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ORIGINAL ARTICLE

Spectrum of Benign Breast Diseases in Surgically Excised Specimens: A Clinicopathological Study in A Tertiary Care Hospital of Sargodha

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ABSTRACT

Background: Approximately 30% of female population suffers from benign breast diseases in anytime of their life. A comprehensive review of histopathological findings can tell us the behavior and type of the breast lesion and will also benefit the patient and the clinician to take the timely decision.
Aim: To understand the histopathological pattern of benign breast diseases encountered in RMC teaching hospital, Sargodha.
Methods: This descriptive study was undertaken in the Pathology Department, Rai Medical College, Sargodha, from January 2017 to December 2021. 146 breast lump specimens were included in the study. This study comprised of all those cases which were diagnosed as benign breast diseases regardless of age of the patient and excluded the cases that were malignant.
Results: 146 cases of benign breast lesions were collected in the pathology department for a period of 5 years. The most frequently encountered lesion were fibroadenoma (45.8%), breast abscess (22.6%) and fibrocystic change (11.6%). The other benign lesions observed were granulomatous mastitis (7.5), gynaecomastia (5.4), sclerosing adenosis (2.7%), phyllodes tumor (2.0%), fat necrosis (1.3%) and tubular adenoma (0.6%).
Conclusion: Benign lesions of the breast are more common as compared to malignant with a peak incidence in the 2nd and 3rd decade. Clinical evaluation followed by histopathological assessment provided the accurate diagnosis. Early excision, assessment and confirmation of the lesion on histopathology help us to distinguish benign from the malignant disease.
Keywords: Fibrocystic Breast Disease, Fibroadenoma, Phyllodes Tumor, Fat Necrosis,

INTRODUCTION

Detection of breast lump by women of reproductive age group is one of the common reasons for hospital visits. Despite the concern associated with the detection of a breast lump that is usually thought to be cancerous, majority of the breast lumps are found to be benign on microscopic examination.[1]Benign breast diseases consist of a varied group of lesions comprising inflammatory disorders, stromal and epithelial proliferations[2]. Approximately 30% of female population suffers from benign breast diseases during their life time for which they take the treatment[3].

Incidence of benign breast diseases commences to increase in the 2nd decade and peaks in the 4th decade of life, which is opposite to malignant lesions, for which the incidence increases in postmenopausal period. Benign breast diseases account for almost 90% of the clinical case of breast lesions. Fibroadenoma, breast abscesses and fibrocystic disease are the most common among benign lesions.[4] Although majority of the cases of breast lumps are benign in nature but the patient become worried due to the fear of having malignancy.[5] Benign breast diseases take on different forms on histological presentation, a thorough review of histopathological findings can tell us the nature of the lesion and will also help the patient and the clinician to take the timely decision[6].

This study has been undertaken to understand the histopathological patterns of benign breast diseases encountered in RMC teaching hospital, Sargodha.

MATERIALS & METHODS

This is a descriptive study conducted in the Pathology Department of Rai Medical College, Sargodha, from January 2017 to December 2021. This study consisted of 146 specimens of resected lesions of breast tissue. The specimens were collected in the Pathology Department from RMC Teaching Hospital and Rai Medical Complex, Sargodha. The specimens were preserved in 10% formalin and representative sections were taken from 3 to 4 random areas and the tissue was processed routinely. The slides were stained with hematoxylin and eosin (H&E stain) and the histomorphological findings were studied under the microscope. The study comprised of all those cases which were diagnosed as benign breast diseases on histopathology regardless of the age of the patient and excluded the cases that were malignant. Data analysis was computer based using SPSS version 20. Categorical variables were summarized as percentages and frequency. Permission was granted by Ethical Review Committee of the institution.

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RESULTS

A total of 146 benign breast lesions were collected in the Department of Pathology for a period of 5 years. The benign to malignant ratio of the breast lumps was 3.2:1. The most frequent lesion was fibroadenoma (45.8%), followed by breast abscess (22.6%) and fibrocystic change (11.6%). The other benign lesions observed were granulomatous mastitis (7.5), gynaecomastia (5.4), sclerosing adenosis (2.7%), phyllodes tumor (2.0%), fat necrosis (1.3%) and tubular adenoma (0.6%). Incidence of the lesion is given in Table 1.

Table 1: Incidence of benign breast lesions.

Benign Breast Lesions	n	Incidence (%)
Fibroadenoma	67	45.8
Breast Abscess	33	22.6
Fibrocystic Change	17	11.6
Granulomatous Mastitis	11	7.5
Gynaecomastia	8	5.4
Sclerosing Adenosis	4	2.7
Phyllodes Tumor	3	2.0
Fat Necrosis	2	1.3
Tubular Adenoma	1	0.6

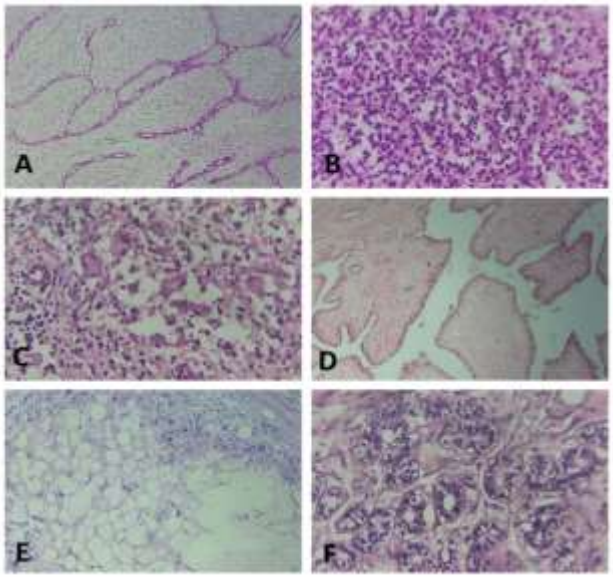
Benign breast diseases were more commonly seen in the 3rd (34.2%) and the 2nd decade (32.8%). In both decades the most frequently observed lesion was fibroadenoma (Table 2). Of the 146 benign breast diseases specimens, 138 specimens were from women and 8 were from men.

Table 2: Incidence of histological type of benign breast lesions in relation to age.

Histological type	Age in years			
	10-19	20-29	30-39	40-49
Fibroadenoma	22	33	12	x
Breast Abscess	x	7	19	7
Fibrocystic Change	x	x	9	8
Granulomatous Mastitis	x	4	5	2
Gynaecomastia	4	3	1	x
Sclerosing Adenosis	x	x	4	x
Phyllodes Tumor	x	x	x	3
Fat Necrosis	1	1	x	x
Tubular Adenoma	1	x	x	x

The histological examination of the fibroadenomas showed fibrous and glandular tissue. The stroma was cellular and fibrotic surrounding compressed glandular spaces. Glands had cuboidal to low columnar epithelium with adjacent myoepithelial cells. The architecture of fibroadenomas was either intracanalicular (34.3%) or pericanalicular (26.8%) and 26 cases (38.8%) showed both patterns (Figure 1A). In intracanalicular pattern, there is proliferating stroma and ducts are compressed into linear structures and in pericanalicular pattern, ducts are open but are separated by proliferating stroma.

Figure 1: Photomicrograph of: **A,** Fibroadenomas showing fibrous and glandular tissue. The ducts are compressed and the stroma is proliferating. **B,** Breast abscess revealing neutrophilic microabscess and inflammatory granulation tissue. **C,** Granulomatous mastitis showing a granuloma composed of giant cells, neutrophils and epithelioid cells. **D,** Phyllodes tumor showing cleftlike spaces and proliferating stroma. **E,** Fat necrosis of breast tissue showing disruption of fat, foreign body type giant cell and chronic inflammation. **F,** Tubular adenoma displaying small tubules which are closely packed and lined by epithelial cells along with sparse stroma. (H&E stain x 1000)



Thirty three cases (22.6%) of breast abscess were observed in this study. Breast abscess showed variable scarring, neutrophilic microabscess, necrotic debri, granulation tissue with reactive endothelial cells and fibroblastic proliferation (Figure 1B). Cases of fibrocystic disease exhibited cystically dilated glands, variable in size and shape and lined by ductal epithelial cells. Other features observed were fibrosis, adenosis, apocrine metaplasia and epithelial hyperplasia. Granulomatous mastitis showed variable sized granulomas composed of Langhans' giant cells, neutrophils and epithelioid cells. Background was inflammatory with significant amount of lymphoplasmacytic infiltrate. Microabscesses and sinus tracts were also observed (Figure 1C).

We observed 3 specimens of phyllodes tumor in the current study, composed of leaf like architecture, cleft like spaces which are lined by epithelium, and a proliferating stroma. One of the cases (33.3%) showed overgrowth of stroma, with epithelial hyperplasia, apocrine metaplasia and cystic dilatation of glands (Figure 1D). In our study, there were 2(1.3%) cases of fat necrosis, in which breast tissue showed chronic inflammation, lipid-laden macrophages, disruption of fat, and foreign body type giant cell reaction (Figure 1E). We also found a single case of tubular adenoma which showed uniform looking small ducts which are closely packed and are lined by epithelial cells and myoepithelial layer along with sparse stroma (Figure 1F).

Finally, we also encountered 2 cases of gynaecomastia composed of breast tissue having slit like ducts lined by cuboidal cells and surrounded by myoepithelial cells. The intervening stroma shows dense hyalinization and fibrosis.

DISCUSSION

One hundred and ninety two breast specimens were collected in the Pathology Department over the past 5 years. Out of 192 breast specimens, 146(76%) were benign lesions and 46(24%) were malignant. The benign to malignant ratio was 3.2:1 that is comparable to a study by Dayan A in 2013 in which among palpable lumps 75.48% were benign and 24.51% lumps were malignant with a ratio of 3.07:1 (Table 3)[7]. Benign breast lesions are more frequent as compared to the malignant lesions among females as seen in other studies done by various authors listed in Table 3 which is also seen in our study. But the study conducted by Batool *et al* in Lahore, showed varied results where malignant disorders were more frequent than benign[8].

Table 3: Incidence of benign and malignant breast diseases in other studies.

Study	Duration (years)	Benign (%)	Malignant (%)
Batool *et al* (2005)[8]	5	30.7	69.3
Malik *et al* (2010)[9]	8	71.5	28.5
Dayan A (2013) [7]	1	75.5	24.5
Rasheed *et al* (2014)[10]	3	77.8	22.2
Forae G *et al* (2014)[11]	7	71.2	28.8
Mukhopadhyay A *et al* (2017)[12]	5	71.9	28.1
Pai S (2019)[6]	6	61.7	38.3
Boral S & Jagtap SV (2021)[13]	2	56.0	44.0
Present study (2022)	5	76.0	24.0

In other studies it was observed that benign breast diseases were more prevalent in the 3rd decade of life which is consistent with the present study (34.2%) (Table 2)[6,11,14,15,16]. According to Ukweh *et al* the average age of the females was 25 years while the majority of the patients were in the 2nd and 3rd decades of life.[1] Kapoor *et al* noted that the women in 3rd decade of life had the highest number of the cases (34.28%).[17] Second most commonly involved age group in the present study was 2nd decade which is comparable to studies conducted by Maychet *et al*[15].

Among different benign lesions, the incidence of fibroadenoma in present study was 45.8% similar to the study done by Kumar N and Prasad J (2019) where the incidence was 46.7% and it was more frequent in the years 15-25[5]. Kumar *et al*, (2018) also observed that the most common breast lump was fibroadenoma (42%).[18] According to Kapoor *et al* fibroadenoma (51.42%) had the maximum number of cases among benign breast lumps and it was most prevalent in 2nd decade of life[17]. According to Olu-eddo *et al* majority of cases occurred in 30-39 years of age group.[19] But studies by Ochicha *et al* and McFarlane *et al* showed different findings where fibrocystic disease was more common than fibroadenomas[20,21].

We noted that the prevalence of breast abscess among benign breast diseases was comparatively higher (22.6%) which is comparable to study done by Malik *et al* (12.4%) who also reported a higher incidence[9]. Studies done by Sangma *et al* and Bagale *et al* showed a low incidence.[15,22] Breast abscess was most

frequently seen in 30-39 years of age group similar to study of Usman *et al*.[23] Mean age of incidence of breast abscess in other studies was higher than the present study[7,19].

Our study documented 17 cases (11.6%) of fibrocystic disease. Fibrocystic diseases were found to be most common in 30-39 years of age group in current study which is comparable to the study of Olu-Eddo (2011) but studies done by Pai S, Bafakeer *et al* and Godwins *et al* showed higher number of cases in the 4th decade.[6,19,24,25] According to Kumar N and Prasad J (2019), fibrocystic diseases (25.33%) were the 2nd most frequent breast lesion and were mostly found in 26-35 years of age group (63.15%)[5]

Incidence of Granulomatous mastitis in current study was around 7.5% which corresponds with the observations of Malik *et al*.[9] We noted that the age affected by granulomatous mastitis is 30-39 years which is analogous to the study of Oltean *et al*.[26] According to Pai S (2019) the average age of patients with granulomatous mastitis was 34.4 years[6].

Phyllodes tumors are quite rare and make < 1% of all breast lumps. In the current study phyllodes tumors were seen in 2.0% of breast lesions and occurred in the 3rd decade which is comparable to a study by Kapoor *et al* (2020) in which phyllodes tumors were 2.85% of benign breast diseases.[17]. A study conducted by Kumar N and Prasad J, showed low incidence of phyllodes tumor (06.6%) and it most prevalent (40%) in 56-65 years of age group.[5]

We observed that the incidence of fat necrosis was relatively low (1.3%). In study conducted by Kumar N and Prasad J (2019) only 01 case of Fat necrosis (1.33%) was detected in a female of 25 years of age.[5]

CONCLUSION

Benign lesions of the breast are more common as compared to malignant lesions having a peak incidence in the 2nd and 3rd decade. Fibroadenoma is the most frequent benign breast lesions. Clinical evaluation and histopathological assessment provides the exact diagnosis. Breast lumps are a cause of concern because a few of them can turn into malignant. Early excision, assessment and confirmation of the lesion on histopathology help us to distinguish benign from the malignant disease. Breast self-examination, female education, breast cancer screening and breast cancer awareness campaigns should be promoted to reduce the cancer related morbidity and mortality. Further work on benign breast lesions is needed to determine risk factors and to understand the differences and associations between benign and malignant breast diseases.

Conflict of interest: Non

Limitations: The study included resected lesions of breast tissue which were diagnosed on histopathology as benign breast diseases. Core needle biopsy and tru-cut biopsy specimens were not considered. Due to small sample size and a single research center, the results of the study cannot be generalized to whole female population.

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