

Cytohisticorrelation of Breast Lesions: An Assessment of Diagnostic Efficacy of FNA as a Tool for Preoperative Diagnosis of Benign and Malignant Breast Lesions

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ABSTRACT

Introduction: A palpable breast mass is the most common presentation of breast lesions in women. FNAC is a minimally invasive technique which provides rapid and accurate diagnosis and serves a cost-effective tool for the diagnosis of breast masses. We conducted a two year study to evaluate the accuracy of FNA in diagnosis of breast masses and to see the correlation of FNAC results with histopathological findings.

Materials and Methods: A two year retrospective study was conducted in the Pathology Department of a teaching institute in North east India. The cyto-histo correlation of all the palpable lumps was calculated and sensitivity and specificity of FNA as a diagnostic tool was calculated for benign and malignant lesions taking histopathological study as the gold standard.

Results: Of all the cases that came for FNAC with breast lump, histopathology was done in 41 cases only. 25 cases turned out to be malignant and 16 were benign. The most common lesion encountered was Infiltrating duct carcinoma of breast (24 cases) followed by fibroadenoma (11cases). Cytohisticorrelation was positive in 28 cases (68.3%). The correlation for histologically benign lesions was 56.25% while for malignancy (on biopsy), it was 80%.The sensitivity and specificity for malignant lesions were 100% with a positive predictive value (PPV) of 100% and a negative predictive value

(NPV) of 80%. Benign lesions had a sensitivity of 100% and a specificity of 86%. PPV and NPV for benign lesions were 80% and 100% respectively.

Conclusion: Although a good correlation between cytology and histology was found, particularly for malignant lesions, histopathological examination is important to rule out false positive and false negative cases and remains the gold standard for diagnosis.


Keywords: Breast, Cytohisticorrelation, Fine Needle Aspiration.

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INTRODUCTION

A palpable breast mass is the most common presentation of breast lesions in women. While most of these lesions are benign, pathological confirmation is essential to rule out malignancy as a clinically palpable mass is the usual presentation of patients with carcinoma of the breast. With an annual incidence of approximately 1,44,000 new cases of breast cancers in India, carcinoma breast has now become the most common female cancer in urban India.¹

It has been suggested that women with a breast lump should undergo a TRIPLE TEST comprising of clinical Examination by experienced clinician, breast imaging: Bilateral Mammogram and pathological examination in the form of Fine Needle Aspiration Cytology (FNAC) / Core biopsy (Ideal) and Excision Biopsy/Incision biopsy if indicated.² FNAC is a minimally invasive technique which provides rapid and accurate diagnosis and serves a cost-effective tool for the diagnosis of breast masses. The advantages of the FNA procedure also include a fairly precise

diagnosis, exceptional patient acceptance, and also a minimal to no morbidity.³

We conducted a two year study to evaluate the accuracy of FNA in diagnosis of breast masses and to see the correlation of FNAC results with histopathological findings.

MATERIALS AND METHODS

A two year retrospective study was conducted in the Pathology Department of a teaching institute in North east India. All cases which came to the cytology section were noted and only those cases which also came for histopathological examination were included in our study. The slides were reexamined and their cytomorphology and histopathological findings were noted. The cyto-histo correlation of all the palpable lumps was calculated and sensitivity and specificity of FNA as a diagnostic tool was calculated for benign and malignant lesions taking histopathological study as the gold standard.

RESULTS

Of all the cases that came for FNAC with breast lump, histopathology was done in 41 cases only. 25 cases turned out to be malignant and 16 were benign. The most common lesion encountered was Infiltrating duct carcinoma of breast (24 cases) followed by fibroadenoma (11cases). Other cases seen were infiltrating lobular carcinoma, adenomyoepithelioma, phylloides tumor, benign fibrous histiocytoma, fibrocystic disease of breast. The FNA diagnosis included duct carcinoma, fibroadenoma, benign proliferative breast disease with and without atypia, phylloides tumor. Cytohistocorrelation was positive in 28 cases (68.3%). The correlation for histologically benign lesions was 56.25% while for malignancy (on biopsy), it was 80%.

4 cases which were given as benign on FNA turned to be malignant on biopsy, while all cases which were reported as malignant came out to be malignant. The sensitivity and specificity for malignant lesions were 100% with a positive predictive value (PPV) of 100% and a negative predictive value (NPV) of 80%. Benign lesions had a sensitivity of 100% and a specificity of 86%. PPV and NPV for benign lesions were 80% and 100% respectively.

The age of the patients ranged from 14yrs to 65yrs. The mean age of patients with benign disease was 28.4 yrs while that for malignancy was 43.5 yrs. The youngest patient with malignancy was 20 years old.

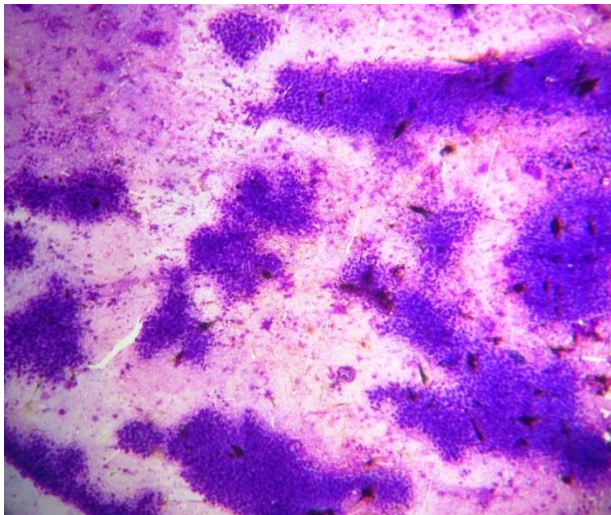


Fig 1(a): Showing FNA findings of fibroadenoma breast

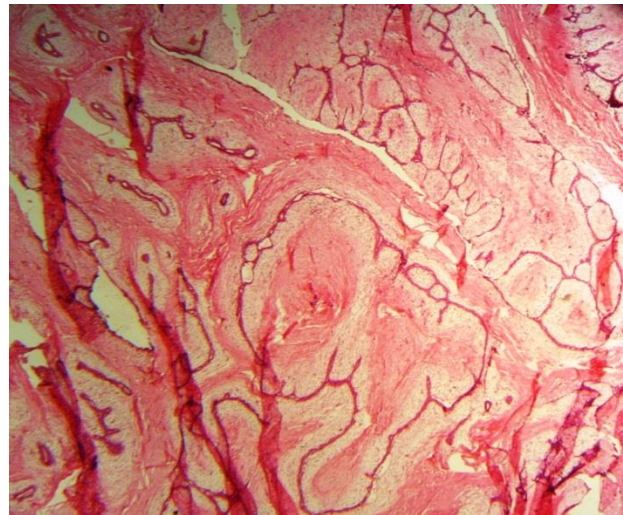


Fig 1(b): Showing a tissue section of fibroadenoma breast (H&E,10X)

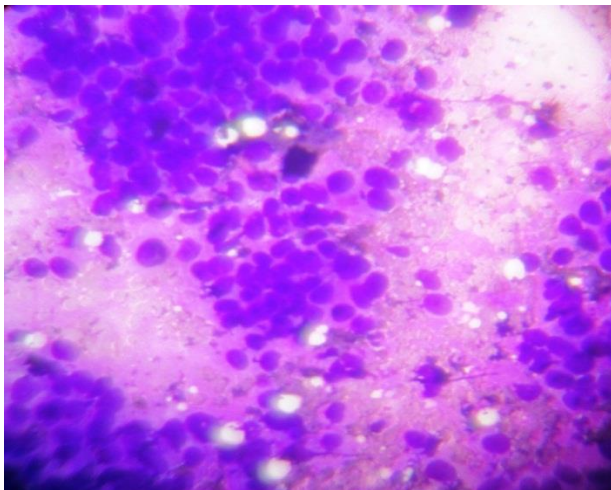


Fig 2(a): Showing ductal carcinoma breast on FNA

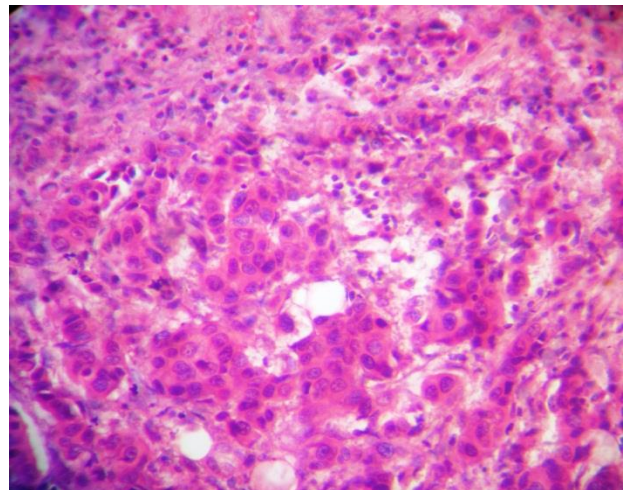


Fig 2(b): Showing tissue section of infiltrating duct carcinoma (H&E,40X)

DISCUSSION

Ever since Martin and Ellis first used FNAC in breast lesions in 1930, it has been established as an important tool in the evaluation of breast lesions. The aim of FNA is to confirm a radiological and clinical benign lesion avoiding unnecessary surgery and to confirm a malignant diagnosis and allow definite treatment planning.⁴ In our study the FNA findings were correlated with biopsy results. The most common finding was malignancy. 61% of our cases were malignant and only 39% were benign. This could possibly be due to the fact that many of the cases which

were cytologically benign did not go for excision biopsy. Studies by Mehra K et al,⁵ Pattari et al⁶ also noted malignant lesions to be commoner than benign lesions in similar studies.

The most common benign lesion was fibroadenoma. All cases cytologically diagnosed as fibroadenoma were confirmed on histopathology except one case which came out to be fibrocystic disease of breast. Proliferative breast disease was the second most common benign diagnosis on cytology. 3 cases of proliferative breast disease with atypia were reported as invasive

ductal carcinoma on tissue biopsy while one case with mild atypia was reported as fibrocystic disease and another turned out to be fibroadenoma. It should be noted therefore that some amount of atypia may be seen in fibroadenomas and other proliferative breast lesions as well. One case of proliferative breast disease without atypia was a duct carcinoma on biopsy, others were diagnosed as fibroadenomas on biopsy. Three cases were reported as benign phylloides tumor on FNA of which only one was histologically confirmed as phylloides. The remaining two were reported as benign fibrous histiocytoma and adenomyoepithelioma on histological examination. Pandey et al in their study noted that benign breast lesions on cytology 36 (59.1%) were fibroadenoma, 2 (3.3%) were benign phylloides tumor, one (1.6%) was fibroadenosis, one (1.6%) was fibrocystic disease, one (1.6%) was lactating adenoma and one (1.6%) was chronic lymphocytic mastitis.⁷ In our study, no cases of mastitis were seen as these did not come for histopathological exam and thus were excluded from our study.

There were 21 cases reported as malignant on FNA and all these turned out to be malignant on biopsy. Thus the positive predictive value for malignant lesions was 100%. One case reported as duct carcinoma on FNA turned out to be invasive lobular carcinoma.

The cytohistocorrelation for cytologically malignant lesions was 100% while for cytologically benign lesions, 25% of these lesions turned out to be malignant on subsequent biopsy. Overall, the cytohistocorrelation was found to be 68.3% when specific diagnosis were considered while the same came out to be 93% when benign vs malignancy was considered.

The sensitivity, specificity, PPV, NPV for malignant lesions were 100%, 100%, 100%, 80% respectively while for benign lesions it was 100%, 86%, 80%, 100% respectively. In the study by Mehra K et al.⁵ the sensitivity, specificity, PPV, NPV for malignant lesions was 93.8%, 100%, 100%, 91.4% respectively. Tiwari M⁸ in one study found overall sensitivity and specificity for both benign and malignant lesions to be 83.3% and 100% respectively while in a study by O Neil S et al,⁹ it was found to be 97% and 78% respectively.

The age of our patients ranged from 14yrs to 65 years. While the average age of patients with benign lesions was 28.4 yrs, that for malignancy was 43.5 yrs. However malignancy was seen as early as 20 year of age. The mean age of patients with breast lump who came for cytology and biopsy was 37.6 years. In the study by Pandey et al,⁷ the age range was 15-75 years with mean age being 30.8 years while in a study by Koirala et al¹⁰ age range was 15-67 years with mean age of 36.2 years which is similar to our study.

A good correlation was found between cytological and histological finding, particularly for malignant lesions. Technical problems in procedure, misdiagnosis or the presence of mixed benign and malignant features are some of the causes of a false negative diagnosis.¹¹

The discrepancies can be minimised by use of guided aspiration techniques and a holistic approach like the triple test. The experience of the cytopathologist is also an important factor in improving the diagnostic accuracy of FNA as a routine diagnostic procedure in evaluation of breast lumps.

CONCLUSION

FNAC is a valuable tool in evaluation of breast lumps due to its simplicity, cost effectiveness, rapidity and low patient morbidity. Although a good correlation between cytology and histology was found, particularly for malignant lesions, histopathological examination is important to rule out false positive and false negative cases and remains the gold standard for diagnosis.

REFERENCES

1. http://globocan.iarc.fr/Pages/fact_sheets_cancer.aspx. [Online]. Fact Sheets by Cancer.
2. Consensus Document for Management of Breast Cancer. New Delhi: Indian Council of Medical Research; 2016. [http://www.icmr.nic.in/guide/cancer/Breast_Cancer.pdf]
3. Silverman JF, Lannin DR, O'Brien K, Norris HT. The triage role of fine needle aspiration biopsy of palpable breast masses. Diagnostic accuracy and cost-effectiveness. *Acta Cytol.* 1987; 31(6): p. 731-6.
4. Mufti ST, Ali SS.. Comparative study between Breast Cytology and Histology in Saudi females.. *JKAU: Med. Sci.* 2011; 18: 37-55.
5. Mehra K , Kumar V, Kaur R, Gupta N. Cyto-histopathological correlation in palpable breast lesions. *Int J Res Med Sci.* 2016 Jun; 4(6): p. 1943-1949.
6. Pattari SK, Dey P, Gupta SK, Joshi K.. Myoepithelial cells: Any role in aspiration cytology smears of breast tumours? 2008;5:9. *Cytojournal.* 2008; 5(9).
7. Pandey V, Verma NK, Sudarshan V, Chandrakar KS ,Sharma A. Cyto- histopathological correlation of breast lesions –A rural hospital based study. *Indian Journal of Pathology and Oncology.* 2017 January-March; 4(1): p. 117-121.
8. Tiwari M. Role of FNAC in diagnosis of breast lumps. *Kathmandu University Medical Journal..* 2007; 5(18): p.215-217.
9. O'Neil S, Castelli M, Gattuso P, Kluskens L, Madsen K, Aranha G. Fine-needle aspiration of 697 palpable breast lesions with histopathologic correlation. *Surgery.* 1997; 122(4); 122(4): p. 824-28.
10. Koirala S. Comparative study of aspiration and non-aspiration cytology of palpable breast lumps and correlation with histopathology. 2014: p. 639-643.

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