

Original Research Article**Spectrum of Benign Breast Disease at a Tertiary Hospital North Karnataka Region: Five Year Study****Krishna B. Dattasamje^a, Purushotham Reddy^b, Sujata S. Giriyan^c**

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Abstract

Background: Breast masses cause more anxiety for the patients. This study was undertaken to know the spectrum of benign breast lesions with their age of occurrence. Benign breast lesions are more common than the malignant ones. Timely and accurate diagnosis with treatment will alleviate anxiety to the patient.

Methods: This study was carried out in a tertiary hospital of north Karnataka region for a period of five years with one and a half years of prospective study. All histopathologically proved benign breast lesions and inflammatory lesions were included in this study.

Results: Of the 600 cases of breast lesion in five years study, slightly less than three fourths of the cases were benign lesions. Of these fibroadenomas formed nearly three fourths of the cases and the remaining were fibrocystic disease, inflammatory and miscellaneous lesions.

Conclusions: This study emphasizes that benign breast lesions are heterogeneous group of lesions including inflammatory lesions, neoplasms, non proliferative lesions, proliferative lesion without atypia and proliferative lesions with atypia. Some of these lesions are a risk of cancer, such patients need a follow up with sonomammography.

Keywords: Benign Breast Diseases; Fibroadenomas; Fibrocystic Disease; Inflammatory Lesions.

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Introduction

Benign breast lesions encompass a wide range of lesions including inflammatory, neoplastic and aberrant hormonal response disorders. Breast masses are a source of anxiety for patients as well as surgeons because of the risk of cancer. During adolescent and reproductive age group major hormonal changes produce alteration in mammary tissue [1]. This directly or indirectly affects the disease pattern. The term benign breast disease is made up of heterogeneous group of lesions that have diverse signs and symptoms like palpable nodularity, thickening,

mass, pain, inflammation or nipple discharge. Many of the signs and symptoms encountered in benign breast disease are non specific and require further evaluation by means of imaging and sometimes followed by biopsy for definitive diagnosis. There is increase incidence of inflammatory breast disease and fibroadenoma in early age group, mazoplasia in middle age group and carcinomas are a major problem in elderly females [2]. Benign lesions of breast are more frequent than malignant ones [3]. The aberration of normal development and involution (ANDI) classification is based on physiological process within the normal breast. The ANDI classification

allows precise definition of an individual patient problem in terms of pathogenesis histology and clinical implications. It has proved helpful in deciding rational clinical management [4]. This study has adapted the categorisation of benign breast lesions according to the criteria of Dupont, Page and Rogers [5] under four broad headings 1) Inflammatory and related lesions. 2) Non proliferative lesions. 3) Proliferative lesions without atypia. 4) Atypical hyperplasia. Review of literature reveals that relative risk ratio of non proliferative lesions in different studies is 1, proliferative lesions without atypia varies from 1.3 to 1.9 and atypical hyperplasia varies from 3.9 to 13 [6]. Hence this study was undertaken to study the spectrum and age distribution of various benign breast lesions.

Methods

The present study was conducted in the department of Pathology at KIMS, Hubli. This was of three and half years of retrospective and one and half years of prospective study from May 2010 to April 2015. All histopathologically proved benign breast lesions and inflammatory lesions were included in this study. All malignant lesions, non representative samples and tru-cut biopsies were excluded

from this study. Paraffin blocks and slides were retrieved for retrospective study and case history was collected from hospital records. In prospective cases the specimens were subjected for detailed gross examination. They were initially fixed in 10% formalin and routinely processed to obtain 5-6 micron thick paraffin sections. Haematoxylin and eosin was routinely employed.

Results

The breast lesion biopsies constituted 2.94% of all specimens received during this period. Of the 600 cases of breast lesions 428 (71.33%) cases were benign including inflammatory and miscellaneous lesions, as shown in Table 1. The rest 171 (28.67%) cases were malignant.

Benign breast disease were common in second, third and fourth decade of life constituting 91.1% of the cases, as shown in Table 2.

Fibroadenomas were the commonest of all benign breast lesions constituting 72.9% of cases. Of these 78.2% were seen in second and third decade of life as shown in Table 2.

Table 1: Histological types of benign breast lesions

Sl. No	Benign breast lesions	Number of cases	Percentage
1	Fibroadenoma	312	72.90
2	Fibrocystic disease	38	8.88
3	Benign phyllodes tumor	25	5.84
4	Chronic mastitis	13	3.05
5	Granulomatous mastitis	12	2.80
6	Gynecomastia.	11	2.57
7	Breast abscess	09	2.10
8	Intraductal papilloma	03	0.70
9	Tubular adenoma	02	0.47
10	Mammary duct ectasia	01	0.23
11	Galactocele	01	0.23
12	Lactating adenoma	01	0.23
	Total	428	100

Table 2: Age distribution in relation to the histologic type of benign breast lesion

Histologic type/Age	11-20	21-30	31-40	41-50	51-60	61-70	71-80	Total	%
Fibroadenoma	122	122	54	13	1	-	-	312	72.90
Fibrocystic disease	3	13	12	7	2	1	-	38	8.88
Benign phyllodes	3	5	10	4	2	-	1	25	5.84
Chronic mastitis	3	7	1	1	1	-	-	13	3.05
Granulomatous mastitis	-	6	4	2	-	-	-	12	2.80
Gynecomastia	7	2	1	-	1	-	-	11	2.57
Breast abscess	2	5	2	-	-	-	-	9	2.10
Intraductal papilloma	-	1	-	1	-	-	1	03	0.70
Tubular adenoma	1	1	-	-	-	-	-	02	0.47
Mammary duct ectasia	-	1	-	-	-	-	-	01	0.23
Galactocele	-	1	-	-	-	-	-	01	0.23
Lactating adenoma	-	1	-	-	-	-	-	01	0.23
								428	100

Majority (96.47%) of fibroadenoma cases were unilateral. The tumor size varied from 1 cm to 9 cm. All were well circumscribed. Pericanalicular type of architecture constituted 61.23%, intracanalicular type 23.39% and mixed type 15.38% of cases. Complex features seen were apocrine metaplasia in 4 cases, cysts in 13 cases, squamous metaplasia 2 cases and calcification in one case. Majority of cases showed predominantly (65.39%) fibrocellular stroma followed by myxoid with fibrocellular in 27.56% and only myxoid stroma in 7.05%. Grading of stromal cellularity was adapted from a study done by H.M. Aiyer et al [7], as shown in Table 3.

Second commonest benign breast lesion was fibrocystic disease forming 38 (8.88%) cases. Most of the cases occurred in third and fourth decade of life comprising of 66.67% of cases, shown in Table 2.

Of the 38 cases of fibrocystic disease, 29 cases were non proliferative type, 9 cases were proliferative without atypia and there were no cases of proliferative with atypia.

Twenty five cases (5.84%) of benign phyllodes tumor were encountered. Majority were seen in the fourth decade forming 40% of cases, as shown in Table 2.

The size of benign phyllodes tumor ranged from 2cm to 16cm. All the cases were well circumscribed and showed pushing margins. Stromal cellularity was grade 1 in 11 cases and grade 2 in 14 cases. Stroma was abundant and predominantly fibroblastic. Stromal overgrowth was of grade 0 B in all 25 cases. Grading of stromal overgrowth

was adapted from a study done by H. M. Aiyer et al [7]. Mitotic figures ranged from 0-2/10hpf in all the cases.

Chronic mastitis constituted 13 cases, of these one showed lactational change. Twelve cases of granulomatous mastitis were encountered in the age range of third to fifth decade, as shown in Table 2.

The size of chronic mastitis cases ranged from 1cm to 7cm in its greatest dimension. All cases showed histiocytes epithelioid cells, giant cells, lymphocytes, plasma cells and eosinophils. All cases were negative for acid fast bacilli. Two cases showed lactational changes.

Eleven cases (2.57%) of gynecomastia were noted and of them only one case was bilateral. Nine cases (2.10%) of suppurative mastitis were seen.

There were three cases of intraductal papilloma with the age range of 24–75 years, as shown in Table 2. The size range was from 1 cm to 6 cm in its greatest dimension.

Two cases each of sclerosing adenosis and tubular adenoma were seen, and one case each of mammary duct ectasia, lactating adenoma and galactocele were encountered in the present study.

Discussion

Benign breast disease encompasses a wide range of lesions including inflammatory, neoplastic and aberrant hormonal response disorders. In the present study of five years duration breast specimen formed 2.94% of all the

Table 3: Stromal cellularity in fibroadenoma

Grading	Number of cases	Percentage
Grade 1	302	96.80
Grade 2	10	3.20
Grade 3	0	0
Total	312	100

Table 4: Comparison of incidence of benign and malignant breast lesions

Study	Duration	Benign	Malignant
Oluwole et al ⁸	3 years	72%	28%
Khanna R et al ²	20 years	61.3%	38.7%
Ochicha O et al ⁹	5 years	73%	27%
Malik R et al ¹⁰	20 years	89%	11%
Present study	5 years	71.3%	28.67%

Table 5: Comparison of frequency distribution of histopathological pattern of various benign breast lesions

Lesions	Khanna R et al (1998) ²	Ochicha et al (2002) ⁹	Jabbo NS et al (2010) ¹¹	Present study
Inflammatory lesions	20%	8%	16.67%	8.18%
Fibroadenoma	60%	29%	64.03%	72.90%
Fibrocystic disease of breast	15%	34%	9.65%	8.88%
Others	5%	29%	9.65%	10.51%
Total	100	100	100	100

specimens received. It is not possible to rely on the absolute number of benign breast lesions removed annually as an indication of incidence, because of wide fluctuation in the number of patients seen in the out patient department and the number of patients undergoing surgery.

Benign breast lesions formed the maximum number of cases in the present study and also in other studies as shown in Table 4. The present study shows a close correlation with the study done by Oluwale et al [8] and Ochicha O et al [9].

Inflammatory lesions in the present study included chronic mastitis, granulomatous mastitis, breast abscess and mammary duct ectasia. In the present study fibroadenoma were the commonest lesions encountered accounting to 72.90% of cases. Similar findings were seen in study by Khanna R et al [2] and Jabbo NS et al [11], as shown in Table 5.

In another study by Khanna [12] fibroadenomas contributed to 72% of benign breast lesions.

In the present study majority (78.2%) of fibroadenomas were in second and third decade of life. Similar findings were seen by Khanna et al² constituting 80.2%.

In the present study of the 312 cases of fibroadenomas, 61.23% were of pericanalicular type, 23.39% intracanalicular and 15.38% were of mixed type which is in correlation with a study done by Kuijper et al [13] forming 60.2%, 20.8% and 19% respectively.

Stromal cellularity was of grade 1 in 96.80% and grade 2 in 3.20% of cases in the present study, where as in study done by H.M. Aiyer et al [7] 70 cases of fibroadenomas were all of grade 1, juvenile cellular fibroadenomas and benign phyllodes tumor showed grade 2 stromal cellularity.

Fibrocystic disease of breast accounted for 8.88% of all benign lesions. The incidence of this entity is varying in different studies. Ochicha et al [9] documented 34.3% of cases, Malik et al [10] had 26.1% of cases, Khanna et al [2] had 15% of cases, as shown in Table 5.

Fibrocystic disease comprise of both cysts and solid lesions including adenosis, epithelial hyperplasia with or without atypia, apocrine metaplasia, radial scars and intraductal papilloma. Over the years it has been one of the major issues to determine whether the lesions are risk factor for subsequent development of breast cancer. The presence of coexisting carcinoma in radial scar or complex sclerosing lesions ranges from 3.6 – 32% [14]. Therefore it is practical to evaluate fibrocystic diseases under a classification system first proposed by Dupont and Page [5] as non proliferative lesions, proliferative lesions without atypia and proliferative lesions with atypia.

Non proliferative lesions include cysts, papillary apocrine change, epithelial related calcification, mild epithelial

hyperplasia as well as duct ectasia, non sclerosing adenosis and periductal fibrosis.

Proliferative lesions without atypia include moderate to florid ductal hyperplasia of usual type, sclerosing adenosis, radial scar and intraductal papilloma or papillomatosis. Proliferative lesions with atypia include atypical ductal and lobular hyperplasia.

The present study showed majority of non proliferative lesions comprising of 76.3% and proliferative lesions without atypia forming 23.7% of cases.

Sclerosing adenosis has a broad spectrum of presentation that can mimic carcinoma both clinically and pathologically [15]. In the present study of proliferative lesions without atypia, two cases of sclerosing adenosis was encountered. There were no cases of proliferative lesions with atypia. Study done by Ageep Ali K [16] showed 85% of cases as non proliferative lesions.

Phyllodes tumor accounted for 5.84% of all benign breast lesions with 68% of cases seen in fourth decade onwards. In a study done by Puoy Hoon Tan et al [17] had encountered 57% of cases after fourth decade of life. Size range from various studies showed varied range, Puoy Hoon Tan et al [17] encountered range from 0.9 to 25 cm. In the present study range was from 2 to 16 cms which is comparable to a study done by Murad et al [18].

All the cases of phyllodes tumor were well circumscribed in the present study. Puoy hoon Tan et al [17] documented 83% of the cases as well circumscribed and 6% as poorly circumscribed and the nature of margins not documented in remaining 11% of the cases.

In the present study all the cases of phyllodes tumor showed cleft like spaces lined by bilayered epithelium surrounded by cellular stroma. Fourteen cases showed grade 2 cellularity and 11 cases showed grade 1 cellularity. Out of the 25 cases of phyllodes 23 cases showed fibroblastic stroma, six showed mixed fibroblastic and myxoid stroma and two cases only myxoid component. All of the 25 cases were of grade 0 B type of stromal overgrowth. In a study by Murad et al [18] majority of mesenchymal components were fibroblastic and four out of nineteen low grade lesions having mixed mesenchymal components.

In a study by Aiyer et al [7] stromal cellularity of grade 2 and stromal overgrowth of 0 to 1 was encountered. The widely accepted definition as proposed by Azzopardi and Salvadori et al [19] for benign phyllodes were defined as those having pushing margins, low stromal cellularity, mild pleomorphism, and mitotic rate of < 5/10Hp. In the present study mitotic figures ranged from 0-2/10Hp.

Inflammatory lesions of breast are of clinical significance because of their potential for confusing with cancer. In the present study inflammatory lesions

comprising of chronic mastitis, granulomatous mastitis, breast abscess and mammary duct ectasia contributed to 8.2% of our cases, as shown in Table 5.

Stone gave an incidence of 2.8% in women below 20 years of age [10], Ferguson reported 15.4% of cases [10]. In a study by Malik et al [10] incidence was 10.7%. Khanna et al [2] reported 20.5% and Ochicha et al encountered 8.1% of cases [9].

The present study is comparable with a study done by Ochicha et al [9]. However these figures are under represented as many inflammatory lesions were managed without surgical biopsies. Gynecomastia was a common abnormality of male breast in 30-40% of adolescent and adult men [15]. Present study documented 2.57% of cases among benign breast disease, Ochicha et al [9] and Oluwale et al [8] encountered 4% and 3.4% of cases in their study.

Intraductal papilloma is a discrete benign tumor arising from epithelium of mammary ducts. It can arise at any point in the ductal system and shows a predilection for extreme ends of the ductal system the lactiferous sinuses and terminal ductules. Present study documented 0.7% of incidence among benign breast lesions which is comparable to 1.1% of incidence in a study done by Ageep Ali K [16] and 1.45% of incidence by Kulkarni Sangeetha et al [20].

There were two (0.47%) cases of tubular adenoma which showed unusual variant of pericanalicular fibroadenoma with an exceptionally prominent adenosis like epithelial proliferation. In a study on non malignant breast lesions by Pudale S et al [21] had encountered 0.55% of cases.

Conclusion

Benign breast lesions are heterogenous group of lesions including inflammatory, neoplasms and aberrant hormonal response disorders. Though fibroadenomas constitute majority of these lesions, some of these benign lesions are associated with risk of cancer and need follow up with sonomammography and biopsy.

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