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Original Research Article

Patterns and prevalence of benign breast disease in Western India

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ABSTRACT

Background: Benign breast diseases constitute a heterogeneous group of disorders including developmental abnormality, epithelial and stromal proliferation, inflammatory lesions and neoplasm. Benign breast lesions deserve attention because of their high prevalence, their impact on women's life and due to cancerous potential of some histological types. Treatment of BBDS is preservation of breast tissue as far as possible in contrast to traumatizing mutilating surgeries in breast cancers.
Methods: This study of 210 cases of histologically diagnosed benign breast lesions was carried out in the Department of Pathology, at tertiary care teaching hospital with attached peripheral hospitals in a metropolitan city of western India from August 2014 to August 2016.
Results: Out of 210 benign lesions, 201 (95.7%) were found in females and 9 (4.3%) were found in males. Commonest benign breast lesion was fibroadenoma (77.62%), followed by fibrocystic disease (4.3%) and gynaecomastia (4.3%).
Conclusions: Fibroadenoma is the most common benign breast disease. Most of the patients presented with painless lump in the breast in upper outer quadrant of the breast. Histopathology plays an important role in the diagnosis of benign breast diseases.

Keywords: Benign breast disease

INTRODUCTION

Benign breast diseases constitute a heterogeneous group of disorders including developmental abnormality, epithelial and stromal proliferation, inflammatory lesions and neoplasm. It is the most common cause of breast problems in females and it is 10 times more common than breast cancer in the western world.[1] Benign breast lesions deserve attention because of their high prevalence, their impact on women's life and due to cancerous potential of some histological types.[2] Treatment of BBDS is preservation of breast tissue as far as possible in contrast to traumatizing mutilating surgeries in breast cancers. Hence awareness and terminologies of benign breast diseases should be there amongst general population and clinicians. Thus, Histopathology plays an important role in management of breast diseases. Present histopathological study was aimed to study pattern and presentation of benign breast lesions over a period of 2 years in a tertiary care centre of western Maharashtra, India.

METHODS

This study of 210 cases of histologically diagnosed benign breast lesions was carried out in the Department of Pathology, at tertiary care teaching hospital with attached peripheral hospitals in a metropolitan city of western India from August 2014 to August 2016. This study is approved by ethical committee. Informed consent was taken. Detailed clinical data were noted as per the proforma with emphasis on history, physical examination and relevant investigations. The excision biopsy specimens, lumpectomy specimens received were

examined grossly for their size, shape, colour and consistency. Cut surfaces were noted for colour, size, and secondary changes such as necrosis, cystic degeneration, haemorrhage and fibrosis. Sections were taken, processed and stained with routine haematoxylin and eosin stain. Detailed microscopic examination was undertaken for histopathological diagnosis by two pathologists. Benign breast tumors and inflammatory lesions were included in this study while malignant tumors were excluded.

RESULTS

During study period, we received 260 cases of breast lesions in the histopathology department. On histopathological examination of 260 cases of breast lesions, 210 (80%) were benign and 20% were malignant. Out of 210 benign lesions, 201 (95.7%) were found in females and 9 (4.3%) were found in males. Commonest benign breast lesion was fibroadenoma (77.62%), followed by fibrocystic disease (4.3%) and gynaecomastia (4.3%). Out of 210 cases, 160 (76.2%) cases presented with painless lump while rest with painful lump. Distribution pattern of benign breast disease is shown in Table 1. Age distribution pattern reveals most of the cases of benign breast lesions were found in 3rd decade followed by 2nd decade. Age distribution pattern of benign breast disease is shown in Table 2.

Table 1: Distribution pattern of benign breast diseases.

Benign breast diseases	Present study (2016)
Benign tumors	
Fibroadenoma	163 (77.62%)
Gynaecomastia	9 (4.3%)
Benign phyllodes	7 (3.4%)
Benign spindle cell tumor	2 (1%)
Duct papilloma	1 (0.4%)
Tubular adenoma	1 (0.4%)
Benign proliferative lesions	
Fibrocystic disease	9 (4.3%)
Sclerosing adenosis	2 (1%)
Inflammatory lesions	
Granulomatous mastitis	5 (2.4%)
Tuberculous mastitis	3 (1.43%)
Abscess	2 (1%)
Chronic inflammation	2 (1%)
Fat necrosis	1 (0.4%)
Lymphocytic mastitis	1 (0.4%)
Lobular mastitis	1 (0.4%)
Periductal mastitis	1 (0.4%)

Out of 163 cases of Fibroadenoma, most of the cases were seen in 3rd decade of life 71 (43.5%), followed by 2nd decade 61 (37.4%). Twenty four cases were noted in 4th decade, 4 cases in 5th decade, 2 cases in 6th decade and one case of fibroadenoma was noted in a 78 year old female. Out of 163 fibroadenoma cases, 78 cases (48%) presented with lump in the left breast followed by right breast 73 (45%) and bilateral fibroadenoma of breasts were seen in 12 cases (7%). Most of the cases (62%) were noted in upper outer quadrant. Microscopically fibroadenoma showed intra and pericanalicular patterns and in some, both patterns co-existed in the same tumor. Morphological changes such as adenosis and cystic change were noted in 3 cases of complex fibroadenomas. One case of fibroadenoma in a 78 year old female showed hyaline change and calicification while other breast showed intraductal papilloma with secondary cystic changes.

Table 2: Age distribution pattern of benign breast disease.

Age group (years)	Number of benign lesions
11-20	67 (32%)
21-30	90 (43%)
31-40	38 (18%)
41-50	8 (3.8%)
51-60	5 (2.4%)
61-70	0
71-80	1 (0.4%)
81-90	1 (0.4%)

Out of 210 benign breast lesions, 9 male patients presented and diagnosed with gynaecomastia, constituting 4.3 % of all benign lesions. Lesions were found in subareolar region of the breast, in which most of cases 6 (66.6%) were in 3rd decade and 3 lesions were seen in right side, 3 lesions in left breast and 3 were bilateral. Grossly, the masses were well circumscribed, oval, disk shaped, firm in consistency. Microscopically, the ducts showed a variable and prominent degree of epithelial hyperplasia and were surrounded by a prominent proliferating stroma.

Out of 210 benign breast lesions, 7 (3.4%) cases were of benign phyllodes tumor. Majority of patients were between 50-60 years (3 cases) followed by 21-30 years (2 cases) and 31-40 years (2cases). The youngest patient was 21 years old and the oldest 60 years. Four lesions were found in right breast and 3 were in left breast. Grossly, the tumor size ranged from 5-15 cm in diameter. Cut section revealed grey white surface with nodular leaf-like areas and slit-like spaces. In large tumors foci of haemorrhage, necrosis and degeneration were seen. Microscopically, these tumors showed characteristic stromal hyperplasia and elongated epithelium lined clefts. The hypercellular stroma showed spindle cells without pleomorphism, with no or less than 2-3 mitoses per 10 high power fields. These spindle shaped cells were arranged perpendicular to the lining epithelium in subepithelial regions of leaf-like structures.

Out of 210 benign breast lesions, 9 (4.3%) cases were of fibrocystic disease. Most of the cases (6) were seen in 4th

decade followed by 3rd decade (2). Right breast were involved in 5 patients and left breast were involved in 4 patients. Most of these lesions microscopically showed cyst formation, fibrosis, epithelial hyperplasia with chronic inflammation. Two cases of sclerosing adenosis were encountered in the present study which constituted 1% of all benign lesions. Both lesions were found in 50-60 years of age group. Both patients presented with small irregular lump in left breast. Microscopically showed densely fibrotic connective tissue along with disorganized ductules. Two cases of benign spindle cell tumor of breast stroma were noted in 17 and 25 year old female. One case of tubular adenoma was noted in a 15 year old female. Grossly, the tumor measured 3 cm and on cut section showed grey white areas. Microscopically, the lesion showed numerous closely packed uniform small tubules, lined by benign epithelial and attenuated myoepithelial cells with very scant stroma.

Five lesions (2.4%) of granulomatous mastitis were found which microscopically showed non ceseating granuloma and were AFB stain negative. All lesions of granulomatous mastitis were noted in 3rd decade. Three lesions were of tuberculous mastitis; microscopically showed caseous necrosis, granulomas comprising of epithelioid cells, lymphocytes and multi-nucleated giant cells. Two cases of breast abscess, one case each of periductal mastitis, lobular mastitis and two cases of chronic inflammation were noted in 3rd decade of life. Single case of lymphocytic mastitis was found in a 15 year old female with no history of diabetes mellitus, which microscopically showed dense intralobular, perilobular, and perivascular lymphocytic infiltrates associated with lobular atrophy and sclerosis. Single lesion of fat necrosis was found in patient of 88 years of age with history of trauma. Microscopically showed foamy macrophages infiltrating partially necrotic adipose tissue.

DISCUSSION

Women presenting with breast complaints, especially lumps is a common finding and a cause of significant anxiety in view of extensive public awareness. It therefore becomes imperative for a surgeon to distinguish benign from malignant conditions and its prevalence. A 200,000 breast disorders are identified annually and it is noted that most of the palpable lesions are benign.[3]

In the present study, out of 260 breast specimens received in histopathology department, 210 cases (80%) were benign breast lesions. Bagale et al a study of north Maharashtra noted 78.52% cases of benign breast lesions while 71.15% was noted by Pudale et al.[4,5] A study of south Maharashtra and 70% benign breast lesions were noted by Kumar et al a study of east Maharashtra.[6] Rasheed et al noted 77.7% of benign breast lesions in north India, and 70% in east India by Sarma et al.[7,8]

Table: 3. Distribution pattern of benign breast disease with comparison with other studies.

Benign breast disease (percentage)	Bagale et al[4]	Mallikarjuna et al[11]	Prajapati et al	Pudale et al	Present study
Benign tumors					
Fibroadenoma	30.8	72	38.7	40	77.62
Gynaecomastia	2.25	-	-	2.23	4.3
Benign phyllodes	1.43	12	-	0.55	3.4
Tubular adenoma		4	7.5	0.55	0.4
Benign proliferative lesions					
Fibrocystic disease	11.24	-	27.5	32	4.3
Sclerosing adenosis	5.93	-	-	-	1
Inflammatory lesions					
Abscess	5.11	-	-	3.88	1
Granulomatous mastitis	4.9	-	-	2.23	2.4
Fat necrosis	2.24	-	-	-	0.4
Tuberculous mastitis	0.4	-	-	1.67	1.43

Incidence of benign breast disease begins to rise in the 2nd decade and it peaks in the 4th or 5th decades as compared to the malignant lesions.[1] Kumar et al reported most of the cases in 11-30years of age group while Bagale et al noted majority of cases in 21-40years age group.[4,6] We also noted most of the patients in 11-30years of age group. Choudhary et al in benign breast disease noted lump in 39% cases, pain in 27.39% cases and nipple discharge in 2.49% cases with predominant involvement of left breast.[9] Karki et al noted mastalgia as a signficant problem accounting for 41% cases.[10] Mallikarjuna et al reported most prominent symptoms was the presence of painless lump in 40 cases (80%) and 10 cases presented with painful lump (20%).[11] Sagar et al reported, 78.13%

cases with a painless lump while rest were painful.[12] Distribution pattern of benign breast disease with comparison with other studies is shown in Table 3.

Fibroadenoma (77.62%) was the most common lesion among benign breast lesions; similar finding was noted by Bagale et al, Mallikarjuna et al, Prajapati et al and Pudale et al.[2,4,11] Majority of fibroadenoma patients belonged to 21-30 years (43.5%), followed by 11-20 years (37.4%) of age group in present study. Prajapati et al noted 80.64% of cases in 21-30 years, Sagar et al noted 46.87% in 15-20years age group, Kumar et al noted 74.03% cases in 11-30 years while Mallikarjuna et al noted highest incidence in 11-20 years (47.22%) with youngest patient of 16 years old and the oldest patient was 45 years old.[2,6,11,12]

In the present study, 78 patients of fibroadenoma presented with lump in the left breast (48%) followed by right breast 73 (45%) and bilateral fibroadenoma of breasts was seen in 12 cases (7%). Sangma et al1 noted 48% lesions in right breast and 40% in left breast, while Bagale et al noted 95% cases in left breast and rest were detected in both breasts.[4] Mudholkar et al noted, the upper outer quadrant was most commonly involved (48%) with average size of fibroadenoma of 3.7cm.[13] We also noted the upper outer quadrant as the commonest site with average size of 4 cm.

The fibrocystic changes were the next common condition in our study and all of the patients (4.3%) belonged to 20-40years of age group, with right breast involvement in 55.55% cases and left breast in 44.44%. Kumar et al stated that fibrocystic disease is commonly seen in 21-30 years of age group.[6] Pudale et al noted upper outer quadrant as the most frequently involved site.[5] Prajapati et al, Bagale et al, and Shashikala et al noted most of the cases in 4th decade while Sangma et al noted most of cases in 3rd and 4th decades.[1,4,14] Microscopically in fibrocystic disease, Prajapati et al noted cystic change, apocrine metaplasia, fibrosis, calcification, chronic inflammation and epithelial hyperplasia.[2] Bagale et al noted fibrocystic changes ranging from focus of abscess, areas of sclerosing adenosis to florid proliferative lesions.[4] Gynaecomastia constitutes 4.3% of all benign neoplasms in present study, while Bagale et al reported 2.25% incidence of gynaecomastia with left breast involvement in 54.55% cases, right breast in 18% cases and bilateral involvement in 27.27% cases.[4] Karki et al noted 4% cases of gynecomastia.[10]

Benign phyllodes tumor (3.4%) is the next common type among benign breast lesions. Majority of patients were between 50-60 years (42.85%) followed by 21-30 years (28.5%) and 31-40 years (28.5%). Higher incidences were noted in urban areas while lower in rural areas. Mudholkar et al, and Mallikarjuna et al noted maximum number of cases in 4th decade while Pudale et al noted most of the cases in 5th decade.[5,11,13] Right breast involvement was seen in 57.14% cases while rest in lest breast in present study. Shashikala et al noted most of the cases in right breast while Sagar et al noted 60% in left breast and 40% in right breast.[12,14]

Bagale et al reported breast abscess as fourth major category constituting 6.51% of all benign lesions with most of the cases (4.1%) in 3rd decade of life.[4] In present study, Breast abscess were found in patient of age between 21-30 years and all lesions were found in left breast with areola as the site of involvement. Shashikala et al found maximum age incidence in the age group ranged from 31-40 years and majority of them were lactating mothers.[14] Kumar et al noted most of the cases in 3rd decade with predominant left breast involvement in 54.2% cases.[6]

Bagale et al and Shashikala et al noted most of the cases of granulomatous mastits were in between 31-40 years of age and granulomas were confined to the lobule.[4,14] We also noted similar findings in granulomatous mastitis. Shashikala et al noted 2% cases of tuberculous mastitis and most of the cases were in 4th decade of life.[14] We noted three (1.43%) case of tuberculous mastits, which showed caseating granulomas and multinucleated giant cells. Pudale et al noted 1.67% cases and Bagale et al noted 0.4% of tuberculous mastitis and stated that Indian studies have reported the incidence of Tuberculous mastitis to vary between 0.04% to 3%.[4,5] Although over one billion people suffer from TB worldwide, mammary TB is a relatively rare condition.[4]

Sagar et al and Mallikarjuna et al noted 4% cases of tubular adenoma, and all cases presenting within 15-25years of age group and shows upper outer quadrant involvement of breast.[11,12] Pudale et al noted 0.55% cases tubular adenoma were commonly seen in 11 to 30 years of age.[5] We also noted similar findings in tubular adenoma (0.4%). We noted 1% cases of sclerosing adenosis in 6th decade while Bagale et al noted that sclerosing adenosis was the third most common lesion in frequency comprising 7.55% of all benign breast disease particulary noted in the age group of 21-30years.[4] Sclerosing adenosis is difficult to define, its incidence in different studies may differ according to the criteria adopted.[4] Visscher et al stated, Sclerosing adenosis is a common proliferative lesion of the breast which, as a single feature, conveys an approximate doubling of breast cancer risk.[15]

We noted intraductal papilloma in 0.4% cases while Bagale et al noted 2.24% cases of Intraductal papilloma and most of the cases were in the age group of 31-40years.[4] DCIS associated with multiple papilloma is typically low grade and arose from areas adjacent to preexisting benign lesion.[4] One interesting case of lymphocytic mastitis was found in 15 year old female with no history of diabetes mellitus, which was labelled as breast abscess on ultrasound; microscopically found dense intralobular, perilobular, and perivascular lymphocytic infiltrates associated with lobular atrophy

and sclerosis. Valdez et al stated, Lymphocytic mastitis and the closely related entity of diabetic mastopathy are uncommon benign breast diseases that are believed to be induced by autoimmune phenomena.[16] A very rare case of fat necrosis was found in patient of 88 years of age with history of trauma, in our study. It is important to diagnose fat necrosis because it can often mimic carcinoma of the breast.[17] Karki et al noted 1% cases of fat necrosis.[10] Fat necrosis is found to be 0.8% of breast tumors. The average age of patients is 50 years. Kerridge et al reported, in fat necrosis microscopically, early lesions show hemorrhage, anucleated adipocytes, foamy (lipid-laden) histiocytes, and multinucleated giant cells. We also noted similar findings in fat necrosis.[17]

We advised follow up every 3 months for both the low and high risk categories, since some studies have the progression of the low risk category to carcinoma1. Hartmann et al stated, histologic features, the age at biopsy, and the degree of family history are the major determinants of the risk of breast cancer after the diagnosis of benign breast disease.[18]

CONCLUSION

Breast self-examination and health education to females is very important in cases of benign breast disease. It is most commonly seen in 11-30years of age group. Fibroadenoma is the most common benign breast disease. Most of the patients presented with painless lump in the breast in upper outer quadrant of breast. Histopathology plays an important role in the diagnosis of benign breast diseases. When correlated with clinical data, mammographic and ultrasonographic findings, the histopathological examination led to early diagnosis of a benign breast disease.

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