

Pitfalls in FNAC diagnosis of carcinoma breast

Asha Goyal^{1*}, Chandrika Gupta²

¹Resident, Department of Pathology, RUHS College of Medical Sciences, Jaipur, Rajasthan, India

²Associate Professor, Department of Pathology, RUHS College of Medical Sciences, Jaipur, Rajasthan, India

Received: 07-02-2021/ Revised: 20-03-2021/ Accepted: 25-05-2021

Abstract

The Breast lesions commonly present as a breast lump. A palpable breast lump is a common diagnostic problem to both general practitioners and surgeons. The most accepted protocol followed for the diagnosis of a breast lump is a triple assessment which includes clinical assessment, radiological imaging, and pathological diagnosis. Since FNAC forms the most important aspect of cytopathology as a part of the triple assessment, it is expected to be an efficient technique which can be relied upon in terms of avoiding further diagnostic surgery before proceeding with the final definitive excisional procedure. FNAC has limitations in diagnosing conditions especially if cellularity is low on the smear. FNAC diagnosis should be given in correlation with clinical and radiological diagnosis to avoid false positive and false negative cases as even one case of misdiagnosis lead to a hazardous effect on that patient.

Keywords: cytopathology, triple assessment, histopathological, Hematoxylin and Eosin stain.

This is an Open Access article that uses a fund-ing model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided the original work is properly credited.

Introduction

Breast lesions commonly present as a breast lump. A palpable breast lump is a common diagnostic problem to both general practitioners and surgeons. Breast cancer is second commonest type of cancer after cervical cancer in India. Most cases of breast lumps are benign, but sometimes, it is difficult to determine whether a suspicious lump is benign or malignant, simply by doing a clinical examination. In these circumstances, as a widely accepted and established outdoor patient procedure, FNAC plays an important role in determining the nature of the lump. FNAC can reduce the number of open breast biopsies[1]. The most accepted protocol followed for the diagnosis of a breast lump is a triple assessment which includes clinical assessment, radiological imaging, and pathological diagnosis. Since FNAC forms the most important aspect of cytopathology as a part of the triple assessment, it is expected to be an efficient technique which can be relied upon in terms of avoiding further diagnostic surgery before proceeding with the final definitive excisional procedure. In the past 20 years, the importance of FNAC has been well documented in the diagnosis of breast lesions[2]. FNAC is not only helpful in the diagnosis and the further planning of the treatment, but it is also helpful in the prognostification of the tumour factors like the nuclear grading, the mitotic index, the hormone receptor status and the DNA contents[3]. A definitive diagnosis of various patterns of breast lesions can be made by histopathological diagnosis.

Material required

For cytology

Needle -Single-use disposable needles no. 22 gauge,
Syringes-Regular 10 CC single-use plastic syringe, or 20 cc single-use syringe

Plunger with the fitting of 10 cc and 20 cc syringe.

Slides -Dry clean glass slides will be used for preparing the smears

Fixative-Wet smears will be fixed with 95% alcohol

*Correspondence

Dr. Asha Goyal

Resident, Department of Pathology, RUHS College of Medical Sciences, Jaipur, Rajasthan, India

E-mail: drashagoyal26@gmail.com

Stain-Staining will be done with Hematoxylin and eosin stain and Giemsa stain.

Microscope

For histopathology- 10% formalin for fixation then the tissue will be routinely processed.

Method

Patient preparation: The procedure will be explained to the patient in complete detail and after explanation, informed and valid written consent will be taken.

Proper clinical history will be taken and cytological aspiration of breast lump done under aseptic condition. The procedure was performed without anesthesia by a trained cytologist in the pathology department. Wet and dried smear prepared[4].

For wet preparation- the smear will be fixed with 95% alcohol and stain with Hematoxylin and Eosin stain. Dried smear air fixed and stained with Giemsa stain.

The histopathology specimen received fixed in 10% formalin for 24 hours routinely processed and stained with Hematoxylin and Eosin stain.

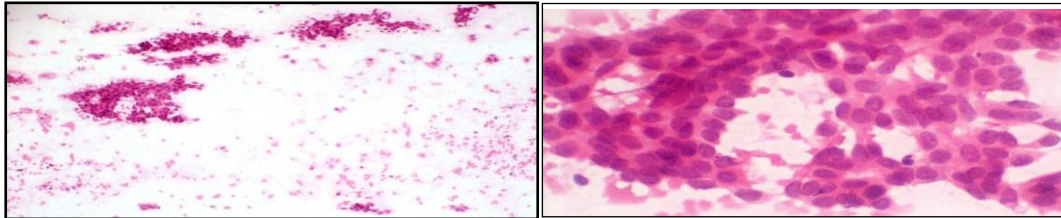
Results

The present study was carried for 6 months, in this duration 29 patients having lump in the breast, FNAC was done in the Department of pathology at RDBP Jaipuria Hospital, attached with RUHS medical college, Jaipur. Patients with breast lump admitted to surgical wards or attending Out-patient, Department of Jaipuria hospital, Jaipur were included in the study.

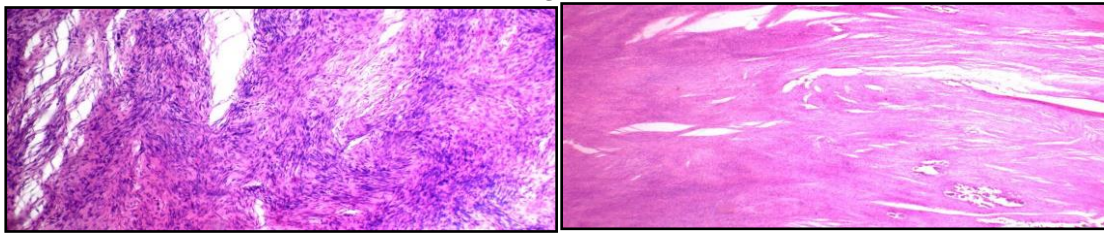
Details of case history and Clinical examination were recorded. Fine needle aspiration with 22-23 gauge needle was done. Smears were made, fixed, and subsequently stained by Hematoxylin & eosin and Giemsa stains. Cytomorphological observations were recorded and cytodiagnosis were made. After surgical excision of lump, histopathological diagnosis was made after routine tissue processing. Cytopathological findings were then correlated with histopathological findings. Our study includes 29 cases of malignant neoplasm, the diagnosis was given on cytopathology was, 23 cases given as malignant neoplasm, 3 cases as suspicious of malignancy, and 3 cases as inconclusive. On Histopathological confirmation 25 were diagnosed as IDC, 1 was diagnosed DCIS, and 2 cases turned as benign phyllodes, and 1 as sclerosing adenosis.

Table1:Corelation of Histopathological finding with Cytological diagnosis

Cytological diagnosis	No. of case on cytology	Histopathological diagnosis			
		IDC	DCIS	Benign phyllodes	Sclerosing adenosis
Malignant Neoplasm	23	20	1	2	0
Suspicious of malignancy	3	3	0	0	0
Inconclusive	3	2	0	0	1
Total	29	25	1	2	1



1A 1B
Fig 1:Phyllodes tumour H&E stain (1A-10x) smear showing fibromyxoid stromal clumps, (1B-40x) showing the hypercellular stromal fragment

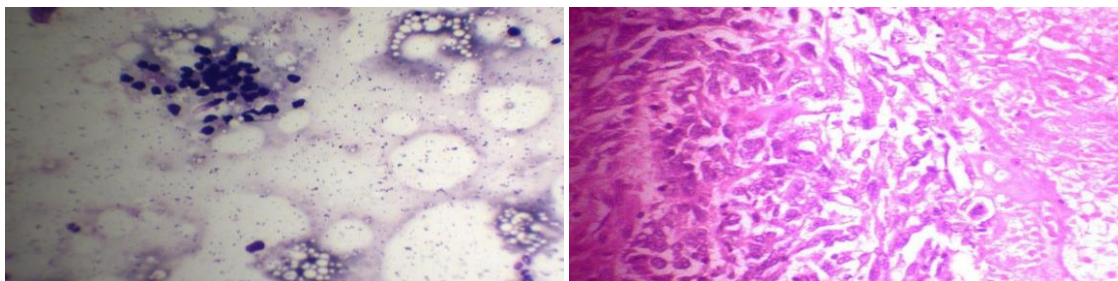


2A 2B
Fig 2 : Phyllodes tumour H&E stain(1A- 4x) ,(1B-10x)– Histopathology section showing excess stromal tissue

Discussion

In the present study, we studied 29 patients with breast lump admitted to various surgical wards and attending out patients department of pathology, RDBP Jaipuria hospital, Jaipur. A review of case history and clinical examination was done. Fine needle aspiration of breast lump was performed, smears were made and alcohol fixed preparation was stained by hematoxylin & eosin while dry smears were stained with Giemsa stains. After surgical excision of lump, histopathological diagnosis was made after routine tissue processing. Cytopathological findings were then correlated with histopathological findings. In our study 23 cases were given as

malignant neoplasm on cytopathology and after histopathological confirmation 20 cases were diagnosed as IDC and one case as DCIS . 2 cases were turned out as benign phyllodes on histopathology and these are false-positive cases of series. Phyllodes tumor is mistaken for ductal carcinomas and forms a significant cause of false-positive diagnosis. This could be due to atypical epithelial or stromal/mesenchymal cells which can be pronounced on cytology[5]. In our case due to high cellularity, dyscohesive clusters of cells and mild atypia in cells lead to misdiagnosis of malignant neoplasm on cytology.



3A 3B
Fig 3:Infiltrating ductal carcinoma Giemsa stain (3A-10x)cytology given as inconclusive, H&E stain (3B-40x), Histopathology section

In the present series, 3 cases were diagnosed as suspicious of malignancy and after histopathological confirmation diagnosed as IDC. These cases were given as suspicious due to mild atypia and dyscohesiveness of cells seen in cytological smear but confirm the diagnosis of IDC was not given as smears were of low cellularity and

no mitosis seen. In the present series, 3 cases were inconclusive on cytopathology and after histopathological confirmation 2 cases were diagnosed as IDC and one case was sclerosing adenosis. These cases were inconclusive as in smears cell morphology was not clear to categorize in the benign or malignant category and cellularity was

not much. Cytological features of sclerosing adenosis include cellular smears with small groups of uniform benign ductal cells, acinar sheets, scattered individual epithelial cells, apocrine metaplasia, foam cells, hyalinized stromal fragments, and the small number of stripped bipolar nuclei; FNAC of sclerosing adenosis may be difficult to distinguish from benign lesions like fibroadenoma, adenomyoepithelioma, and proliferative breast diseases[6]. It poses a diagnostic confusion with infiltrating lobular carcinomas and tubular carcinomas even in histological sections but is identified by the relative preservation of overall lobular architecture, the compressed glands, lack of atypia, the retention of two cell layers, and the confirmation of the presence of myoepithelial cells by immunohistochemistry[7]. Overall in our study out of 29 cases, 26 cases were diagnosed correctly on FNAC and in 3 cases we gave misdiagnosis due to limitations of FNAC procedure and difficulty in identification of cellular details.

Conclusion

Although Fine needle aspiration cytology is a simple, easy and inexpensive method for preoperative diagnosis of breast lumps and can be repeated without inconvenience to the patient, it has a limitation in diagnosing lesions like sclerosing adenosis, Phyllodes tumor. Histopathology is essential to establish the diagnosis as cytopathology may lead to misdiagnosis as in our cases. FNAC has limitations in diagnosing conditions especially if cellularity is low on the smear. FNAC diagnosis should be given in correlation with clinical and radiological diagnosis to avoid false positive and false negative cases as even one case of misdiagnosis leads to a hazardous effect on that patient.

References

Conflict of Interest: Nil
Source of support: Nil

1. Sahil I. Panjvani, Biren J. Parikh, Swati B. Parikh, Bhawana R. Chaudhari, Kazoomi K. Patel, Garima S. Gupta, Ashka H. Kodnani, Garima M. Anandani. Utility of Fine Needle Aspiration Cytology in the Evaluation of Breast Lesions. *Journal of Clinical and Diagnostic Research*. 2013 ;7(12): 2777-2779.
2. Cherath SK, Chithrabhanu SM. Evaluation of Masood's and Modified Masood's Scoring Systems in the Cytological Diagnosis of Palpable Breast Lump Aspirates. *Journal of Clinical and Diagnostic Research*. 2017 ;11(4): EC06-EC10.
3. Vasudev V, Rangaswamy R, Geethamani V. The cytological grading of malignant neoplasms of the breast and its correlation with the histological grading. *J Clin Diagn Res*. 2013;7:1035-9.
4. Svante R. Orell, Gregory F. Sterrett. *Fine Needle Aspiration Cytology*. 5th edition 2012.
5. Muddegowda PH, Lingegowda JB, Kurpad R, PG Konapur, AS Shivarudrappa, and PM Subramaniam. The value of systematic pattern analysis in FNAC of breast lesions: 225 cases with cytohistological correlation. *J Cytol*. 2011; 28(1): 13-19.
6. El Aouni N, Balleyguier C, Mansouri D, Mathieu MC, Suci V, Delalogue S, et al. Adenosis tumor of the breast: Cytological and radiological features of a case confirmed by histology. *Diagn Cytopathol*. 2008;36:496-8.
7. Carter D, Schnitt SJ, Millis RR. *Sternberg's Diagnostic Surgical Pathology*. In: Mills SE, Carter D, Greenson JK, Reuter VE, Stoler MH, editors. 5th ed. Philadelphia: Lippincott Williams and Wilkins; 2010. pp. 285-350.