Original Research Article

A clinicopathological study to determine age specific prevalence rate of benign breast lumps

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ABSTRACT

Background: The pathogenesis involves disturbance in the breast physiology extending from an extreme normality to well defined disease processes. The clinician must provide a degree of diagnostic accuracy while at same time ensuring that an excessive biopsy rate is prevented. The aim of this study was to evaluate the benign breast lumps in different age groups and to determine the prevalence of benign breast lumps among the breast symptomatic.

Methods: This clinico-pathological cross sectional study was conducted with a sample size of 100. The study was conducted during the period from July 2018 to June 2019 which included all patients presenting with benign breast lump during the study period.

Results: Out of 100 studied cases of benign breast diseases, the most common benign breast tumor found as fibro adenoma and majority of the fibro adenoma found in the 2nd and 3rd decade of life. Right breast and upper outer quadrant were most commonly affected. Majority of benign breast lesions presented with painless lump in the breast and most of them were from rural background. Majority of benign Breast lumps (45%) cases were found in the age group of 21-30 years. Majority of the patients (60%) attain menarche between ages 13-15 years. Majority of cases (55%) were belonged to lower socio economic status.

Conclusions: Our study indicates that FNAC is diagnostically more accurate, safe, cost effective and OPD procedure, however when FNAC was inconclusive, biopsy is the best choice for breast tumors.

Keywords: Breast disease, Breast lump, Fibroadenoma, Benign breast lesion

INTRODUCTION

Breast is a dynamic structure that undergoes changes throughout women's reproductive life, and superimposed on this, cyclical changes throughout the menstrual cycle. The pathogenesis involves disturbance in the breast physiology extending from an extreme normality to well defined disease processes.[1] Approximately 40% of all patients attending a breast clinic have a benign breast lump. In the past there was a tendency to excise all lumps and an excessive amount of unnecessary surgery was performed for benign disease. The main problem from the women's point of view is fear that such a lump may be a cancer. The clinician must therefore provide a degree of diagnostic accuracy while at same time ensuring that an excessive biopsy rate is prevented. It is now easier to exclude cancer with the development of diagnostic aids such as mammography, ultrasonography and aspiration cytology.[2]

The surgeon in the breast clinic has two important tasks when confronted with a patient with a breast lump. Firstly, he has to decide whether the lump is truly an abnormality or whether it can be regarded as being within

the spectrum of normality. Secondly, if the lump is a truly abnormal, he has to determinate whether it is malignant. In previous studies, statistical comparison between clinical diagnosis, mammography, needle biopsy and aspiration cytology tests revealed that aspiration cytology was significantly more accurate than physical examination for all lesions (p=0.07), but significantly more accurate for benign lesions (p=0.005). Overall, aspiration cytology was significantly more accurate than mammography (p=0.000001) and needle biopsy (p=0.008).[3]

The major advantage of FNAC with immediate reporting is that this technique allows early reassurance and the avoidance of unnecessary surgery in this patients with benign breast diseases while at the same time detecting all the patients with breast carcinoma.[4] The reports on the benign and completely curable lesions of the breast are scarce, because there have been overshadowed by the magnitude of the problems of cancer of the breast. Some of these pose diagnostic problems due to their clinical resemblance with carcinoma of the breast. Beside this, the spectrum of benign breast lesion shows considerable variations from one geographical region to another. The infective lesions are seldom seen in the west but in one of the Indian report, the infective disease was responsible for more than 13% of the benign breast disease.[5] Benign breast diseases are one of the commonly encountered cases in our surgical OPD, as these cases are referred from the peripheral hospital also. Studying the cases of benign breast diseases is important because the main problem from the women point of view is fear that such a lump may be cancer. Moreover, many are frequently difficult to differentiate from breast cancer clinically and some breast lumps are incorrectly diagnosed and inappropriately treated.

On this background, a clinico-pathological study of benign breast diseases has been selected.

Objectives

The aim of this study is to evaluate the benign breast lumps in different age groups and to determine the prevalence of benign breast lumps among the breast symptomatic attending surgery OPD of teaching hospital by clinical examination. Also the study intends to find out the clinical and pathological diagnosis of benign Breast lump by clinical examination and FNAC; to determine the prevalence of benign breast lumps according to age groups; to find out the distribution of benign breast lumps according to related variables and to compare the preoperative cytological reports with postoperative histopathology reports.

METHODS

This clinico-pathological cross sectional study was conducted by Department of General Surgery at College of Medicine and JNM Hospital, Nadia. The study was conducted during the period from July 2018 to June 2019 which included all patients presenting with benign breast lump in Surgery OPD during the study period. It is a descriptive, observational epidemiology study with a sample size of 100 derived as under,

$$n=\frac{1.96 \times 1.96\,PQ}{L^2}$$

where P= proportion, L= allowable error, Q=100-P,

Taking prevalence of fibro adenosis of 23% (Shashikala, Rani, Victor et al titled clinicopathological study of benign breast disease), the sample size will be 75 inclusive of 10% non-response rate.

Sampling (recruitment of participants) was by including every alternate patient diagnosed clinically as benign breast lump till final sample size will be reached.

Data analysis and statistics

The data collected was entered in MS Excel 2016. The data was analyzed by IBM SPSS version 22.0 (licensed). Proportions were calculated.

Ethical issue

This study started after the clearance from ethical committee of College of Medicine and JNM Hospital. All the operative procedures followed were standard procedures. Written informed consent was taken from the participants or guardians before enrolment.

The subjects attending the surgery OPD of the concerned hospital with the features of symptomatic breast will be subjected to detailed history and clinical examination for clinical diagnosis of benign breast disease. The subjects will be subjected to FNAC besides routine investigations. The subjects who requires surgery and in whom surgery is contemplated will undergo excisional biopsy and histopathological examination of the excised lump.

Patients with carcinoma breast, non-cooperative patients and mentally challenged respondents were excluded from the study.

RESULTS

In the one year period, 100 cases of benign breast lumps were studied in COM and JNM hospital, Kalyani. The total number of breast tumors encountered in Com and HMN hospital, Kalyani during the period of the present study in given the following table.

Distribution of benign breast disease according to age group

93% of all cases of benign disorder fall in the age group

of 11-40 years, of these 77% are represented by early and mid-reproductive age group. Majority of them 45% belong to the age group 21-30 years with average age being 25.6 years. The mean age of highest incidence of fibro adenoma is 24.2 years, majority (84%) are within the age group of 11-30 years. In this study youngest patient of fibro adenoma is 11 year old, eldest being of 48 years. Only seven cases were noted between the age group of 40-65 years, of which two were fibro adenoma, four being fibrocystic disease and one was fat necrosis. 83% the cases of fibrocystic disease fall within 31-50 years age group. 80% of the cases of antibioma fall within 21-30 years age group. About 60% of the cases of fat necrosis fall within 31- 40 years age group. The youngest patient of fibrocystic disease was 27 years old and treated conservatively while the eldest being 50 years old. There were seven cases of phylloides tumours, youngest being 22 years and eldest was 37 years. Among 100 cases studied, two fibro adenoma cases were treated with excision and HPE showed fibro adenoma on right breast and fibro cystic disease on left breast in one case and for other patient, HPE showed fibro adenoma on right breast and phylloides tumour on left breast.

Table 1: Distribution of benign breast disease according to age group in years (n=100).

Diagnosis (lesions)	11-20	21-30	31-40	41-50	>50	Total
Fibro adenoma	24	30	8	2	0	64
Fibrocystic disease	0	2	6	4	0	12
Phylloides tumours	0	5	2	0	0	7
Antibioma	1	4	0	0	0	5
Fat necrosis	0	1	3	0	1	5
Lipoma	3	0	1	0	0	4
Galactocele	0	3	0	0	0	3
Total	28	45	20	6	1	100

Distribution of benign breast disease according to place of residence (n=100)

Majority (70%) of patients lived in rural area. Rest 30% were from urban area.

Distribution of benign breast disease according to social economic status (n=100)

Majority (95%) belonged to middle (40%) and lower (55) class. Rest 5% belonged to upper class.

Table 2: Distribution of benign breast disease according to presenting symptoms (n=100).

Symptoms	No. of patients	%
Lump	100	100
Mastalgia	30	30
Discharge	0	0
Nodularity	12	12

Distribution of benign breast disease according to presenting symptoms

Mastalgia (30%) was the most common symptom in breast lump patients.

Distribution of benign breast disease according to nature of lesions

In the present study, fibro adenoma predominated with 64 cases (64%). Next common being tumour found was fibrocystic disease i.e., 12 cases (12%). Phylloides tumour was in 7 cases (7%). Antibioma was present in 5 cases (5%). Fat necrosis was 5 cases (5%). Lipoma was present in four cases (4%) and galactocele was seen in 3 cases (3%) found.

Table 3: Distribution of benign breast disease according to nature of lesions (n=100).

Nature of lesion	No. of cases	%
Fibro adenoma	64	64
Fibrocystic disease	12	12
Psyllids tumour	7	7
Antibioma	5	5
Fat Necrosis	5	5
Lipoma	4	4
Galactocele	3	3

Distribution of benign breast disease according to duration

28 cases (28%) had symptoms for 3-8 months. 27 cases (27%) had symptoms for 9-15 months. 23 cases (23%) had symptoms for <2 months. 18 cases (18%) had symptoms for 16-25 months. 4 cases (4%) had symptoms for >25 months. In fibro adenoma patients, 10 cases had duration between <2 months, 16 cases between 3-8, 20 cases between 9-15 months, 14 cases between 16-28 months and 4 cases had duration of more than 25 months. All five cases of antibioma had symptoms less than 2 months. Four (4) cases of Fat necrosis had symptoms between <2 months and one cases between 3-8 months. All cases of galactocele had symptoms between 3-8 months.

Distribution of benign breast disease according to menopausal status (n=100)

94% of patients were premenopausal and 6% were postmenopausal.

Distribution of benign breast disease according to age at menarche (n=100)

Most (60%) of the patients attained menarche between 13-15 years of age followed by patients 38% of whom attained menarche between 9-12 years of age and rest 2% attained menarche after 15 years of age.

Table 4: Distribution of benign breast disease according to duration (n=100).

Diagnosis	<2 months	3-8 months	9-15 months	16-25 months	>25 months
Fibro adenoma	10	16	20	14	4
Fibrocystic disease	4	4	2	2	0
Psyllids tumour	0	2	3	2	0
Antibioma	5	0	0	0	0
Fat necrosis	4	1	0	0	0
Lipoma	0	2	2	0	0
Galactocele	0	3	0	0	0
Total	23	28	27	18	4

Marital status

Among 100 female patient 39 were married and 61 were unmarried. 20 patients used oral contraceptives. Most of married females' breast fed their babies. Out of 100 cases, 3 patients had undergone operation for fibro adenoma previously. H/o of trauma was present in patient with fat necrosis.

Table 5: Distribution of benign breast disease according to mean age (n=100).

Lesion	Mean age in years
Fibro adenoma	24.2
Fibrocystic disease	37.1
Phylloids	28.14
Antibioma	22.6
Fat necrosis	37.6
Lipoma	23.25
Galactocele	25.33

Distribution of benign breast disease according to mean age

Maximum mean age was found in fibrocystic disease and fat necrosis followed by phylloides tumour. Minimum mean age was found in antibioma.

Distribution of benign breast disease according to position (n=100)

In this study, five patients had bilateral lesion, out of which 4 being fibro adenoma and 1 lipoma. Out of seven phylloides tumour, 6 were found in right breast, 1 in left side. Eight fibrocystic diseases were seen in right side and four were in left side.

Distribution of benign breast disease according to quadrant in right (n=60) and left (n=40) breasts

In right breast there was preponderance for UOQ (38.4%), followed by LOQ (18.4%), LIQ (15.3%), UIQ (13.8%). It was seen that, 6.1% of the lumps had >1 quadrant presentation. 50% of lump in left breast are in UOQ. Both LIQ and UIQ had equal distribution (10%).

Distribution of benign breast disease according to size of lump

Majority (53%) of lumps was of the size 2-5 cm, 32% were 6-10 cm. One case of fibro adenoma is >10 cm and two cases of phylloides tumor is >10 cm.

Table 6: Distribution of benign breast disease according to size of lump (n=100).

Diagnosis	<2 cm	2-5 cm	6-10 cm	>10 cm
Fibro adenoma	10	35	18	1
Fibrocystic disease	2	6	4	0
Phylliodes tumour	0	1	4	2
Antibioma	0	4	1	0
Fat necrosis	0	2	3	0
Lipoma	0	3	1	0
Galactocele	0	2	1	0
Total	12	53	32	3

Table 7: Accuracy of FNAC against HPE.

Diagnosis	No. of cases	FNAC			
		Consistent		Non-consistent	
		No. of cases	%	No. of cases	%
Fibro adenoma	64	64	100	-	-
Fibrocystic disease	12	9	75	3	25
Phylloides tumour	7	5	71.4	2	28.6
Fat Necrosis	6	6	100	-	-
Lipoma	4	4	100	-	-

Table 8: Management of benign breast disease.

Disease	Total no. cases	Excision	Wide local excision	Mastectomy	Conservative	Aspiration
Fibro adenoma	64	64	-	-	-	-
Fibrocystic disease	12	4	-	-	8	-
Phylloides tumour	7	1	4	2	-	-
Antibioma	5	1	-	-	4	-
Fat necrosis	5	5	-	-	-	-
Lipoma	4	4	-	-	-	-
Galactocele	3	1	-	-	-	2

Distribution of benign breast disease according to laboratory parameters (n=100)

11 patients were anaemic and 5 were type 2 diabetics on oral hypoglycaemic agent.

Special imaging studies

Only six patients underwent ultrasonography. The findings were as follows as first patient showed hypoechoic solid lesion 2.2 × 2.0 cm with specks of micro calcification and loss of surrounding architecture with surrounding ductal dilatation, second patient showed fibrocystic change is seen in both breasts, more predominant in right breast upper outer quadrant. One fibro adenoma band in RT breast upper quadrant was seen. One benign enlarged lymph node seen in left axilla, third patient showed B/L fibroadenosis with left fibro adenoma, fourth patient had fibro adenoma in right breast 2.35 × 1.5 cm at 4 and 5'0 clocks, fifth patient had well defined hypoechoic lesion in left breast at 6'0 clock position likely fibro adenoma and sixth patient had fibro adenoma at left breast with B/L fibroadenosis. One patient subjected to mammography which showed large cystic lesion solid components in right breast.

Accuracy of FNAC against HPE

Among 64 of fibro adenoma all cases FNAC results were 100% accurate. Fibrocystic disease and other 9 (75%) were given as fibrocystic disease and other 3 (25%) were false negative as fibro adenoma. In fat necrosis, FNAC was 100% accurate. Among 7 cases, 5 (71.4%) cases were accusatively given as phylloides tumour and the remaining two (28%) cases were false negative as firbo adenoma. For lipoma, FNAC findings were 100% accurate.

Management of benign breast disease

Majority (88%) were treated surgical, 12% treated conservatively. For all fibro adenoma simple excision was done. Fat necrosis and lipoma was treated with excision. Four cases of fibrocystic disease were treated by excision and 8 cases were treated conservatively. Among 7 cases of phylloides tumour one was treated by excision, four cases were treated by wide local excision and two cases were treated by mastectomy. All the incisions healed by primary intention.

DISCUSSION

In the present study 100 cases of benign breast lump were studied. After detailed history, clinical examination and relevant investigation and treatment following observations were made.

Fibro adenoma accounts for 64% of the total cases studied. Malik et al reported 77%, Olowe reported 70.5%, Rosen et al 45%, and Greenberget et al 50%.[6-9] Present study incidence is consistent with Oluwel. According to all above mentioned studies fibro adenoma is the most common. Fibrocystic disease accounts for 12% in present study, similar with 13% in Malik et al and 14.2% in study by Gnanaprakashan et al.[10] Phylloides tumor incidence in present study is 7%, whereas 2.3% in Oluwole, and 0.4% in Malik et al.[11,12] Our hospital being a referral hospital may be the reason for this discrepancy. In India reports show a wide variation in the incidence of phylloides

tumor from 0.63-13.8% of the benign lesions.

Youngest patient in this series is 11 years old with fibro adenoma, eldest being 52 years old with fat necrosis. In the present study, majority of the patients are in the age group 21-30 years (45%) and the findings were similar to the study done by Hari, where peak incidence of benign breast disorders is between 21-30 years, similar to our study.[13] Fifty four (54) cases (84%) of fibro adenoma occurred between age group 11-30 years. The corresponding literature of Haagensen reported 70%.

The commonest type of presentation of benign breast disease was lump in the breast constituting 100% in present study and mastalgia 30%. According to Hagensen, lump was common type of presentation.[14] Mastalgia is one of the commonest symptoms in patients attending a breast clinic and is also the most frequent reason for breast related consultation in general practice.[15] Mastalgia accounted for 56.9% in study by Krishnaswamy.[16] 78% patients presented with lumps of less than fifteen months duration which is consistent with study Decholnoky.[17]

94% of our patients were in premenopausal period. Maximum in second and third decade seems to be influenced by most intense endocrine activity. In our study, 60% of patients attained menarche between 13-15 years. Decholnoky had average at menarche to be 13-14 years.[17] 39 out of 100 female patients (39%) were married, of whom 33 (84%) had experienced pregnancy and all of them have breast fed their babies. Decholnoky et al had 27.5% patients who experienced pregnancy and 63% were nulliparous.[17] Early marriage and multiparity seems to influence the higher incidence in our population.[10] 22 of the patients in present study used oral contraceptive pills. Vessey et al ascertained they can be protective if taken for more than 2 years.[18]

In this study, 65% of the lesions were on right side, bilateral being 5%; Oluwel et al showed 45% benign lesions in right breast, 41% in left breast and bilateral 14%.[19]

Upper outer quadrant (UOQ) was the common site of distribution of lump (42.8%) and lower inner quadrant (LIQ) distribution compared to 30.2% and 20.6%, respectively in study by Oluwole.[7] Decholonky noted that 50 % of the lump in his study were Upper outer quadrant (UOQ).

Majority of lumps (53%) in the present study averaged 2-5 cm in size and 32% averaged 6-10 cm in size, 12% less than 2 cm and 3 cases (3%) more than 10 cm in size. There was no relationship between the duration to the size of lesion. Benign breast lumps, especially fibro adenoma progress slowly after attaining a size of 2 cms. Decholnoky's study shows that 57% of the benign lumps were less than 2 cms.

In the study of 100 cases of benign breast disease, 12 cases were managed conservatively (8 patients were fibrocystic disease, 4 patients with antibioma). In a study by Cant et al, conservative approach is safe for clinically and cytologically benign breast lumps in women under 25 years, but very few will accept it.[20] For all fibro adenomas simple excision was done. For all lipomas, and all fat necrosis, simple excision was done. Among 7 phylloides tumour, for one patient simple excision was done. Other 4 patients were treated with wide local excision and 2 patients underwent mastectomy. In a study by Abdulla, Sakr complete surgical excision by either wide local excision or mastectomy if necessary is important in the primary surgical treatment of phylloides tumors.[21]

CONCLUSION

Out of 100 studied cases of benign breast diseases, the most common benign breast tumor found as fibro adenoma and majority of the fibro adenoma found in the 2nd and 3rd decade of life. Right breast and upper outer quadrant were most commonly affected. Majority of benign breast lesions presented with painless lump in the breast and most of them were from rural background. Majority of benign breast lumps (45%) cases were found in the age group of 21-30 years. Majority of the patients (60%) attain menarche between ages 13-15 years. Majority of cases (55%) were belonged to lower socio economic status. A surgical excision was an adequate and effective treatment for most of the benign breast tumors. FNAC was 100% accurate in diagnosing fibro adenoma, fat necrosis, and lipoma, 75% accurate in diagnosing fibrocystic diseases and 71.4% accurate in diagnosis of phylloides tumors. Our study indicates that FNAC is diagnostically more accurate, safe, cost effective and OPD procedure, however when FNAC was inconclusive, biopsy is the best choice for breast tumors.

REFERENCES

1. Sainsburg RC. The breast. In: Russell RCG, Williams NS, Bulsrode CJK, eds. Bailey and love's Short practice of surgery. 24th ed. London: CRC Press; 2004: 824-846.
2. Greenall MJ. Benign conditions of the breast. In: Morris PJ, Malt RA, eds. Oxford text book of surgery. New York: Oxford Medical Publication; 1994; 789-808.
3. Shabot MM, Goldberg IM, Shick P, Neiberg R, Pilch YH. Aspiration cytology is superior to true-cut needle biopsy in establishing the diagnosis of clinically suspicious breast masses. Ann Surg. 1982;196:122-6.

4. Dixon JM, Clarke PJ, Crucioli V, Dehn TC, Lee EC, Greenall MJ. Reduction of the surgical excision rate in benign breast disease using Fine needle aspiration cytology with immediate reporting. Br J Surg. 1987;74:1014-6.

5. Khanna S, Aryya NC, Khanna NN. Spectrum of benign breast disease. IJS. 1988;169-75.

6. Winchester DP. ACP consensus statement, the relation of fibrocystic disease to breast cancer. Am Coll Surg Bull. 1986;71:29.

7. Johnson D, Shah P, Collins P, Wigley C. Breast. In: Starndring S, ed. Gray's anatomy. 38th ed. London: Elsevier Churchill Livingstone; 2005: 969-976.

8. Rossen PP, Ashikari R, Thaler H, Ishikawa S, Hirota T, Abe O. A comparative study of some pathological features of mammary carcinoma in Tokyo, Japan and New York, U.S.A. Cancer. 1977;39:429-34.

9. Greenberg R, Skornick Y, Kaplan O. Management of fibro adenoma. J Gen Int Med. 1998;13:640-3.

10. Rangabhashyam N, Gnanaprakasam D, Krishnaraj B. Spectrum of benign breast lesion. Madras J Royal Coll Surg. 1983;28:369.

11. Hindle WH, Payne PA, Paney. The use of fine needle aspiration in the evaluation of persistent palpable dominant breast masses. AMJ Obs Gynaecol. 1993;168:1814-8.

12. Malik MAN, Salahudin O, Azar M, Irshad H, Sadia, Salahudin A, et al. Breast diseases; spectrum in Wah Cantt; POF Hospital Experience. Professional Med J. 2010;17(3):366-72.

13. Hari SS, Sandeep K. Benign breast disorders in Non-Western population. Part II. Benign breast disorders in India. World J of Surg. 1989;13:667.

14. Cheatle GL. Hyperplasia of epithelial and connective tissues in the breast: its relation to fibro adenoma. Br J Surg. 1923;10:436-55.

15. Gupta JC. Breast lumps in Jabalpur area. Review of 1104 cases. Indian J Surg. 1983;45:268.

16. Krishnaswamy U. Indian J Surg. 2003;65(2):171-81.

17. Decholnoky T. Benign tumours of the breast. Arch Surg. 1937;38:79.

18. Vessey P, Doll R, Sutton PM. Oral contraceptives and breast neoplasia: a retrospective study. Br Med J. 1972;3:719-24.

19. Soju F, Oluwel, Harold P. Freeman. Analysis of benign breast lesions in blacks. Am Surg. 1979;137:786-9.

20. Al-Mulhim AS, Sultan M, Al-Mulhim FM. Accuracy of the "triple test" in the diagnosis of palpable breast masses in Saudi females. Ann Saudi Med. 2003;23(3-4):158-61.

21. Abdullah HM, Sakr MA. Predictive factors of local recurrence and survival following primary surgical treatment of phylloides tumors of the breast. J Egypt Nat Can Inst. 2006;18(2):125-33.