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SPECTRUM OF HISTOLOGICAL VARIANTS OF FIBROADENOMA OF BREAST

Pathology

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ABSTRACT

Background: Fibroadenoma of the Breast is a frequently occurring benign tumor. several reports describe a high risk of subsequent breast carcinoma in patients with fibroadenoma. There is increased risk of carcinoma is seen with complex changes, hyperplasia and positive family history.

Aim And Objectives: 1. To study the histological variation within the fibroadenoma of Breast 2. To study age wise histological variations and to identify the possible changes of malignancy.

Materials And Methods: Total 120 specimens of fibroadenoma of Breast studied from June 2018 to May 2020 in our institution. H and E stained sections were thoroughly screened for fibrocystic changes, proliferative epithelial changes, stromal changes, foci of phylloid tumor, tubular adenoma and secondary degenerative changes. Malignant lesions were excluded from the study. Results: The commonest histological variant was mild hyperplasia; complex hyperplasia was noted in more than 50 years age group.

Conclusion: The common age group was 2nd and 3rd decades. The possible malignant changes were not seen below 40 years age.

KEYWORDS

Fibroadenoma, Fibroepithelial hyperplasia, Phylloid tumor

INTRODUCTION

Fibroadenoma of Breast is the most common benign tumor. It can occur at any age, but more common in 2nd and 3rd decades[2]. Though it is a benign tumor, higher risk of breast carcinoma noted in patients with fibroadenoma.[3,4,5] About 15% of the tumor presents as a palpable breast lumps, 20% are bilateral and 20% are multiple. The tumor shows similar hormonal activities of normal breast like lactation, perimenopausal involution[6].

15% of fibroadenomas are complexed and occurs in old age[6]. Complex fibroadenoma with fibrocystic changes like apocrine metaplasia, cyst formation, sclerosing adenosis and epithelial calcification occur in old age[7]. The risk of invasive carcinoma is more in patients with complex fibroadenoma. The changes occur within and adjacent to the fibroadenoma. The reported incidence of carcinoma[6] was 0.002% to 0.0125%. complex fibroadenomas can slightly increase the risk of breast carcinoma[8,9]. Proliferative changes in fibroadenoma[3] were related to a further increase of risk by 3.88. The Aim of the present study is to make a thorough exploration of histological features of the epithelium and stroma within and around the fibroadenoma.

MATERIAL AND METHODS

This retrospective study was conducted from June 2018 to May 2020 at RIMS, Ranchi, Jharkhand. A total number of cases of lumpectomy specimens of clinically suspected, formalin fixed, paraffin embedded, Hand E stained sections were screened for the proliferative epithelial changes (fibrocystic change, apocrine metaplasia, in situ changes) stromal changes (hyperplasia, hyalinization and myxoid changes) and other changes such as foci of phylloid and tubular adenoma. Informed consent of the patient is not needed as it was a retrospective study.

RESULTS

During the two-year period an analysis of 120 cases of fibroadenomas was done. All the cases were in the age range of 10-50 years. Most of the cases (80%) noted in the age range of 20-30 years, followed by 30-40 years age group. Most of the patients were married (106 of cases).

90% of the patients were presented with painless lump in the breast and 10% presented with painful lump. The duration of symptoms varied from few months to two years with maximum cases (60%) presented within a year, presenting as breast lump. Most of the cases found in right breast (64 cases) (53.34%) followed by left breast (54 cases) (45%) and two cases (1.66%) presented bilaterally. Most of the cases located in the lower lateral quadrant followed by upper outer quadrants. The size of the tumor was 1-20 cms and most of the tumors were between 3-6 cms, 20 cases were giant fibroadenoma with >10 cms size. H and E stained slides were reviewed. 52 (43.34%) fibroadenomas were pericanalicular, 38 (31.66%)were intracanalicular. Proliferative epithelial changes seen in 38 cases (31.67%) of fibroadenomas like mild ductal hyperplasia was found in 12 cases (10%), 18 cases (15%) showed moderate ductal hyperplasia, 5 cases (4.17%) revealed florid hyperplasia, 2 cases (1.67%) with atypical hyperplasia and One case (0.83%) showed DCIS.

Hyperplasia was found in the age range of 40-50 years. Fibrocystic epithelial changes found in 36 cases (30%) like apocrine metaplasia was the frequent change seen in complex hyperplasia (16 cases) (13.34%), cysts seen in 10 cases (8.34%), adenosis seen in 6 cases (5%), sclerosing adenosis seen in 2 cases (1.67%) and calcification seen in 2 cases (1.67%). More than two features were noted in 5 cases (4.17%) and in the higher age range (>50 years) with a statistically significant value. Stromal changes were noted in 32 cases (26.67%) of fibroadenomas with myxoid change in 13 cases (10.83%), hyalinization in 18 cases (15%) and one case (0.83%) multinucleated giant cells with necrosis was observed. Foci of tubular adenoma was observed in 6 cases (5%) and foci of benign phyllodes tumor seen in 8 cases (6.67%).

Histological Changes In Fibroadenomas

Table – 1

Proliferative epithelial changes	No. of cases	Percentage
Mild ductal hyperplasia	12	10%
Moderate ductal hyperplasia	18	15%
Florid ductal hyperplasia	05	4.17%
Atypical ductal hyperplasia	02	1.67%
DCIS	01	0.83%

Table – 2

Fibrocystic epithelial changes	No. of cases	Percentage
Apocrine metaplasia	16	13.34%
Cysts	10	8.34%
Microglandular Adenosis	06	5%
Sclerosing adenosis	02	1.67%
Calcification	02	1.67%

Table – 3

Stromal changes	No. of cases	Percentage
Hyalinization	18	15%
Myxoid change	13	10.83%
Multinucleated giant cells	01	0.83%

Other Features:

Foci of tubular adenoma – 06 cases (5%).

Foci of Benign phyllodes tumor – 08 cases (6.67%)

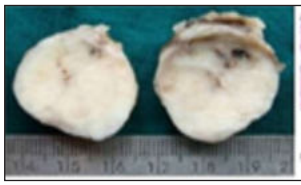

Fig 1: Fibroadenoma – Gross;

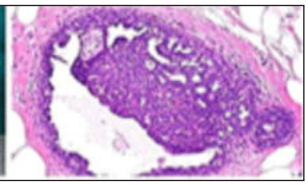

Fig 2: Florid Hyperplasia;

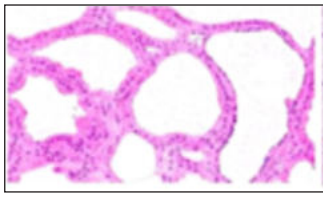

Fig 3: Apocrine Metaplasia;

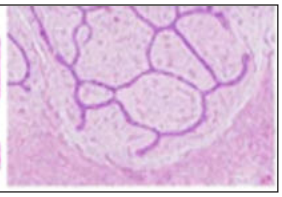

Fig 4: Intracanalicular Pattern

DISCUSSION

In this study 120 cases of fibroadenoma were analyzed for various associated histological changes like proliferative changes, fibrocystic changes and stromal changes. Fibroadenomas commonly noted in the age range of 20-30 years.[10,11,12] Purushothaman et al documented that 60% of fibroadenomas belongs to 2nd - 3rd decade. The mean age correlated with Carty NJ et al 1995 and Purushothaman rangaswamy et al. 2016. Out of 120 cases 60 cases (50%) were intracanalicular, 50 cases (41.67%) were peri canalicular and 10 cases (8.33%) were intra and pericanalicular type. The frequent histological change noted was hyperplasia.[13] The incidence of 13.7% of hyperplasia documented by Dupont et al 1994. In the present study 25% of hyperplasia noted, hence the study differed with Dupont et al study. The associated changes noted in the surrounding tissue and in focal areas of the lesion. Purushothaman rangaswamy et al documented that the hyperplasia within fibroadenoma was frequently noted. In the present study hyperplasia noted only in 25% of cases, hence our study differed with puroshothaman rangaswamy et al. 2016. Pages criteria used for hyperplasia, (including dispersed myoepithelial cells) curling up of epithelium of larger ducts were excluded with this study. Dupont and page DL et al. 1985 documented the risks for hyperplasia in breast parenchyma ranging from 2-5%. In this study only 0.3% risk noted and differed from above authors study. To identify the risk factor, preferable to include, if possible a rim of surrounding tissue while excising the fibroadenoma. In the present study, it was possible in phyllodes tumor. The incidence of complex fibroadenoma were more in Dupont et al and less in Kuijper et al. noted that there is tendency for more complex fibroadenomas with higher age[1]. the present study correlated with kuijper et al and puroshatam et al. Hormonal dependency and lactation were the possible reasons for fibroadenoma in the younger age group[15]. Our findings consistent with Stehr KG et al. 2004 and Hanna et al. stated that giant fibroadenoma is common on puberty16. Our findings are consistent with above authors.

Fibroadenomas are more common in urban background compared to rural background and in women with high socioeconomic classes[17]. Fibroadenomas most frequently occur in married than unmarried women. Rimsten et al. and Canny et al. 1988 observed the incidence of breast lesions were higher in the let breast than in the right[18].

The present study differed with Canny et al. Foster ME et al observed lesions commonly located in upper outer quadrent[19], but the present study revealed the location as lower quadrant. Usually fibroadenomas presents as a discrete solitary breast masses of 1-2 cms size and varying from 1-18 cms[20]. In our study only 2 cases of giant fibroadenoma noted in the age group of 20-30 years.

The present study correlated with Amshel CE et al. and Sibley E et al. 2001. These are fibroadenomas having histologic characteristic more than 3 mm diameter or with elements of sclerosing fibroadenosis, epithelial calcification or papillary apocrine metaplasia[6,21] were associated with 3.1 elevated risk of breast cancer with incidence being 0.002% to 0.0125%. In the present study 7% cases were complex fibroadenomas and only one case of DCIS noted in the age group of 30-40 years. Complex features observed in 2nd, 3rd and 4th decades were 2.4%, 12.63% and 20% respectively[8] Jehan et al. 2018. In the present study 2%, 12.1% and 18% were observed, hence our study correlated with jehan et al. 2018. Complex features increased with age and positive predilection for malignancy in future[8,22,23]. Our study revealed that complex fibroadenomas in the age range of 30-40 years.

Fibroadenoma with history of 18 months duration or below (8.04%) more complex fibroadenomas, while fibroadenomas more than 18 months showed only 5 (3.49%) cases of complex fibroadenoma. In the present study 7% and only 2% showed complex fobroadenomas hence correlated. No relationship with the duration of the lesion and complexity Jehan et al. 2018. According to the page et al 1987 and Holland et al[24] among the proliferative changes, epithelial hyperplasia is divided into mild, moderate and florid. Jehan et al, Wu, Yu-Ting et al. And Goodman ZD et al. found maximum cases with mild ductal hyperplasia followed by moderate and florid ductal hyperplasia, similar to the present study. Azzopardi et al. 1979, Jehan et al. 2018 revealed 35% of cases with apocrine metaplasia. Cystic changes, sclerosing adenosis, focal calcification, microglandular adenosis, pseudo lactational changes observed Kuijper et al. 2001 and Jehan et al. 2018. in the present study similar findings noted. Jehan et al. 2018 study revealed 13.6% of cases of sclerosing adenosis, out of which 11% were related with cystic change. In the present study apocrine metaplasia 13.34%, calcification 1.67%, cystic change 8.34% observed, hence differed from Jehan et al. In the present study, majority of cases revealed hyaline and myxoid change and do not have risk for malignant transformation.

Similar findings observed by Jehan et al. 2018. The basic features of intracanalicular, pericanalicular and mixed patterns observed not associated with risk of malignancy[8].

Kuijper et al. 2001 observed pseudo angiomatous stromal hyperplasia misdiagnosed as malignancy. In the present study, no such features observed. Our study revealed 1 case with multinucleated giant cells, necrosis and inflammatory cells. Jehan et al. 2018 study revealed no such changes. Out of 120 cases 70 cases of fibroadenoma along with (surrounding) adjacent tissue. At least 0.5 cm^2 of tissue should be present around the fibroadenoma to know the various parenchymal changes[14]. the present study revealed 5 cases o fibroadenoma with adjacent changes like tubular adenoma, focal areas of necrosis and granulation tissue. 8 cases showed features of benign phylloid tumor. Our study correlated with Jehan et al. 2018 and Thuruthiyath, Nithya et al. 2012. Kuijperet al. study revealed LCIS and DCIS in few cases. Our study revealed only 1 case of DCIS, hence correlated.

CONCLUSION

Fibroadenomas with various complex features are known for malignant transformation. The epithelial and stromal changes are essential so they should be included in the HPE report.

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