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Clinical presentation and pathological correlation of benign breast diseases in females - A cross sectional study.

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Abstract

Background: Benign breast disease is a neglected entity despite the fact that it constitutes the majority of breast complaints profiled the clinic-pathological spectrum of Benign breast diseases (BBDs). BBDs is not life threatening although clinicians require an in-depth understanding of its significance so that clear explanations can be given to affected patients, appropriate treatment can be instituted, and unnecessary long-term follow-up can be avoided.

Methods: All female patients aged 15 years and above with benign breast diseases attending OPD and admitted for treatment in the Department of Surgery, Regional Institute of Medical Sciences, Imphal, Manipur. The Cross-sectional study was conducted during a period of 2 calendar years from August 2017 to July 2019. Clinical diagnosis was made based on detailed history and thorough physical examination including local examination of the affected breast, contralateral breast, the axillae. Investigations like ultrasonography, mammo

graphy of the breast, FNAC/ Histo pathological Examination, cytological examination of nipple discharge were done wherever applicable.

Results: A total of 156 female patients were included in the study. Maximum number of patients was in the age group 15-25 years, accounting for 83 cases (53%). The most common presenting complaint noted was lump in the breast, in 147 patients of which 87 patients (55.76%) presented with only lump, 53 (33.97%) presented with lump associated with pain, 5 (3.2%) with lump, pain and discharge. Fibroadenoma was the most common benign breast disease seen in 70 (44.9%) patients, other common diagnoses were proliferative breast disease without atypia seen in 27 (17.3%) patients, fibrocystic disease seen in 17(10.9%) patients, galactocele (7.1%) and mastalgia (4.5%).

Conclusion: Awareness on BBDs with focus on the importance of self-breast examination should be created at the community level. Proper counselling can go a long way in alleviating the anxiety and stress and avoiding unnecessary surgical intervention.

Keywords: Benign breast disease, mammography, triple assessment, fibroadenoma.

Introduction

Mammary glands are modified sweat glands of ectodermal origin that produce milk.[1,2] In the female, the breasts undergo extensive postnatal development with age and are regulated by hormones that influence reproductive function.

The lobule is the basic structural unit of the mammary gland.10-100 lobules aggregate to form lobes of the gland, which converge on the nipple, where each lobe is drained by a duct. As the collecting ducts proceed from the nipple, they branch and end in terminal ductal lobular unit (TDLU). The mature breast is composed of three principal tissue types namely glandular epithelium, fibrous stroma and supporting structures and adipose tissue. The breast remains undeveloped in the female until puberty, when it enlarges in response to ovarian oestrogen and progesterone and initiate proliferation of the epithelial and connective tissue elements. Complete development occurs with pregnancy. There is tremendous variation in the size of the breast. A typical nonlactating breast weighs between 150 and 225 g, whereas the lactating breast may exceed 500g.[3,4]

Hormones and growth factors acting on the epithelial and stromal elements right from the onset of puberty till menopause cause significant morphological changes leading to Aberration in Normal Development and Involution (ANDI) causing majority of Benign Breast Diseases.[5] The term Benign Breast Diseases (BBDs) includes a heterogeneous group of lesions and may present with wide range of symptoms.[6] They are the most common cause of breast problems in females and they are more frequent than the malignant ones.[7-12]

In fact, it is at least 10 times more common than breast cancer in the West.[13] They generally present with one or more of these complaints – breast lump, breast pain and nipple discharge. Approach to a patient with breast lump with or without breast pain and nipple discharge includes performing ‘Triple Assessment’ which includes clinical breast examination, imaging of bilateral breast (USG or Mammography) and a tru-cut biopsy/FNAC (Fine Needle Aspiration Cytology).

This more rapid diagnostic approach helps to allay the anxiety caused by delays in scheduling, performing, and interpreting an open biopsy.

Up to 30% of the women who suffer from BBDs will require treatment at some time in their lives.[14] The incidence of benign breast lesions begins to rise during the 2nd decade of life and peaks in the 4th and 5th decades, as opposed to malignant diseases, for which the incidence

continues to increase after menopause, although at a less rapid pace.[15-22] One in four women is referred to a breast clinic at some time in her life for breast related problem.[23] 200,000 breast disorders are identified annually[24] and it is noted that most of the palpable lesions are benign.[25]

ANDI classification of benign breast disorder provides an overall framework for benign conditions of the breast that encompasses both pathogenesis and the degree of abnormality.[26] It is a bidirectional framework based on the fact that most BBDs arise from normal physiologic processes.

The vertical component defines the pathogenesis of the condition. The horizontal component defines BBD along a spectrum from normal to mild abnormality to severe abnormality.

Together, these two components provide a comprehensive framework into which most BBDs can be fitted. But the popular classification of BBDs according to the ANDI causes confusion due to a lack of clarity in distinguishing between the normal physiological changes and the pathologic ones.

One of the more satisfying classifications was the one which was devised by Love Set al[27] the so-called Nashville classification. According to this, BBDs are classified by 2 systems.

Pathologically, BBDs are divided into (a) non-proliferative lesions, (b) proliferative lesions without atypia and (c) atypical proliferative lesions. Clinically, BBDs are classified as (a) physiologic lump and tenderness, (b) nodularity, (c) breast pain, (d) palpable lumps, (e) nipple discharge and (f) infections or inflammation.

A cyclical pattern of diffuse lumpiness or nodularity is common and represents the responsiveness of breast parenchyma and stroma to circulating estrogenic and progestational hormones.[26,28,29] A dominant mass in the breast must be investigated to rule out cancer. Dominant masses that are benign include macroscopic cysts, galactoceles, and fibroadenomas.[12]

Cyclic breast pain usually occurs during the late luteal phase of the menstrual cycle, in association with the premenstrual syndrome or independently,[30-35] and resolves at the onset of menses.[30,31] Noncyclic breast pain is unrelated to the menstrual cycle. Whether caffeine, iodine deficiency, alterations in levels of fatty acid in the breast, fat intake in the diet, or psychological factors have a causative role in cyclic breast pain has not been established.[36]

Nipple discharge can be classified as galactorrhea or abnormal nipple discharge.[37] Although this symptom is particularly distressing to the patient, only 5 % of these patients are found to have serious underlying disease.[38] Age is an important factor with respect to the risk of malignant disease.

About 50% of women in their reproductive years have physiologic nipple discharge that is characterized by bilateral, milky, green or yellow fluid expressed from multiple nipple duct openings and often associated with nipple stimulation. Pathologic nipple discharge is spontaneous and often unilateral.

It can be bloody, serous, green or black.[39] Benign intraductal papilloma (48%), ductal ectasia (15%–20%) and carcinoma (10%–15%) are the most common causes.[40]

Although BBD is not life threatening, clinicians require an in-depth understanding of its significance so that clear explanations can be given to affected patients, appropriate treatment can be instituted, and unnecessary long-term follow-up can be avoided.[41] Hence in this study, we have profiled the clinic-pathological spectrum

of BBDs and it is hoped that this would help in working out the most suitable management for the patients.

Materials and methods

The cross-sectional study was carried out in the Department of Surgery, Regional Institute of Medical Sciences, Imphal, Manipur during a period of 2 years from August 2017 to July 2019 on female patients aged ≥ 15 years with benign breast diseases.

Sample size is calculated using the formula

$N=4P(100-P)/L^2$

Where P= Prevalence of fibroadenoma taken as 48% from a previous study

L=allowable error taken as 8%

We have N=4x48(100-48)/8x8

=9984/64

=156

A pre-designed proforma was used to gather information of the subject of study. Clinical diagnosis was made based on detailed history and thorough physical examination including local examination of the affected breast, contralateral breast, the axillae. Investigations like ultrasonography, mammography of the breast, Fine needle aspiration cytology (FNAC), Histopathological Examination (HPE), cytological examination of nipple discharge were done wherever applicable. Thereafter a final diagnosis was arrived at after imaging and/or pathological findings. Management was either conservative or surgical.

In addition to assurance, conservative management in the form of reassurance, breast support, dietary changes, analgesics, evening primrose oil and Vitamin E were given based on patient's condition and findings. Surgical intervention in the form of simple excision, wide local excision, mastectomy was done according to the diagnosis and size of breast lump.

Data was checked for completeness and consistency and analysed statistically using SPSS Version 21 (IBM). Descriptive data was presented using proportion for sex, diagnosis, FNAC/HPE etc. and mean and standard deviation for continuous data like age. The study was carried out after obtaining approval from the Research Ethics Board, Regional Institute of Medical Sciences, Imphal. Confidentiality and privacy were maintained.

Results

A total of 156 female patients were included in the study. Maximum number of patients were in the age group 15-25 years, accounting for 83 cases (53%). It was followed by 26-40 years of age group, accounting for 46 cases (29.5%).

The youngest patient was 15 years of age and the oldest was of 68 years; the mean age was 28.55±10.85 years.

Table 1: Table showing presenting symptoms.

Sn.	Presentation	No. of patients	Percentage (%)
1	Breast lump only	87	55.76
2	Breast lump + pain	53	33.97
3	Breast lump + nipple discharge	2	1.28
4	Breast lump + pain + nipple discharge	5	3.2
	Breast pain only	8	5.1
	Nipple discharge only	1	0.64
	Total	156	100%

Table 2: Distribution of patients by diagnosis (N=156).

Sn.	Diagnosis	No. of cases	(%)
1.	Fibroadenoma	70	44.9
2.	Fibrocystic disease	17	10.9
3.	Galactocele	11	7.1
4.	Proliferative breast disease without atypia	27	17.3
5.	Mastalgia	7	4.5
6.	Atypical ductal hyperplasia	4	2.6
7.	Breast cyst	3	1.9
8.	Duct ectasia	1	0.6
9.	Epidermal inclusion cyst	3	1.9
10.	Epithelial hyperplasia	2	1.3
11.	Intraductal papilloma	3	1.9
12.	Lactating adenoma	3	1.9
13.	Parasitic cyst	1	0.6
14.	Phyllodes Tumour	2	1.3
15.	Proliferative disease with atypia	2	1.3
	Total number of cases	156	100

Fibroadenoma was the most common benign breast disease seen in 70 (44.9%) patients, 5 of which were giant fibroadenoma where fibroadenoma size was >5cm. Other common diagnoses were proliferative breast disease without atypia seen in 27 (17.3%) patients, fibrocystic disease seen in 17(10.9%) patients, galactocele (7.1%) and mastalgia (4.5%).

Discussion

In this prospective observational study, all patients who presented with breast lump were evaluated by Triple Assessment (clinical examination + USG/ Mammography + FNAC / HPE). The mean age of presentation of BBDs was found to be 28.5 years. This finding is similar with those of Sangma et al[42] and Navneet et al[43] where the mean ages of presentation of BBDs were 28.4 years and 29.3 years respectively. The prevalence of BBDs in the study was seen more commonly in the younger age group as compared to older age groups; more than half of the cases were seen in the age group of 15-25 years. This finding is comparable with Chalya et al[44], Mallikarna et al[45], Naik et al[46] where majority of the BBDs also occur in the younger age group. The 15-25 years age group represents the early reproductive age group where cyclical changes of hormonal factors seem to play a role in the development of BBDs. This might explain why BBDs occurred more commonly among the younger age group. Another reason could be that younger age groups are more likely to be educated and more aware which could make them seek medical advice earlier.

Majority of the females were Hindu (85.3%). Majority of the women in the study were married. Shankar MR et al[47] observed that majority of the females in his study were Hindu (94%). This could be due to the fact that majority of the people in the area were Hindus. Majority of the females were not nulliparous (58%) which was also a similar finding with Jaiswal et al[48] where majority of the females were not nulliparous.

Most common complaint at the time of presentation was breast lump which was seen in 55.76% of cases. This finding is in line with findings of Vimal et al[49] where breast lump or lump was also the most common mode of presentation seen in 54% followed by lump with pain which accounted for 33.7%. In a study by Navin Kumar et al[50], lump was also the most common presentation (60%) followed by lump with pain (33.3%). In studies by Jaiswal et al[48], Gupta et al[51], the most common presentation was a breast lump accounting for 67.79%, 66.25% respectively, followed by painful lump accounting for 58.97%, 22.5% respectively.

In the study by Sharma et al[52], right side of the breast was involved in 51% of the cases, left side of the breast in 46% of the cases and both breasts were involved in 2.6% of the cases. Upper outer quadrant, lower outer quadrant and upper inner quadrant were the most commonly involved quadrants seen in 36.7%, 20.4%, 17% of the cases respectively in the study. In the study by Sukanya M et al[53], upper outer quadrant was the most commonly involved quadrant (31.67%), followed by lower outer quadrant (21.67%) and upper inner (16.67%). Similarly in a study by Ram NSS et al[54], upper outer quadrant, lower outer quadrant, upper inner accounted for 50%, 26%, 10% respectively.

In the study, size of the lump was ≤ 2cm in majority of the cases (68%) which is comparable to the findings of Dixon et al[55] where majority of the size of lumps was ≤ 2cm (63%). Krishnaswamy et al[56] and Chaudhry et al[57] also observed that majority of the patients in their studies had lump of size <2 cm. Whereas in other studies by Ram NSS et al[54], majority of the females had lump of size 2-5cm accounting for 54%, followed by lump of size upto 2 cm accounting for 24%. In another study by Ranga swamy and Rubby[58], majority of the lumps were in the range of 3-5 cm accounting for 53.75%. Gupta et al[51] also observed in his study that majority of the size of lump was 2-5 cm accounting for 76.09%. The difference in the presentation of the size of lump could be due to increased awareness among the female patients about the presentation of breast cancer as a lump which could explain the early notice of lump among females in the study.

In the present study, a total of 156 cases were examined clinically and pathologically. In present study, fibroadenoma formed 44.9 % of all benign breast diseases and most patients presented between 15-25 years (71.4%) of age group followed by 26-40 years (22.9%) of age group. The result is consistent with Bagale[59] study which reported fibroadenoma as the most common lesion (44.5%).

Fibroadenoma was most prevalent in the age group of 15-25 (65.71%) years in a study by Navin Kumar et al.[50] In a study by Bagale et al[59], 71% of the fibroadenoma occurs in the age group of 10-30 years. Rangaswamy et al[58] observed that majority of the fibroadenoma was in the age group 16-30 years (62.5%) followed by age group 31-45 years (22.5%).

In the study, fibroadenoma was more commonly involved in right breast (53%) than left which was a similar finding with study by Ajitha et al.[60] Upper outer quadrant was the main location of fibroadenoma (37.1%), followed by lower outer (25.7%). This finding is similar with study by Ajitha et al[60] who also observed that majority of the fibroadenoma was found to be in upper outer quadrant (43.8%).

Conclusion

Benign Breast Diseases are more common in the younger age groups. Fibroadenoma comprises nearly half of the cases of BBDs. Out of every 10 cases 9 presented with breast lump, majority being painless and others with variable pain and nipple discharge. Upper outer quadrant is the most commonly involved, followed by lower outer quadrant. Sensitivity of clinical diagnosis of fibroadenoma is high but specificity is low. Since breast lump is a common feature of breast diseases, self-examination of breast might prove to be a useful method for early diagnosis of breast diseases. Thus, awareness on breast diseases with focus on the importance of self-breast examination should be created at the community level. Proper counselling can go a long way in alleviating the anxiety and stress and avoiding unnecessary surgical intervention. Other forms of study design like case

control, cohort can be adopted to find out the causal factors of BBDs.

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