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FNAC & Histopathological Correlation of Benign Breast Lesions

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Abstract: ***The overall diagnostic accuracy of cytology in diagnosing benign breast lesions was found to be 89.7% in this study. To study the cytomorphological spectrum of benign breast lesions on fine needle aspiration cytology & correlate FNAC findings with histopathological findings wherever available. Accuracy of Cytology for fibroadenoma was 92.1%, for fibrocystic disease was 88.9% and for gyanecomastia, abscess, phyllodes tumors was 100%. FNAC helps in preoperative evaluation of breast lumps without surgical intervention. However, overlapping features of different lesions can also cause cytodiagnostic errors. There exists a high degree of correlation with histopathological findings. In cases of discordance, histopathology remains gold standard diagnostic modality.***

Keywords: Benign breast lesions, FNAC, Histopathology

1. Aims & Objectives

a) To study the cytomorphological spectrum of benign breast lesions on fine needle aspiration cytology.
b) To assess the age, sex and site predilection of different benign breast lesions
c) To correlate FNAC findings with histopathological findings wherever available.

2. Material & Methods

All patients with clinically diagnosed breast lumps referred to the pathology department of tertiary care hospital of Mumbai for FNAC between period July 2015 to June 2017 were taken up for this study. Written informed consent from patients included in the study and clearance was taken from institute's ethical committee. The study was prospective and included all inflammatory and benign breast lesions. Malignant lesions on cytology were excluded. Inpatients and out patients who presented with history of breast lump were taken up for study. Detailed clinical data was noted as per proforma with emphasis on history, physical examination and relevant investigations. FNAC was done using 10 ml disposable syringe and 23G needle. Smears prepared were fixed in 95% methanol and stained with H&E, PAP stain. Air dried smears were stained with ZN stain & Giemsa stain. Reporting of the smears was done by the Principal investigator (first author) and co-investigators (second and third authors). Excision biopsies & lumpectomy specimens were examined grossly for their size, shape, colour and consistency. Cut surface of the lesion was noted for colour, size, secondary changes like- hemorrhage, necrosis, cystic change, fibrosis etc. The specimens were fixed in 10% formalin for 24 to 48 hours. Grossing of the specimens was done and sections underwent processing in tissue processor after which paraffin blocks were prepared. Sections taken were mounted on glass slides and stained with Hematoxylin & Eosin stain. PAS and ZN stain wherever needed were done. Reporting of histopathology cases was done by the principal and co- investigators keeping them blinded to FNAC diagnosis.

Table 1: Histopathological Correlation of Cytological Diagnosis

Diagnosis on cytology/ Diagnosis on HP	Fibroadenoma	Adenosis	Fibrocystic disease	Gynaecomastia	Abscess	Granulomatous Mastitis	TB Mastitis	Foreign Body Granulomatous Inflammation	Chronic Inflammatory cyst	Duct Ectasia	DCIS	Benign Phyllodes	Lipoma	Sclerosing Adenosis	Adenomyoepithelioma	Diabetic Mastopathy	Total
Fibroadenoma	47	1	2									1					51
Fibrocystic Disease	1		8														9
Gynaecomastia				1													1
Abscess					1												1
Granulomatous Mastitis						2	2	1									5
Benign Cystic lesion									1								1
BPBD with atypia	1									1	1						3

Phyllodes-benign												3					3
Lipoma													1				1
Sclerosing Adenosis														1			1
Adenomyoepithelioma															1		1
Lymphocytic Mastitis																1	1
Total	49	1	10	1	1	2	2	1	1	1	1	4	1	1	1	1	78

3. Observation & Results

310 benign cases out of the total 365 breast lesion patients (84.94%) referred for FNAC were included in this study. 279 cases (90%) were female patients whereas 31 cases(10%) were males. 80.32% cases fell in reproductive age group. Maximum cases were from the age group of 21-30 years.The most common clinical presentation was painless breast lump in 205 patients (66.12%). Majority of the benign lesions were found in the right breast(46.13%). Bilateral lumps were present in 12.26% cases. Majority of the lesions were found in the upper half of the breast(42.5% in the upper outer quadrant and 14.1% in the upper inner quadrant). Common benign cytology diagnosis were Fibroadenoma (52.58%), Fibrocystic disease (12.9%), Gynaecomastia (9.68%), Abscess(8.73%) and Granulomatous mastitis (5.48%). 78 out of 310 cases were received for histopathological examination.68 cases showed concordance of histopathology with cytology while 9 cases showed discordance. The diagnostic accuracy of FNAC was 89.7%. Accuracy of Cytology for fibroadenoma was 92.1%, for fibrocystic disease was 88.9% and for gyanecomastia, abscess, phyllodes tumors was 100%.

4. Discussion

The percentage of benign breast lesions on cytology in the present study was 84.94% which was in correlation with the studies done by Shreshta et al [1](87.5%). A relatively lower incidence of benign breast lesions in other studies is explained by Bhargava GS et al [2]that they go unreported, especially in rural population due to cultural barriers and financial constraints. 10 % cases of benign breast lesions in this study were males which was similar to the incidence of male benign breast lesions in study by Shanthi V et al [3]. Majority of patients in this study fell in age group of 21 to 30 years(37.09%) which correlated with the study by Gupta A et al [4](38.75%). Painless breast lump(66.12%) was the most common clinical presentation followed by painful lump(27.1%). Our study correlates with the study by Sangma M et al [5]which also reported almost similar incidence of clinical presentations. The incidence of benign lesions in the right breast was 46.13% and in the left breast was 41.61%. This was in correlation with other studies. However, in study by Shashikala V et al [6]left breast was more commonly involved. Upper outer quadrant (42.5%)was more commonly involved by benign breast lesions, Ackerman et al [7]found 50% of patients with breast lump involving the upper outer quadrant. 52.58% of benign breast lesions in the present study were reported on cytology as fibroadenomas which was in concordance with the incidence of fibroadenomas as reported by Chalya P et al [8]. 4 out of 5 cases of bilateral gynaecomastia in the present study had history of alcoholism or other liver disease. Cavanaugh G et al [9]found the prevalence of gynaecomastia in cirrhotic patients to be 44%. Out of 17 cases of granulomatous mastitis, 15 showed non caseating granulomas with ZN stain for AFB negative, 2 cases showed caseating granulomas with multinucleate giant cells and AFB positivity. Gupta R et al [10]stated that demonstration of AFB in TB mastitis is usually difficult and for the diagnosis, demonstration of caseating granulomas and multinucleate giant cells in breast tissue is sufficient. Mammary TB is a relatively rare condition with an estimated prevalence of 0.1% of breast lesions examined histologically. Benign phyllodes tumour constituted 1.61% of all the benign lesions which was in concordance with the incidence in study by Forae G et al [11.] A single case of lymphocytic mastitis reported on cytology had history of diabetes mellitus and histologically confirmed as diabetic mastopathy. This case was labelled as breast abscess on USG. The present study also reported one case each of Sclerosing Adenosis and Adenomyoepithelioma on cytology which correlated with histopathology diagnsosis. Of 51 cases confirmed histologically as fibroadenomas, on cytology 47 were reported as fibroadenomas, 1 was reported as adenosis, 2 were reported as fibrocystic disease and 1 was reported as phyllodes. Of 9 cases reported as fibrocystic disease on histology, 8 cases were also reported as same on cytology while 1 case was reported as fibroadenoma. Of 5 cases of granulomatous mastitis reported on cytology, 2 cases on histology retained the diagnosis, while 2 cases were confirmed as TB mastitis and 1 case was reported as foreign body granulomatous inflammation. 3 cases of Benign parenchymal breast disease with atypia reported on cytology were classified as fibroadenoma,duct ectasia and DCIS on histology.

5. Conclusion

The overall diagnostic accuracy of cytology in diagnosing benign breast lesions was found to be 89.7% in this study. FNAC helps in preoperative evaluation of breast lumps without surgical intervention. However, overlapping features of different lesions can also cause cytodiagnostic errors. There exists a high degree of correlation with histopathological findings. In cases of discordance, histopathology remains gold standard diagnostic modality.

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