

Role of Fine Needle Aspiration Cytology (FNAC) in Diagnosis of Breast Lesions

Manal Ashraf Ali, Neetu Kumar, Farah Jalaly Meenai

Department of Pathology, Chirayu Medical College, Bhopal

ABSTRACT

Accurate diagnosis of breast lesions requires triple assessment approach comprising of clinical, radiological and pathological examination. This was a retrospective study of 55 cases of breast lesions diagnosed over a period of 6 months. Diagnosis on FNAC was correlated with that of histopathology wherever available. Out of 55 cases of breast lesions, 27 cases were malignant, 16 were of proliferative breast lesion without atypia (12 cases of fibroadenoma, two cases each of Phyllodes tumor and Ductal papilloma), 7 were benign lesions including composed of three cases of fat necrosis, two cases each of granulomatous mastitis and benign cystic lesion consistent with fibrocystic disease. Three cases were diagnosed as proliferative breast lesion with atypia of which one turned out to be low grade duct carcinoma on histopathology and remaining two were fibroadenomas. Histopathological correlation was present in 46 cases. The sensitivity and specificity of FNAC was 100% and 88.9% respectively in diagnosis of the breast lesions. Fine needle aspiration cytology is an easy, rapid, cost effective and accurate method for diagnosis of breast lesions.

KEY WORDS: breast lesions, FNAC, histopathological

INTRODUCTION:

Breast masses are one of the most common lesions from where fine needle aspiration cytology is performed. There is wide variety of lesions encountered in breast that ranges from inflammatory to benign to malignant lesions. Commonest approach in diagnosis of breast lesions is triple assessment approach composed of clinical, radiological and pathological diagnosis. The diagnostic accuracy of this triple assessment exceeds 99% in breast lesions when all three show concordant diagnosis^[1-2].

Preoperative evaluation is necessary in appropriate management of breast masses so as to triage them as benign or malignant. Core needle biopsy is being used nowadays in order to obtain confirm diagnosis as well as to obtain tissue for hormonal status of the tumor. However, core needle biopsy is costlier, more traumatic and has a long

processing time as compared to FNAC and also has a risk of seeding of tumor along the needle track^[3-4].

Although most breast lesions diagnosed are benign, the malignant breast lesions are increasing nowadays. Breast cancer is now the commonest malignancy in women worldwide as well as in India^[5-6].

Fine needle aspiration is an important procedure in diagnosis of the breast lesions as it helps in rapid diagnosis and thus expediting the management of the cases. It can easily differentiate benign from malignant lesions and thus segregating the cases which require prior attention. FNAC in combination with clinical and radiologic findings may help in diagnosing most of the cases. In a low resource setting FNAC can help in diagnosing most of the cases and should be performed routinely.

MATERIALS AND METHODS:

This was a retrospective observational study of 55 cases of breast lumps on which FNAC was performed either routinely or under ultrasound guidance during last 6 months. FNAC was performed by pathologist under all aseptic precaution using a 23 G needle and aspiration technique. Slides were stained

Corresponding Author:

Dr Neetu Kumar

Assistant Professor,

Department of Pathology,

Chirayu Medical College,

Bhopal - 462030 (MP), India

Phone No.: +91 7999529646

E-mail: nkumar1570@yahoo.com



were stained with Giemsa and Papanicolaou stains. The records of subsequent core biopsy or excisional biopsies were retrieved and compared with cytological findings for correlation. The histopathological diagnosis was considered as gold standard and sensitivity and specificity of FNAC was evaluated.

RESULTS:

In this study, out of 55 cases of breast lesions, most of the cases were malignant (25 cases of duct carcinoma, 1 case of lobular carcinoma and one case of spindle cell sarcoma). Fourteen cases showed features of a benign fibro-epithelial lesion of which twelve cases were diagnosed as Fibroadenoma and two cases as benign Phyllodes tumor. Three cases showed features of traumatic fat necrosis. Two cases of granulomatous mastitis, Ductal papilloma and benign cystic lesion consistent with fibrocystic disease were diagnosed. Three cases were diagnosed as proliferative breast lesion with atypia of which one turned out to be low grade duct carcinoma on histopathology (was considered as true positive as cytologist mentioned atypia and excision biopsy was advised) and remaining two were fibroadenomas (were considered as false positive). Two cases showed only blood and were inadequate for opinion.

Histopathological correlation was present in 46 cases. FNAC helped in diagnosis of all the lesions correctly and the sensitivity and specificity of FNAC was 100% and 88.9% in diagnosis of the breast lesions.

DISCUSSION:

FNAC is the useful tool in pre-operative diagnosis of breast lesions. In this study the FNAC was able to provide diagnosis in 98% of cases while it was inadequate in only one case. According to English literature, the inadequate cases varies from 0-57% cases and is dependent on many factors like lack of technical experience, hemorrhagic smears, sclerosed lesion etc^[7-8].

In this study the most common diagnosis were malignant breast lesions comprising of approximately 49% of cases and is concordance with study performed by Sankaye SB et al.⁹ and is discordant with many others.^[10-12]

This is due to the fact that our institute has a dedicated cancer unit. The most common diagnosis was duct carcinoma in 25 cases. The cytological features that favored a diagnosis of duct carcinoma were nuclear enlargement, hyperchromasia, nuclear pleomorphism and

Table 1: Cyto-Histo correlation of cases.

Cytological Diagnosis	Cases	Histopathology	Concordant	Discordant
Inadequate	2	0	--	
Benign	7	0	--	
Proliferative breast lesion without atypia (Fibroadenoma, Phyllodes, papilloma)	16	16	16 (True negative)	0
Proliferative breast lesion with atypia (suspicious)	3	3	1 (True positive)	2 (False positive)
Malignant	27	27	27 (True positive)	0
Total	55	46	44	2

Sensitivity- TP/TP+FN, (28/28+0)x 100= 100%, Specificity- TN/TN+FP= (16/16+2)x 100= 88.9%

duct formation (Figure 1). One case was of lobular carcinoma and showed smaller dissociated cells in cords and loosely cohesive sheets with scanty to moderate cytoplasm (Figure 2). Occasional signet ring type of cells and intracytoplasmic lumina were also seen. Nuclear pleomorphism and bizarre forms were absent. One case was diagnosed as spindle cell sarcoma and it showed cellular smears composed of many spindled cells in an abundant myxoid background. A differential diagnosis of benign proliferative lesion like nodular fasciitis was considered, however it was ruled out due to presence of few atypical mitotic figures. In all the cases histopathological follow up was present and was concordant with cytological diagnosis. Fourteen cases were diagnosed as benign fibroepithelial lesion composed of proliferation of both epithelial as well as stromal component. Out of these 12 cases were diagnosed as Fibroadenoma and two cases were benign phyllodes tumor. The cytological features which favor a diagnosis of fibroadenoma were tightly cohesive clusters of benign duct epithelial cells forming staghorn type of arrangement along with background showing many bare nuclei and stromal fragments with less cellularity. The features which favored Phyllodes tumor were presence of spindle shaped cells in background along with cellular stromal fragment. Three cases showed abundant neutrophils, histiocytes and

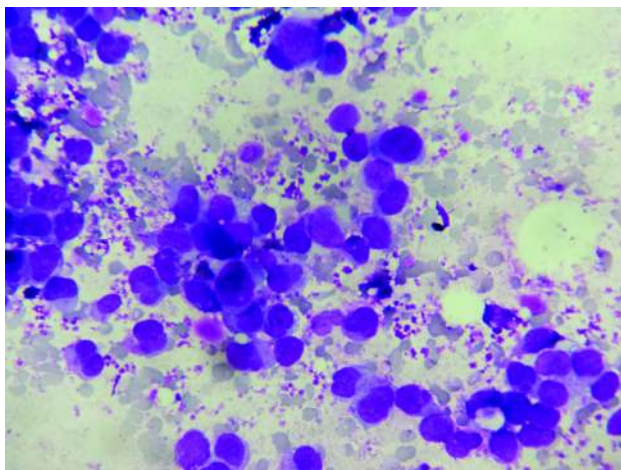


Figure 1: Giemsa stained smears showing dissociated large cells with hyperchromasia and high nucleocytoplasmic ratio suggestive of duct carcinoma (400x).

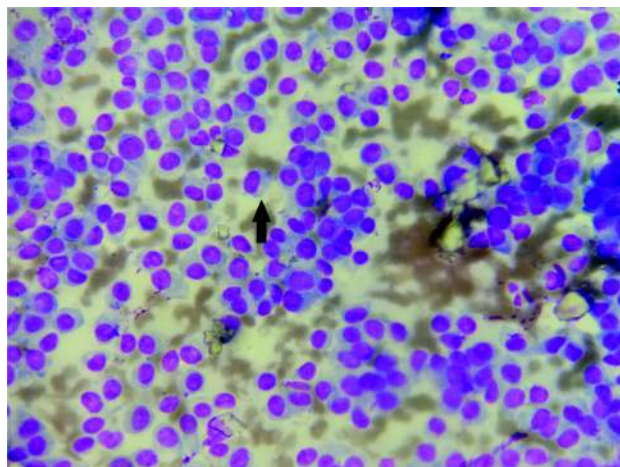


Figure 2: Giemsa stained smears from a case of lobular carcinoma showing dissociated small monomorphic loosely cohesive clusters of cells with many showing plasmacytoid (arrow) or eccentric nucleus. (400x).

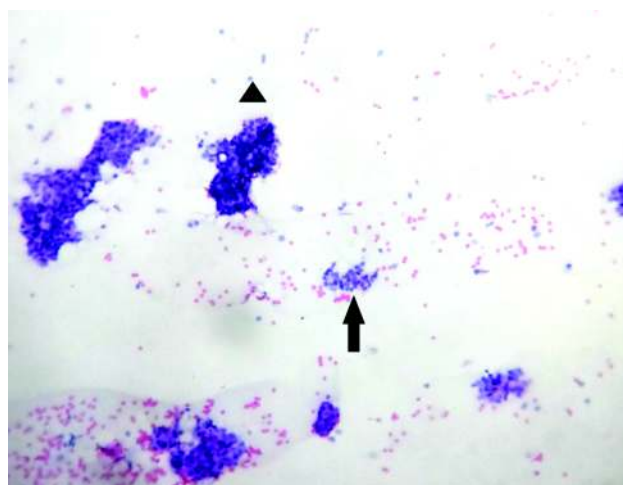


Figure 3- Papnicolaou stained smears showing tightly cohesive clusters of cells with few loose clusters resembling gland (arrow) and with nuclear enlargement. Few bare nuclei (arrow head) are also seen in the background (400x).

necrotic adipocytes against a background of fatty vacuoles and thus diagnosed as fat necrosis. Two cases of ductal papilloma were diagnosed based on the presence of papillaroid fragments of epithelial cells and columnar cells. Two cases showed granulomatous inflammation and two cases showed cystic fluid with many macrophages and apocrine cells. These cases were managed medically and responded to treatment. Three cases were diagnosed as proliferative breast lesion with atypia based on the presence of cellular dissociation and nuclear atypia and excision biopsy was advised. Out of these three, one case

was diagnosed as duct carcinoma on histopathology and two were diagnosed as fibroadenoma with areas of sclerosingadenosis which was interpreted as loose clusters of epithelial cells with atypia on cytology (Figure 3). However, no evidence of in situ or invasive malignancy was seen. Observed specificity (88.9%) is due to the fact that we have diagnosed the fibroadenomas as lesion with atypia and on retrospective analysis; these lesions showed foci of adenosis thus giving dissociated cells on cytology with atypia. Care should be taken while evaluating dissociated cells in presence of tightly cohesive clusters and bare nuclei and biopsy should be advised to avoid unnecessary surgery. Only two cases were inadequate for diagnosis.

CONCLUSION:

FNAC can serve as rapid cost effective and valuable diagnostic tool which can help in segregating the benign from malignant cases. Correlation with clinical and radiological findings may further aid in accurate diagnosis of the lesion. This study showed data from Central India demonstrating the spectrum of lesions diagnosed on FNAC and its role in accurately diagnosing the lesions.

REFERENCES:

- Ahmed I, Nazir R, Chaudhary MY, Kundi S. Triple assessment of breast lump. *Journal of the College of Physicians and Surgeons--Pakistan: JCPSP* 2007;17(9):535-8.
- Al-Mulhim AS, Sultan M, Al-Mulhim FM, Al-Wehedy A, Ali AM, Al-Suwaigh A, Al-Dhafiri S, Baymen O. Accuracy of the "triple test" in the diagnosis of palpable breast masses in Saudi females. *Ann Saudi Med* 2003;23(3-4):158-61.
- Ellis IO, Humphreys S, Michell M, Pinder SE, Wells CA, Zakhour HD. Best Practice No 179. *J Clin Pathol* 2004 1;57(9):897-902.
- Garbar C, Curé H. Fine-needle aspiration cytology can play a role in neoadjuvant chemotherapy in operable breast cancer. *ISRN Oncology*. 2013;10:2013.
- Siegel RL, Miller KD, Jemal A. Cancer statistics, 2015. *CA: A Cancer. J Clinicians* 2015;65(1):5-29.
- Malvia S, Bagadi SA, Dubey US, Saxena S. Epidemiology of breast cancer in Indian women. *Asia-Pacific. J Clin Oncol* 2017;13(4):289-95.
- Feoli F, Paesmans M, Van Eeckhout P. Fine Needle Aspiration Cytology of the Breast. *Acta Cyto* 2008;52(2):145-51.
- Zardawi IM, Clark D, Williamsz G. Inflammatory Myo. broblastic Tumor of the Breast. *Acta Cyto* 2003;47(6): 1077-81.
- Sankaye SB, Dongre SD. Cytological study of palpable breast lumps presenting in an Indian rural setup. *Indian journal of medical and paediatric oncology: Official. Indian J Med Paediatr Oncol* 2014;35(2):159.
- Mohammed AZ, Edino ST, Ochicha O, Alhassan SU. Value of fine needle aspiration biopsy in preoperative diagnosis of palpable breast lumps in resource-poor countries: A Nigerian experience. *Ann Afr Med* 2005;4:19-22.
- Yeoh GP, Chan KW. Fine needle aspiration of breast masses: an analysis of 1533 cases in private practice. *Hong Kong Med J* 1998;4:283-8.
- Park IA, Ham EK. Fine needle aspiration cytology of palpable breast lesions. *Acta Cyto* 1997;41(4):1131-8.

Cite this article as: Ali MA, Kumar N, Meenai FJ: Role of Fine Needle Aspiration Cytology (FNAC) in Diagnosis of Breast Lesions. *PJSR*;2018:11(1):24-27.
 Source of Support : Nil, Conflict of Interest: None declared.