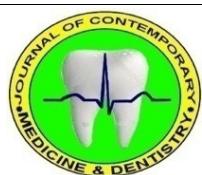


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Histopathological Spectrum of Benign Breast Lesions

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Abstract

Background: Breast carcinoma is the leading cause of carcinoma deaths in women. Sometimes it is difficult to differentiate between a premalignant lesion and a malignant lesion. Therefore, early recognition is critical from the point of view of therapy and prognosis. **Methods:** A Detailed history, clinical findings, and radiological parameters were noted from the patients admitted to the surgical ward. The specimens were fixed in formalin, processed, and embedded in a paraffin wax block. Sections of 3-micron thickness were affixed on slides. The former was stained with hematoxylin and eosin (H&E) stains H&E-stained slides were examined thoroughly and a provisional diagnosis of each case was performed. Morphometric analysis was done on H&E- stained histological and they were analyzed. **Results:** Benign lesions included fibroadenoma 55.79% the commonest followed by fibrocystic disease 11.58%, benign phyllodes tumor 9.47%. Chronic mastitis, granulomatous mastitis, gynecomastia, breast abscess, intraductal papilloma, sclerosing adenosis, tubular adenoma, mammary duct ectasia, galactocele, and lactating adenoma. **Conclusion:** The incidence of benign lesions in this study was 79.16% and malignant lesions were 20.83%. Of the benign lesions, the most common were fibroadenoma and fibrocystic disease. The incidence of inflammatory conditions was 12.63%. Breast lesions are a common presentation in the young age group and are a cause of concern for the patient because of the possibility of malignancy. Therefore, all young females must be educated regarding self-breast examination seeking a diagnosis in cases of detection of masses in the breast by mammography and biopsy.

Keywords: Benign Breast Lesions, Fibroadenoma, Fibrocystic Disease, Histopathology Of Breast Lesions

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Introduction

Benign breast lesions encompass a wide range of lesions including inflammatory, neoplastic and aberrant hormonal response disorders. Increasing awareness of breast cancer (the commonest female malignancy worldwide) has stimulated profound interest in benign breast lesions since certain epithelial benign breast diseases have been associated with malignant transformation.^[1] The vast majority of the lesions that occur in the breast are benign. Much concern is given to malignant lesions of the breast because breast cancer is the most

common malignancy in women in Western countries; however benign lesions of the breast are more frequent than malignant ones.^[2] The term “benign breast diseases” encompasses a heterogeneous group of lesions that may present a wide range of symptoms or may be detected as incidental microscopic findings. The incidences of benign breast lesions begin to rise during the second decade of life and peak in the fourth and fifth decades, as opposed to malignant diseases, for which the incidence continues to increase after menopause, although at a less rapid pace.^[2] For many years, the relationship of benign breast disease to the risk for subsequent carcinoma was controversial. Of the several

reasons for the controversy, the most important was past inconsistencies in defining benign breast diseases, not only in the field of pathology but also in radiological and clinical practice.^[3] Numerous studies have been conducted about breast lesions. The risk of breast cancer will increase in association with proliferative and atypical lesions. For early diagnosis, diagnostic methods such as mammography, ultrasonography, and fine-needle aspiration cytology are being progressively used nowadays. The evolution of more advances in imaging modalities and increased use of fine-needle aspiration cytology have immensely helped in the preoperative assessment of lesions in the breast.^[4, 5] The present study is undertaken to study the spectrum of histopathology of benign breast lesions.

Materials and Methods

This study was conducted in the Department of Pathology, Prathima Institute of Medical Sciences, Nagnaor, Karimnagar. Institutional Ethical approval was obtained for the study. Written consent was obtained from all the participants of the study. All mastectomy specimens and local excision specimens received for histopathological examination were included in the study. A detailed history, clinical findings, and radiological parameters were noted from the patients admitted to the surgical ward. The specimens were fixed in formalin, processed, and embedded in a paraffin wax block. Sections of 3-micron thickness were affixed on slides. The former was stained with hematoxylin and eosin H & E stains H & E-stained slides were examined thoroughly and a provisional diagnosis of each case was performed. Morphometric analysis was done on H & E-stained histological and they were analyzed. All the available data was uploaded on an MS Excel spreadsheet and analyzed by SPSS version 21 in windows format. Continuous variables were expressed as mean, standard deviations, and percentages.

Results

A total number of n=120 mastectomy specimens were received for examination in the Department of Pathology. The total number of

benign lesions was n=95(79.16%) and malignant lesions were n=25 (20.83%).

Table 1: Types of breast lesions

| Type of breast lesions | Frequency | Percentage |
|--|-----------|------------|
| Benign breast lesions including inflammatory lesions | 95 | 79.16 |
| Malignant | 25 | 20.83 |
| Total | 120 | 100.00 |

Benign lesions included fibroadenoma 55.79% the commonest followed by fibrocystic disease 11.58%, benign phyllodes tumor 9.47%. Chronic mastitis, granulomatous mastitis, gynecomastia, breast abscess, intraductal papilloma, sclerosing adenosis, tubular adenoma, mammary duct ectasia, galactocele, and lactating adenoma as shown in table 2.

Table 2: Types of benign breast lesions

| Benign breast lesions | No. of cases | Percentage |
|------------------------|--------------|------------|
| Fibroadenoma | 53 | 55.79 |
| Fibrocystic Disease | 11 | 11.58 |
| Benign Phyllodes Tumor | 9 | 9.47 |
| Chronic Mastitis | 4 | 4.21 |
| Granulomatous Mastitis | 5 | 5.26 |
| Gynecomastia | 3 | 3.16 |
| Breast Abscess | 2 | 2.11 |
| Intraductal Papilloma | 2 | 2.11 |
| Sclerosing Adenosis | 2 | 2.11 |
| Tubular Adenoma | 2 | 2.11 |
| Mammary duct Ectasia | 1 | 1.05 |
| Galactocele | 0 | 0.00 |
| Lactating Adenoma | 1 | 1.05 |
| Total | 95 | 100.0 |

About 77.36% of fibroadenoma were seen in the second and third decade of life, and 81.81% of fibrocystic disease were seen in the third, fourth, and fifth decade of life, 77.78% of benign phyllodes were seen in the third, fourth, and fifth decade, 75.0% of chronic mastitis were seen in the second and third decade. The majority of benign breast lesions were seen in the 2nd and 3rd decades. Fibroadenomas occurred over a wide age range. The youngest patient was 18 years old and the oldest was 56-year-old. The mean age of occurrence of fibroadenoma was 31.02 years. The occurrence of fibroadenoma was unilateral in n=51(96.23%) cases and bilateral in n=2(3.77%) cases. The gross appearance showed in fibroadenoma cases the tumor size varied from 1 cm to 9 cm with a mean size of 4 cm. The external surface varied from round to irregular. Most fibroadenoma specimens were solid with cleft-like spaces. All fibroadenoma were well-

circumscribed with grey, white color. Microscopic appearance is depicted in table 3.

Table 3: Microscopic appearance of fibroadenoma

| Microscopic Appearance | Frequency | Percentage |
|------------------------|-----------|------------|
| Pericanalicular (PC) | 42 | 79.24 |
| Intracanalicular (IC) | 08 | 15.09 |
| Both PC and IC (Mixed) | 03 | 5.66 |
| Total | 53 | 100 |

Most cases of fibrocystic disease occurred in the 3rd and 4th decade of life comprising n=8(72.72%) out of n=11 cases. All the n=11 cases of the fibrocystic disease were non-proliferative without atypia. The gross appearance of fibrocystic disease showed the size from 1.5 cms to 8 cms all specimens appearing white grey with cystic spaces. The microscopic appearance revealed dilated ducts lined with flattened or cuboidal epithelial cells. The Phyllodes Tumor presentation was seen from 18 to 75 years and maximum case in 4 and 5th decade. The gross appearance size varied from 2 cms to 16 cms and cut sections showed grey, white areas with leaf-like projections and cleft spaces. Microscopic appearance revealed increased stromal cellularity and ducts lined by inner epithelial and outer myoepithelial cells layers with well-circumscribed margins. The stromal cellularity was most of the cases was 2+ and few cases with 1+ cellularity. Chronic mastitis occurred in 4.21% of cases the young patient being 16 years old and the oldest being 52 years old. Gross specimens were sent in bits that appeared irregularly rounded and firm size varied from 0.5 cms to 11 cms. The cut surfaces were white to grey, brown. Granulomatous mastitis revealed the presence of epithelioid histiocytes, giant cells and lymphocytes, and plasma cells with occasional eosinophils around lobules. The microscopic appearance of cases of gynecomastia showed epithelial and myoepithelial cells. There was a proliferation of loose connective tissue around ductal structures. No lobule formation was seen. Breast abscess microscopy revealed Breast parenchyma was infiltrated with sheets of neutrophils along with necrosis in the background. The gross appearance of papilloma was from 1 cm to 6 cms grey or white in appearance and microscopy showed breast tissue with dilated ducts and florid papillary lesion composed of

fibro collagenous stalk and papillae lined by cuboidal to columnar epithelium.

Discussion

Benign breast diseases encompass a wide range of lesions including inflammatory, neoplastic, and aberrant hormonal response disorders. Increasing awareness of breast cancer, the commonest female malignancy worldwide has stimulated profound interest in benign breast lesions since certain epithelial benign breast lesions have been associated with malignant transformation.^[1] There were n=120 specimens studied in this study out of which n=95(79.16%) and malignant lesions were n=25 (20.83%) were benign lesions. Malik R et al.,^[6] in their study of 20 years duration found 89% cases of benign breast lesions and 11% were malignant lesions. Ochicha O et al.,^[1] in a similar study found the incidence of benign lesions as 73% and malignant 27%. In our study, the incidence of malignancy is 20.83% which is higher than other observations the probable reason could be because the cancerous lesions grow faster and produce more systemic and local manifestations. Hence the patients are brought to the hospital earlier and since the benign lesions are asymptomatic and slow-growing and hence frequently neglected.^[7] In our study we found the incidence of fibroadenoma 55.79%. Khanna R et al.,^[7] in their study found the incidence of fibroadenoma 60%, and Jobbo NS et al.,^[8] found the incidence at 64.03%. In general, most breast masses in young patients were benign with fibroadenoma accounting for the majority of surgical specimens.^[9] Malik MAN et al.,^[10] showed the age range for fibroadenoma was 12-30 years and 97% of cases of fibroadenoma were unilateral. Fibrocystic disease or fibrocystic change of the breast is common, and it can mimic carcinoma in clinical, radiographic, gross, and microscopic appearance. Some forms, especially those that are proliferative and atypical, are associated with increased risk for subsequent development of carcinoma.^[11] Fibrocystic disease usually presents as a mass of variable-sized with variably defined margins. Ultrasound and imaging investigations may reveal cyst formation and microcalcification. The entity is rare before the age of 25 and most patients present clinically between the ages of 35 and 50.48 The present study showed all the

cases were non-proliferative lesions without atypia. Ali K showed 85% of fibrocystic disease cases to be non-proliferative.^[12] The Phyllodes Tumor presentation was seen from 18 to 75 years and maximum case in 4 and 5th decade. The majority of phyllodes tumors occur in older individuals, there are reported cases of phyllodes in adolescent girls.^[13] The majority have been classified as benign, but a few examples of malignant phyllodes tumors have been described in this age group. In the present study 3 patients were aged about 16, 17 & 20 years out of 25 cases. There are no specific clinical features that reliably distinguish among fibroadenoma, a benign phyllodes tumor, and a malignant phyllodes tumor. A diagnosis of phyllodes tumor may be favored if the tumor is larger than 4 cm or if there is a history of rapid growth.^[14] The incidence of inflammatory lesions in the current study was 12.63% which included chronic mastitis, granulomatous mastitis, breast abscess, and mammary duct ectasia. Stone et al., gave 2.8% incidence in women below 20 years of age and Fergusson reported 15.4% of inflammatory lesions. In a study done by Malik et al.,^[10] the incidence was 10.7%. Khanna R reported 20.5% of inflammatory lesions.^[7] The incidence of intraductal papilloma in the current study was 2.11% this disease is associated with a heightened risk for breast cancer. Because both a family history of breast cancer and an increased risk for breast cancer are associated with the diagnosis of juvenile papillomatosis, long-term follow-up is recommended both for the patient and the family.^[2] Two cases (2.11%) of tubular adenoma in the present study had all the classical features. A tubular adenoma is an unusual variant of pericanalicular fibroadenoma with exceptionally prominent adenosis like epithelial proliferation.^[14] Tavassoli et al.,^[15] have reported 0.13-1.7% incidence of tubular adenoma among benign breast lesions.

Conclusion

The incidence of benign lesions in this study was 79.16% and malignant lesions were 20.83%. Of the benign lesions, the most common were fibroadenoma and fibrocystic disease. The incidence of inflammatory conditions was 12.63%. Breast lesions are a common presentation in the young age group

and are a cause of concern for the patient because of the possibility of malignancy. Therefore, all young females must be educated regarding self-breast examination seeking a diagnosis in cases of detection of masses in the breast by mammography and biopsy.

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