one of the most important cause of breast problem in females and it is more frequent than malignant ones .

Incidence of benign breast lesion in the present study was 82% of are the breast lesions. The findings were comparable with the studies done by Hatim et al⁵(80%) and Rasheed et al (80.7%) Bagale et al a study in north Maharashtra noted 78.57% while Pudale et al noted(71.75%).

In our study , about 48% of the patients with BBD were in the age group between 21-30 years. Similar incidence of benign breast disease in the age group of 21-30 is reported by Godwins et al From Nijeria and Hatim et al⁵ study .

In study by khazada et al majority of the patients (82%) were below the age of 40 yrs in agegroup between 21-30 yrs. Other studies from India by Vimal M et al and karkiObetal reported higher incidence of BBD of 50% and 67% respectively in age group of 21-30 yrs.

Sex distribution- benign breast lesions were higher in females 98%

similar were the findings in the study of Khanna et al (97.73%) and Haque et al (91.44%) .

In present study fibroadenomas (63.06%) is the most common benign lesion which are comparable with the studies of Hatim KS et al (77.62%)⁵, Pudale et al (40%)⁸, Haque et al (52.88%)¹⁴, Oluwale and freeman (48.51%) , Bagale et al (30.8%)⁷, and kulkarni et al (62.32%) .

In our study fibrocystic disease account for 2.70%, while other study in account for 4.3%, 32%, 22.12%, 11.24% in Hatim KS et al⁵, Pudale et al⁸, Haque et al¹⁴ and Bagale et al⁷ respectively. It was seen association with fibroadenoma. It was equally seen in 2rd, 3rd and 4th decade, however kumar et al found fibrocystic disease in agegroup 20-30yrs where as Prajapati et al , Bagale et al⁷ found most cases in 4th decades.

Fast necrosis was seen in single case (0.90%) while it was 0.40%, 2.88%, 2.97% and 2.24% in Hatim K S et al⁵, Haque et al¹⁴, Oluwale and Free man et al and Bagale et al⁷ study respectively. Fat necrosis is a benign nor suppurative inflammatory process of adipose tissue It is important to diagnosis necrosis because it can often mimic carcinoma of the breast.

Eigth cases of hamartoma of the breast was reported in our study constituting 7.20% of all the cases. Two cases of hamartoma were reported by Forae et al while Pudale et al⁸ reported a single case (0.18%) in their study.

Breast abscesses was seen in four cases in our study accounting for 5.40% of cases. In India, incidence of breast abscess ranges from 1%, 1.67% to 6.5% as reported by Hatim KS et al⁵, Pudale et al⁸ and Bagale et al⁷ respectively.

Granulomatous mastitis was seen 2 cases in present study which was accounting few 1.80% of total cases. In other studies of Hatim KS et al⁵, Pudale et al⁸ and Bagale et al⁷ it was accounted few 2.40%, 2% and 4.90% respectively.

In our study mammary hamartoma account few 7.20% while in the study of Gargade CB et al and Aamir et al it was 1.23% and 93% respectively.

In present study benign phylloid account few 2.70 , two was in 41-50 yrs & one was in 21-30 yrs. These findings were comparable with Forae GD et al²⁰ and Olu-Eddo et al where benign phylloides tumor constitutes 1.8% of benign breast diseases and most commonly encountered between the third and fifth decade of life. Mudholkar et al and Mallikarjun et al noted maximum number of cases in fourth decades, while pudale et al⁵ noted most of the cases in fifth decade.

However our findings are in controy to the reports by Ngwogu et al , Irabor et al where patients with benign phylloides tumor below 20 yrs of age are rare reported in Indian literature.

One case (0.90%) of tubular adenoma was encountered in our study, Numerous small tubular structures, composed mainly of secretory epithelial cells set in free cellular stroma. One case in age group of 41-50 yr. Pudale et al⁸ noted 0.55% cases of tubular adenoma commonly seen in 21 to 30 yrs of age in study of Hatim et al⁵ was 0.4%.

Lactating adenoma was found in 3 (2.70%) cases in our study. All the cases seen in the age group 11-20 and 21-30 yrs. Duct ectasia also found in 2 cases accounting for 2%. Microscopically the lession were characterized with foamy macrophages surrounding dilated ducts. Duct ectasia also found in the studies of Haque et al¹⁴ and Oluwale and Free man et al¹⁹ with 2.88% and 0.49% respectively.

In our study we had a cases of lipoma, Accessory breast and mixed hemangioma which are found in one case (0.9%), 3 cases (2.70%) and one case (0.9%) respectively. We also found other inflammatory conditions such as acute on chronic nonspecific inflammation, chronic specific lobulitis with interstitial inflammation. These all are found in 7 cases which accounted for 6.30%.

CONCLUSION

Our study included 111 cases of breast biopsies which had given us the opportunity to study a variety of lesions which were diagnosed histopathologically. Benign breast lesions are common than malignant

neoplasms. Fibroadenoma is the commonest benign breast lesion. Our study had given the information which was comparable with other studies. Histopathological study of breast lesions play very important role in diagnosis of lesion and hence in treatment and prognosis.

REFERENCES

1. Mahboob E; Epidemiology of Cancer Saudi Arabia, 1975-1985. *Ann Saudi Med.*, 1987; 7: 265-266.
2. Parkin DM1, Bray F, Ferlay J, Pisani P; Global cancer statistics, 2002. *CA cancer J Clin.*, 2005; 55(2): 74-108.
3. Miltenburg DM, Speights VO. Benign breast disease. *Obstet Gynecol Clin North Am* 2008;35(2):285-300. [
4. Hatim KS, Laxmikant NS, Mulla T. Patterns and prevalence of benign breast disease in Western India. *Int J Res Med Sci* 2017;5(2):684-8.
5. Rasheed A, Sharma S, Mohsin-ul-Rasool BS, et al. A three year study of breast lesions in women aged 1570 years in a tertiary care hospital. *J App Med Sci* 2014;2(1B):166-8.
6. Bagale P, Dravid NV, Bagale S, et al. Clinicopathological study of benign breast diseases. *International Journal of Health Sciences and Research* 2013;3(2):47-54.
7. Pudale S, Tonape SD. A histopathological study of non malignant breast lesions. *Int J Res Med Sci* 2015;3(10):2672-6.
8. Godwins E, David D, Akeem J. Histopathologic analysis of benign breast diseases in Makurdi, North central Nigeria. *International Journal of Medicine and Medical Sciences* 2011;3(5):125-8.
9. Khanzada TW, Samad A, Sushel C. Spectrum of benign breast diseases. *Pak J Med Sci* 2009;25(2):265-8.
10. Vimal M, Chitra T. Spectrum of benign breast diseases in females of reproductive age group. *Journal of Research in Medical and Dental Science* 2017;4(2):137-40.
11. Karki OB, Kunwar D, De A. Benign breast diseases: Profile at a teaching hospital. *Amer J Pub Health Res.* 2015;3(4A):83-6.
12. Khanna, U. (1985). Benign Breast Lump. A study of 250 cases. *Maharashtra. Med. Jr. Vol. XXXIV, Sr. No. 397.*
13. Haqqe, M., Pudale, S., & Tonape, S. D. (2017). A histopathological study of non-malignant breast lesions. *International Journal of Research in Medical Sciences*, 3(10), 2672-2676.
14. Oluwole, S. F., & Freeman, H. P. (1979). Analysis of benign breast lesions in blacks. *The American Journal of Surgery*, 137(6), 786-789.
15. Kulkarni S, Voralla M, Ghorpade K, et al. Histopathological spectrum of breast lesions with reference to uncommon cases. *J Obstet Gynecol India* 2009;59:444-52.
16. Kumar, M., Ray, K., Harode, S., & Wagh, D. D. (2010). The pattern of benign breast diseases in rural hospital in India. *East and Central African Journal of Surgery*, 15(2), 59-64.
17. Prajapati SR, Patel KK, Nanavati M. Histopathological Study of Benign Epithelial Lesions of Breast. *International journal of scientific research.* 2015;7(4):2277-8179.
18. Oluwole G, Ajao MB. Benign breast lesions. *Jof Nat Med asso* 1979; 71(9):867-868.
19. Forae GD, Nwachokor FN, Igbe AP, et al. Benign breast diseases in Warri, Southern Nigeria: a spectrum of histopathological analysis. *Ann Nigerian Med* 2014;8(1):28-3
20. Gargade C.B., Deshpande A.H., Spectrum of benign breast diseases on a remote Indian Island. *J. Evolution Med. Dent. Sci.* 2017;6(73):5238-5241,
21. Amir SS, Abdul Rahman, M Sadi, Fazalllahi, SS Sheikh. The Spectrum of Breast Diseases in Saudi Arab Females: A 26 yr Pathological Survey at Dhahran Health Center. *Ann Saudi Med* 1995; 15(2):125-132.
22. Olu-Eddo AN, Ugiagbe EE. Benign breast lesions in an African population: a 25-year histopathological review of 1864 cases. *Niger Med J* 2011;52(4):211-6. [
23. Mudholkar VG, Kawade SB, Mashal SN. Histopathological study of neoplastic lesions of breast, Indian. *Medical Gazette* 2012:353-64.
24. Mallikarjuna, Maralihalli SS. Clinico-pathological study of benign breast disease. *Indian Journal of Basic and Applied Medical Research* 2015;4(2):39-46.
25. Ngwogu et al; Histopathological pattern of benign breast disease among female patients in Abia State University Teaching Hospital; *IJSR* 2017;6(4):126-134
26. Irabor DO, Okolo CA. An audit of 149 consecutive breast biopsies in Ibadan, Nigeria. *Pakistan Journal of Medical Sciences* 2008;24(2):257-62.