

Utility of Fine Needle Aspiration Cytology in Evaluation of Breast Lesions.

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ABSTRACT

Objectives: FNAC(Fine needle aspiration cytology) of the breast lesion is a simple, cost effective and less traumatic screening procedure that is valuable for distinguishing non-neoplastic lesions from neoplastic lesions. The aim of the present study was to correlate cytological findings with histopathological findings and to determine the accuracy of FNAC in the diagnosis of breast lesions. **Methods:** A Retrospective study of total of 200 breast aspirates from January 2015 to May 2015 in pathology department, of B.J.M.C. civil hospital Ahmedabad was done and Histo-cytological correlations were obtained in 80 cases. **Results:** The statistical analysis showed high sensitivity (92.1%) and specificity (100%) of FNAC in breast lesions, with Positive Predictive Value (PPV) and the Negative Predictive Value (NPV) being 100% and 93.33% respectively. The diagnostic accuracy was found to be 98.5%. **Conclusion:** FNAC of breast is simple, cost effective and less traumatic method for diagnosis of breast lesions. It can be carried out safely as a preoperative diagnosis method on OPD basis. It is a highly sensitive and specific method so it can be recommended for the diagnosis of suspicious breast lump.

Keywords: Breast lesion, Breast lump, FNAC.

Introduction

Cancer of breast is a second most common cause of cancer in women¹. Increase in cases of breast cancer are related to late marriage, birth of child in the later age, shorter period of breast feeding and nulliparity¹. Mass in breast, whether benign or malignant is a cause of the anxiety to the patient & her family members¹. It is difficult to determine whether a suspicious lump is benign or malignant simply from clinical examination. Therefore a method of definitive diagnosis of patients who present with breast lumps at the out patients clinic is needed. **FNAC** is accurate method, easy to perform, acceptable to the patient, carried out in a busy clinic setting, not requires too much preparation, cost effective¹. The application of FNAC for the diagnosis of palpable breast masses was introduced by **Martin and Ellis** in 1930 and since then it has been established as an important tool in the evaluation of breast lesion². Histopathological diagnosis is a universally accepted confirmatory mode of diagnosis & follow up³. **FNAC of breast lump is an important part of triple assessment³:** It includes clinical



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examination, Imaging and FNAC of palpable breast lumps.

Aims and Objectives

The aim of the present study was to correlate cytological findings with histopathological findings and to determine the accuracy of FNAC in the diagnosis of breast lesions.

Material and Method

Retrospective study carried out and total of 200 breast aspirates were studied at B. J. Medical college, Civil hospital, Ahmedabad in the duration between January 2015 to May 2015, Histo-cytopathological correlations were obtained in 80 cases.

Results & Observations

The age of the patients in the present study varied from 16 to 80 years. Out of 200 cases, Female and Male patients were 195 and 5 respectively.

FNAC finding of 80 cases were correlated with histo-pathological findings taking histo-pathological diagnosis as the “gold standard”. This study documented the fact that benign breast lesions were the most common lesions in young females, among which the Fibroadenoma was the commonest one⁴. The malignant lesions were common in fourth and fifth decades of life, among which infiltrating ductal carcinoma was the most common lesion⁴.

Table-1: Results of FNAC finding

Benign	130
Inflammatory	23
Malignant	43
Suspicious	04
Total	200

Table-2 : FNAC findings According to Age distribution

	Group I (16-40 yrs)	Group II (40-50 yrs)	Group III (50-60 yrs)
Benign	133	09	11
Suspicious	01	03	-
Malignant	07	11	25
Total	141	23	36

Total cases of FNAC of breast lumps according to age groups

- Group I (16 -40 years) -141(71%)
- Group II (40-50 years) -23(12%)
- Group III (50-60 years) -36(17%)

Table-3 Inflammatory Lesions of Breast

Category	Cytological diagnosis	No. of cases	Percentage (%)
Inflammatory Lesions (23 Cases- 11.5%)	Acute mastitis /Abscess	19	9.5
	Granulomatous mastitis	3	1.5
	Tuberculous Mastitis	-	-
	Fat necrosis	01	0.5
	Duct ectasia	-	-

Table 4 - Benign Breast Lesions

Category	Cytological diagnosis	No. of cases	Percentage (%)
Benign Breast Lesions (130 Cases-65%)	Fibroadenoma	116	58
	Fibrocystic Disease	04	2
	Sebaceous Cyst	01	0.5
	Virginal hypertrophy	01	0.5
	Galactocele	03	1.5
	Lactational Changes	-	-
	Gynecomastia	05	2.5

Table-5 Malignant Lesions of Breast

Category	Cytological diagnosis	No. of cases	Percentage (%)
Malignant Breast Lesions (43 Cases-21.5)	Ductal Carcinoma	38	19
	Lobular Carcinoma	01	0.5
	Stromal Sarcoma	01	0.5
	Medullary Carcinoma	02	1
	Malignant Phyllodes Tumor	01	0.5
Suspicious of Malignancy (4 cases-2%)	Atypical cells Suspicious of malignancy	04	2

**Image 1: Fibroadenoma
[10x]**

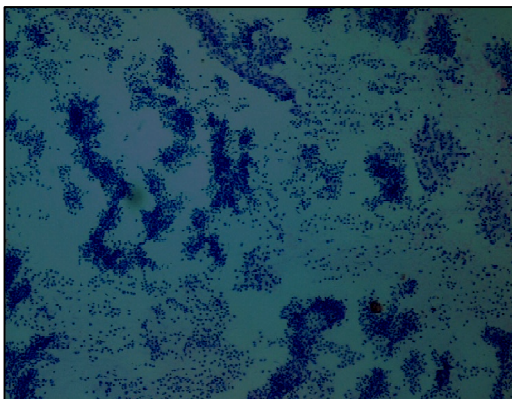


Image 2: Proliferative breast lesion with Atypia [10x]

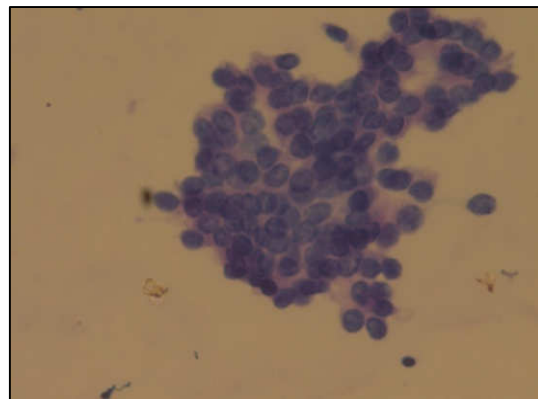


Image 3: Ductal carcinoma in situ [10x]

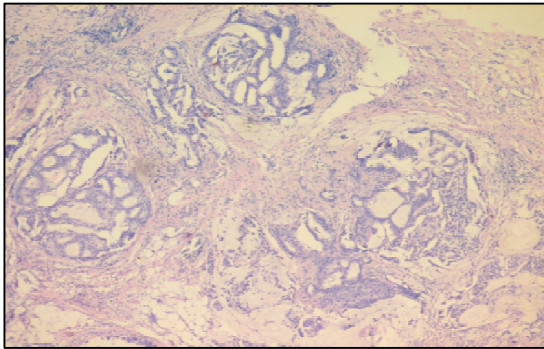


Image 4: Ductal carcinoma in situ [40x]

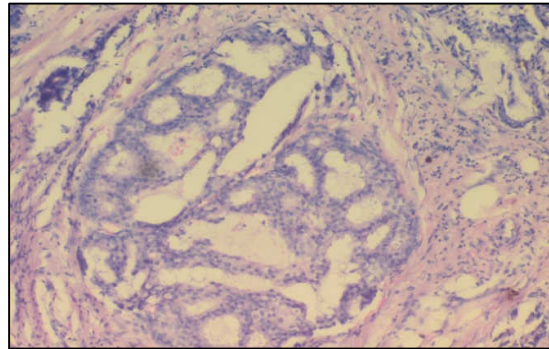


Image 5: Phyllodes Tumor [10x]

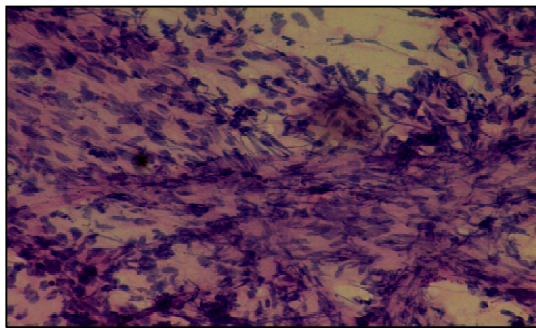


Image 6: Primary Stromal Sarcoma [10x]

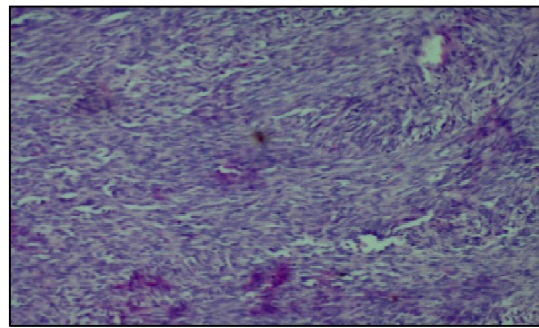


Image 7: Primary stromal sarcoma [40x]

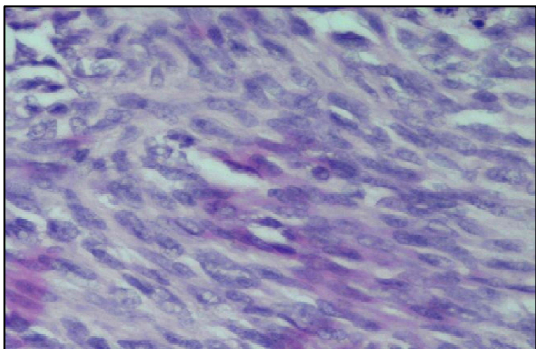


Image 8: Suspicious Malignant Spindle cell tumor [10x]

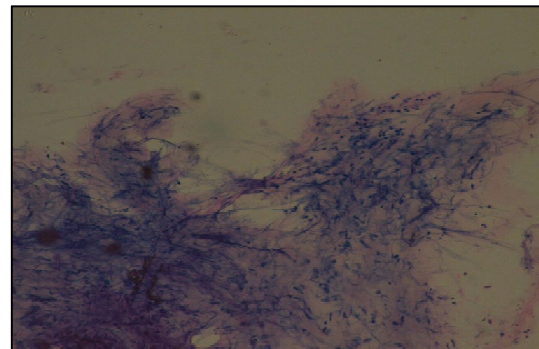
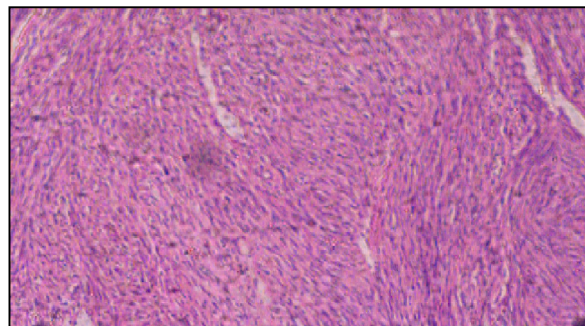


Image 9: Malignant Phyllodes Tumor [10x]



A total of 130 out of the 200 FNA specimens were read as benign (65%). A diagnosis of “suspicious” was made for 4 out of the 200 FNAC specimens & of these all 4 were found malignant on Histopathology. 43 cases (21.5%) were diagnosed as malignant. Histopathological and cytological correlation was found in 80 cases. Out of 80 cases all 35 malignant lesions were confirmed histopathologically. Out of 45 cases diagnosed as Benign on FNAC, 42 were confirmed as benign but 3 cases as fibroadenoma were found to be invasive ductal carcinoma on histopathological examination. (False negative rate- 2%). However, one case which was misinterpreted as a benign cystic lesion by FNAC, was later on diagnosed as a malignant phyllodes tumour on histopathological examination. The statistical analysis showed high sensitivity (92.1%) and specificity (100%) of FNAC in breast lesions, with Positive Predictive Value (PPV) and the Negative Predictive Value (NPV) being 100% and 93.33% respectively. The diagnostic accuracy was found to be 98.5%.

Discussion

This study documented the fact that the Fibroadenoma is most common benign lesion of breast⁴. Most common malignant breast lesion is invasive ductal carcinoma⁴. FNAC of breast lumps is an accepted and established method for determining the nature of breast lumps with a high degree of accuracy^{5,6,7,8}. The increased cases of benign breast lesion indicate awareness of patients. Reassurance is the main line of treatment though close follow up is mandatory in benign lesions. Most of the patients with breast lumps are in a state of anxiety. So, in reducing anxiety and unnecessary surgical procedures as well as in minimization of delay in the diagnosis, FNAC proves very fruitful.

Table – 6 Comparison of findings with previous study^{9,10}.

	Our series(200) 2015	O’Neil (697) 1997⁹	Ariga (1,158) 2002¹⁰
Inadequate	-	5 (0.7%)	12(1%)
True positive	35(43.75%)	485 (69 %)	693(74%)
True negative	42(52.5%)	153 (24%)	131(14%)
False positive	0 (0%)	44 (6%)	3(<3%)
False negative	3 (3.75%)	13(1.9%)	18(14%)
Sensitivity	92.1 %	97%	98%
Specificity	100%	78%	97%
Positive Predictive Value	100%	92%	99%
Negative Predictive Value	93.33%	92%	86%
Accuracy	98.5%	92%	97%

In our study, out of 45 cytologically diagnosed benign cases, 42 cases were confirmed histopathologically as benign breast lesions. However, one case which was misinterpreted as a benign cystic lesion by FNAC, was later on diagnosed as a malignant phyllodes tumour, another 3 cases as fibroadenoma were found to be invasive ductal carcinoma on doing a histopathological examination (False negative rate-2%). This might be due to inadequate sampling, because of the cystic nature of lesion. So, in case of cystic lesions, it is better to re-aspirate the lesion from the solid area after evacuation of cyst or image guided FNA should

be performed to locate solid area. It is always necessary to correlate the FNAC findings with clinical diagnoses and mammograms and to go for core biopsies whenever they are needed, to avoid misdiagnosis

Conclusion

FNAC of breast is simple, cost effective and less traumatic method for diagnosis of breast lesions. It can be carried out safely as a preoperative diagnosis method on OPD basis. It is a highly sensitive and specific method so it can be recommended for the diagnosis of suspicious breast lumps

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