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Original Research Paper

Pathology

CLINICOPATHOLOGICAL STUDY OF FIBROADENOMA BREAST AT TERTIARY CARE CENTER

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ABSTRACT

Background: Fibroadenomas are commonest benign breast tumors and can show wide variety of cytomorphological and histomorphological features. Complex fibroadenoma can slightly increase risk of breast carcinoma and can lead to false positive diagnosis of malignancy on cytology. Proliferative epithelial changes in fibroadenoma also increase the risk of malignancy. Cellular fibroadenomas frequently offer diagnostic confusion with phyllodes on cytology hence meticulous histological examination is must. Aim of the study was to study clinical, cytomorphological and histomorphological features of fibroadenoma and correlate FNAC and core needle biopsy or excisional biopsy findings of fibroadenoma. **Methods** This is a 2.5 year retrospective and 0.5 year prospective study. Total 202 histopathologically confirmed cases of fibroadenoma were studied for clinical, cytomorphological and histomorphological features. **Result:** Of the202 cases of fibroadenoma most were in the age group of 21-30 years. Unilateral solitary breast lump was the commonest clinical presentation seen in 90.1%cases. Most fibroadenomas 58.41% were of size3-5cm, commonly located in upper outer quadrant47%,commonest histological pattern was pericanalicular pattern seen in 36%fibroadenoma. Myxoid change was the commonest stromal change seen in 60% cases whereas mild ductal epithelial hyperplasia was the commonest epithelial change seen in 10% fibroadenoma. We observed Fibrocystic changes like sclerosing adenosis seen in 18% fibroadenomas, cystic change seen in 17%fibroadenoma and apocrine metaplasiais seen in 15% fibroadenoma. We also reported one case of infarcted fibroadenoma. Cytopathological and histopathological diagnosis were concordant in 98% cases. **Conclusion:** Fibroadenomas can be reliably diagnosed by FNAC yet meticulous histopathological study for various epithelial proliferative changes and complex features in fibroadenoma increasing the risk of malignancy is very important. Comment on complex features and proliferative epithelial changes in report can guide surgeon in management.

KEYWORDS : Fibroadenoma, Cytopathology, Histopathology, complex features

Fibroadenomas are the most common benign breast tumors. They commonly present as painless palpable breast lumps . They are more common in young females and are less common in postmenopausal females. These benign biphasic tumors are composed of proliferating glandular and stromal components of breast[1]. Depending on proportion and relationship of epithelial and stromal component there are three main types of fibroadenoma – A]Intracanalicular- they exhibit intracanalicular pattern showing stromal proliferation compressing the ducts into slit like spaces B]- Pericanalicular - they have stromal proliferation around ductal spaces so that ducts remain round or oval on cut surface. C]Mixed- when features of both intracanalicular and pericanalicular fibroadenoma are present in single lump [2] .

Microscopically fibroadenomas are divided into 2 categories : 1] Simple fibroadenoma which are more common, less cellular and do not increase risk of malignancy. 2] Complex fibroadenomas which are less common and contain other components such as epithelial calcifications, apocrine metaplasia, sclerosing adenosis, and cyst larger than 3mm in diameter. Complex fibroadenomas can slightly increase risk of breast cancer[2]. Rarely epithelial components of fibroadenoma can undergo malignant transformation. Proliferative epithelial changes are related to further increase of risk by 3.88. Though benign tumors fibroadenomas can clinically and radiologically mimic malignant breast tumors leading to diagnostic challenges[3].The cytologic findings considered to be diagnostic of a fibroadenoma are abundant bipolar stromal cells, irregular flat sheets of epithelium composed of uniform, evenly spaced polygonal cells, so-called "antler horn" clusters, and fenestrated or "'honeycomb cohesive sheets composed of similar cells[Fig1][4]. Failure to appreciate the cytologic variability that may be found in cytology smears from fibroadenomas can lead to a false suspicion of or misdiagnosis of carcinoma [5]. FNAC is valuable and reliable in assessing fibroaadenomas but may offer diagnostic challenge in complex fibroadenomas. Core needle biopsy and excisional biopsy by providing more tissue can helps in reaching at definitive diagnosis[6]).

MATERIALS AND METHODS

The present prospective and retrospective study is carried out on histopathologically confirmed cases of fibroadenomas which were referred for Fine needle aspiration cytology and subsequent histopathological examination in department of Pathology at LTMMC &LTMGH, Mumbai during the period of October 2018 to September 2021. FNAC smears and histopathology slides of all histopathologically confirmed fibroadenoma cases were retrieved from archeives. Clinical records and slides were studied and analysed. In prospective cases patients referred to cytopathology section with breast lumps were examined and evaluated. Relevant clinical and radiological data was recorded in case record form including age, sex, presenting complaints, menstrual history, lactation, weight loss, parity, examination findings including size, quadrant location, mobility of lump ,radiological impression. out of total 667 benign breast diseases referred to cytopathology section 202 Fibroadenomas with subsequent histopathological examination were studied in present study.

RESULTS

Fibroadenoma was the commonest benign breast lesion accounting to 67.3% cases of total benign breast lesions reported during this period. Maximum number of cases 118 (58.41%) were between age group 21-30 years. Second frequently involved age group by fibroadenomas was 0-20years.[Table 1] Most of the cases 182(90.1%) cases were solitary fibroadenomas and were present in unilateral breast. Multiple and bilateral fibroadenomas were rare. [Table 1] 99(49%) fibroadenomas were present in right breast and 94(46.5%) fibroadenomas were present in left breast. 9(4.5%) fibroadenomas were bilateral. [Table 1]In present study maximum number of fibroadenoma i.e118 (58.41%) were ranging in size between 3-5cm, 70(35%)fibroadenomas were of size between 1-3cm and 14 (6.9%) fibroadenomas were larger

than 5cm.[Table 1].They were giant fibroadenomas and were commonly seen in adolecent females.

Table 1 Age, Laterality, Multiplicity, Quadrant distribution and Size distribution of Fibroadenoma in present study

		No of cases	Percentage of fibroadenomas
Age group in years	11-20	46	22.78%
	21-30	118	58.41%
	31-40	23	11.39%
	41-50	14	6.93%
	51-60	1	0.49%
	More than 60	0	0%
Laterality and multiplicity	Solitary unilateral fibroadenoma	182	90.1%
	Solitary bilateral fibroadenoma	14	6.93%
	Multiple unilateral fibroadenoma	4	1.98%
	Multiple bilateral fibroadenoma	2	0.9%
Side of breast	Right breast	99	49%
	Left breast	94	46.5%
	Bilateral breast	9	4.5%
Quadrant of breast	Quadrant ofbreast		
	Upper outer quadrant	95	47%
	Upper inner quadrant	42	21%
	Lower outer quadrant	42	21%
	Lower inner quadrant	23	11%
Size of fibroadenoma	1-3cm	70	35%
	3-5cm	118	58.41%
	More than 5cm	14	6.9%
Total		202	100%

Table 2 Spectrum of Histopathological Changes seen in Fibroadenoma

Histopathological changes	Number of fibroadenomas	Percentage of fibroadenomas
Stromal changes		
Pericanalicular pattern	72	36%
Intracanalicular pattern	69	34%
Mixed pattern	60	30%
Myxoid change	121	60%
Hyaline change	44	22%
Cellular fibroadenoma	9	4.9%
Multinucleated giant cells	2	1%
Infarct	1	0.5%
Fibrocystic epithelial changes		
Sclerosing adenosis	36	18%
Cysts	34	17%
Apocrine metaplasia	30	15%
Calcification	8	4%
Tubular adenoma	1	0.5%
Complex fibroadenoma	1	0.5%
Benign Proliferative Epithelial changes without atypia		
Mild ductal hyperplasia	20	10%
Moderate ductal hyperplasia	18	9%
Florid ductal hyperplasia	2	1%

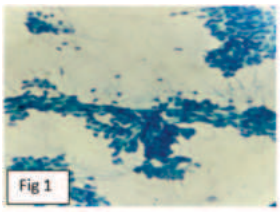
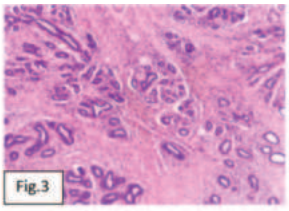


Fig 1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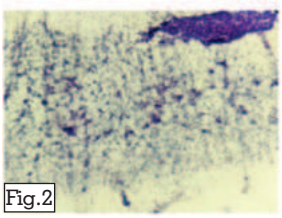
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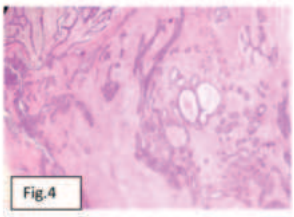
Fig.4

Histolopathologically commonest pattern in fibroadenoma observed in present study was Pericanalicular pattern seen in 36%fibroadenomas followed by intracanalicular pattern and mixed pattern [Table2].

145(72%) fibroadenomas showed hyaline change and 121(60%) fibroadenomas showed myxoid change in stroma 14 (6.9%) cases of fibroadenoma were showing cellular stroma and all of them were juvenile fibroadenomas. Majority of patients with juvenile fibroadenoma were adolescent girls and under 18 years of age. Multinucleated giant cell and infarction in fibroadenomas were infrequently seen in present study. one case of fibroadenoma with infarction [Fig 2]was reported during this study[Table2]. In present study most common proliferative epithelial change in fibroadenoma histopathologically seen was mild ductal hyperplasia seen in 20(10%) fibroadenomas [Table2]. Fibrocystic changes like sclerosing adenosis [Fig3]was seen in 36 (18%) fibroadenomas, cystic change was seen in 34(17%) fibroadenomas and apocrine metaplasiais was observed in 30(15%) fibroadenomas[Table2]. One case of suscpicious of papillary lesion on cytopathology was histopathologically confirmed as complex fibroadenoma. [Fig 4] .

Out of 202 cases cytohistological agreement was seen in 198(98%) cases. Two cases diagnosed as suspicious of malignancy on cytopathology were histopathologically confirmed as fibroadenoma with sclerosing adenosis Where as in other two cases FNAC was nondiagnostic and on histopathological examination of excisional biopsy fibroadenoma was reported.

DISCUSSION

In present study fibroadenoma were commonly found in age group 21-30 years. Fibroadenoma were seen more frequently under age of 40 years in present study, Echejoh Godwins et al study [7]and Tariq wahab Khanzada et al study [8].

Higher incidence in young and lower incidence in older perimenopausal age group is probably due to hormonal influence over breast tissue during reproductive years that causes proliferation and lump formation and involution at menopause. In younger patients rapid growth of fibroadenoma, more incidence of giant fibroadenoma, more cellularity of fibroadenoma on cytopathology and histopathology was observed in present study supporting the findings of Ajitha et al study[9]

Fibrocystic changes were common in 30-40 years age group similar to Echejoh Godwins et al study [7] and Tariq wahab Khanzada et al study [8] .

Abhijit MG et al [10]and Jawade KK et al [11]reported

findings.similar to our study regarding solitarity and multiplicity in fibroadenoma.

Findings of Present study regarding laterality of breast affected were comparable with Sreedhar Babu Kanaka et al [12] ,N J Carty et al [13 and P Rangaswamy et al [14] studies.

Maximum number of fibroadenomas were of size between 3-5cm. It was observed that fibroadenomas in youger patients were relatively more cellular and had faster growth rate, and had tendency to grow to larger size, whereas fibroadenomas in perimenopausal female were less cellular and were having relatively smaller size.

Fibroadenoma larger than 5cm ,defined as giant fibroadenoma were more common in younger females and showed tendency to grow rapidly. If present in adolescents they are termed juvenile giant fibroadenoma. In present study 6.9% giant fibroadenomas were observed. Majority of them in age group less than 21 years. Similar findings were reported by Ajitha et al[9], P Ramaswamy et al[14] and R Poojasree et al [15].

Histopathologically commonest pattern observed in fibroadenoma was pericanalicular pattern seen in 36%fibroadenomas followed by intracanalicular pattern seen in 34%fibroadenomas and mixed pericanalicular and intracanalicular pattern in seen 30% fibroadenoma cases.

Myxoid change was common in present study similar to Jehan Nizam et al [16],whereas hyaline change was relatively less common alike Sreedhar Babu Kanaka study[12]. In conventional fibroadenomas the stromal cellularity was observed similar to that of normal perilobular stroma without atypia and without or minimal mitotic activity .These stromal changes do not increase risk of malignancy.

Cytopathologically and histopathologically juvenile fibroadenomas showed increased stromal cellularity. Among juvenile fibroadenomas frequent mitosis, prominent pericanalicular pattern and mild ductal hyperplasia were noted.. Younger age and absence of cytological atypia helped us in ruling out benign phyllodes tumor on cytopathology in such cases.

In our study one case of 38 year female with breast lump cytopathologically showed clusterered and dissociated benign duct epithelial cells with slightly enlarged nuclei with scant cytoplasm and many dissociated columnar cells, foamy macrophages and collagen like material admixed with blood and was reported as suspicious of papillary lesion of breast. Histopathologicaly lesion showed features of complex fibroadenoma. Thus FNAC can some time lead towards false positive diagnosis of malignancy and detail histopathological examination is crucial.

In present study most common proliferative epithelial change in fibroadenoma histopathologically seen was mild ductal hyperplasia seen in10% fibroadenoma followed by moderate ductal hyperplasia seen in 9%fibroadenomas and florid ductal hyperplasia seen in only in 3%fibroadenomas. Arno Kujper et al [17] and Sreedhar Babu Kanaka et al [12]reported higher incidence of moderate ductal hyperplasia. Jehan Nizam et al [16] reported higher incidence of mild ductal hyperplasia. Moderate ductal hyperplasia was reported in more cases in Arno Kujper et al study[17]. No case of atypical hyperplasia,,atypical lobular hyperplasia, LCIS, DCIS was reported in our study. Jehan Nizam et al [16]reported 1.7% cases of DCIS arising in fibroadenoma.

One case of fibroadenoma in pregnant female with spontaneous infarction was also reported in present study. Spontaneous infarction can rarely complicate fibroadenoma and such a lesion may mimic carcinoma in imaging studies, especially ultrasonography. [18]"Worrisome" cytologic alterations on FNA from infarcted fibroadenomas can be seen. [19] Infarction can occur in proliferative lesions other than fibroadenomas such as in florid sclerosing adenosis . This is most likely to occur during pregnancy when the epithelium in sclerosing adenosis may exhibit pronounced hyperplasia, cytologic atypia, and mitotic activity. [20]

In two cases FNAC diagnosis was reported as suspicious of malignancy.1 patient was 35 year old and other was 44 year old. on palpation they had hard ,fixed and non mobile lumps. Cytosmears showed few duct epithelial cells with pleomorphism and high nucleocytoplasmic ratio. Final histopathology report was fibroadenoma with sclerosing adenosis.

CONCLUSION

Fibroadenomas are the commonest benign breast lesions seen in reproductive age group females FNAC is reliable and cost effective investigation in diagnosing fibroadenomas . When done by experienced cytopathologist diagnostic accuracy is very high. Meticulous histopathological examination to study various epithelial proliferative changes and complex features in fibroadenoma increasing the risk of malignancy is very important. Reporting of complex features and proliferative epithelial changes can alert surgeons regarding risk of malignancy and guide them regarding close follow up and appropriate treatment.

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