

## A Study of Aspiration Cytology of Breast Lesions And Histopathological Correlation

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### Abstract

**Background:** Breast carcinoma is the major cause of death in women. Most of the time, Breast lump is the common clinical presentation. FNAC (Fine Needle Aspiration Cytology) is a rapid and safe procedure with good patient's compliance.

**Aim:** The aim of this study is to examine the aspirated smears from various breast lesions and to ascertain the role of FNAC in improving the quality of diagnosis and correlating with Biopsy specimens.

**Materials And Methods:** Over a period of one year, Study was conducted in the department of pathology, Government Royapettah Hospital, Kilpauk Medical College, Chennai. 204 aspiration, were performed which includes 15 bilateral cases. Children below 10 years and Gynaecomastia were excluded, however, suppurative and granulomatous cases were included. The cytological diagnosis was diagnosed as inadequate, benign, suspicious and malignant lesions. After this they were subjected to excision (or) mastectomy and subsequent histopathological examination and its correlation was done.

**Results:** Out of 204 cases, 130 cases were benign, 42 cases were malignant, 11 were suspicious, 11 cases were non-neoplastic and 10 cases were inadequate Cytological and histological correlation found in 193 cases out of 204 cases. Fibroadenoma was the commonest benign lesions noted in the age group of 21- 30 years and Infiltrating ductal carcinoma was the most common malignant lesion in 40 – 60 years. Accuracy of present study was 97.27%, Sensitivity was 97.67% and Specificity was about 97.14%.

**Conclusion:** Breast FNAC is an ideal initial diagnostic modality in breast lumps which gives accurate result with proper technical interpretation.

**Keywords:** Breast lump, Cytology, Histopathology, Benign and Malignant lesion.

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### I. Introduction

Breast cancer is one of the commonest malignancy world wide. In Indian females, it is the most common site after cancer cervix. Currently 75000 new cases of breast cancer are detected in India yearly [1]. The preoperative evaluation of breast lumps is an essential part of the management of breast lesions [2,3]. Most cases of breast lumps are benign, but sometimes it is difficult to determine the correct status. The triple assessment approach comprising of clinical, radiological and pathological examination, is an excellent tool for evaluating palpable breast lump. Among these FNAC (Fine Needle Aspiration Cytology) was the first line pathological investigation in both screening and symptomatic populations. Hence making FNAC the most reliable component of triple test evaluation [4]. In addition to its diagnostic accuracy FNAC is minimally invasive, cost effective and helps in rapid diagnosis. However FNAC cannot be a substitute to histopathological examination for definitive diagnosis. The aim of this study is to evaluate various breast lesions in FNAC material and compare it with histopathological biopsy.

### II. Material and Methods

Our study is the Retrospective study, FNAC was done on a total of 204 female patients presenting with breast lesions in the department of Pathology, Government Royapettah Hospital, Kilpauk Medical College, Chennai. Informed consent was obtained from each patient. FNAC was done by using 23 gauge needle attached to 20ml disposal plastic syringes smeared on standard glass slides fixed with alcohol and stained with hematoxyline and eosin (H&E). These cases were reported using a 5-tier system; [Table 2] C1- for inadequate; C2 for benign; C3 for suspicious probably benign; C4 for suspicious probably malignant and C5 for malignant

breast lesions. [5,6]Records of subsequent trucut, excision biopsies and mastectomies were correlated with cytological results.

### **III. Result**

FNAC was done for a total of 204 cases for the period of one year from January 2016 to December 2016. Children below 10 years and all Gynaecomastia were not included in the study. Out of 204 cases, 130 were benign, 42 were malignant, 11 cases were non neoplastic and 10 cases were inadequate. [Table 1]Cytological aspirations of 204 cases was reviewed and lesions were classified according to 5 tier system revealing, C1- inadequate (4.90%); C2- Benign (39.71%); C3- Suspicious probably benign (24.02%); C4- Suspicious probably malignant (5.39%) and C5 – Malignant (20.5%). The age of the patient ranged from 10 to 84 years and oldest case (84 years) was diagnosed as Ductal carcinoma of breast and the youngest (10 Years) was fibroadenoma. Left side (50%) of Breast lesions were slightly more common than Right side (42.65%) and Bilateral cases were 15 (7.35%). Among 11 non neoplastic cases, 9 were reported as acute suppurative lesion and 2 cases as granulomatous lesions. Fibroadenoma was the commonest benign lesion noted in the age group of 21 – 30 years and Infiltrating ductal carcinoma was the most common malignant lesion in 40 – 60 years. Apart from these, one case of Phylloides tumor was reported. Out of 204 cases, cytohistological correlation was seen in 183 cases. Following histopathology correlation, sensitivity, specificity were calculated. There were 4 false positive cases and 1 false negative case in this study. [Table 5] Among 183 cases with cytohistological correlation, 53 (89.71%) were benign. False positive were observed by proliferative lesions(2.19%). In the present study sensitivity was 97.67% and specificity 97.14%.

### **IV. Discussion**

FNAC occupies a major role in the “Triple assessment approach” for detecting breast malignancies in women with breast lesions. In our present study, 204 aspiration were performed over a period of one year. Among 11 non neoplastic cases, 9 were reported as acute suppurative lesion and 2 cases as granulomatous lesions. Out of 204 aspiration, 183 cases were followed up by histopathological examination. These 183 cases were considered as the study group for the present study of cytological and histopathological correlation of breast lesions. The age of the patients ranged from 10 to 84 years and oldest (84 years) was diagnosed as Ductal carcinoma of breast and the youngest (10 years) as fibroadenoma. Of the 39.71 % benign cases, fibroadenoma was the most common benign lesions (29.1%) in the age group (21-30) years followed by fibroadenosis (24.02%) in the age group(31-40) years, fibrocystic disease (9.80%) in the age group (41-50) years and abscess (4.41%) in the age group of(31-40) years. Atypical ductal hyperplasia account for 5.39% common in the age group of (31-40) years. In our study fibroadenoma was commonest benign lesions (29.41%). It was more prevalent in the agegroups of (21-30) years followed by (10 – 20) years, which in accordance with Robbins et al which states that fibroadenoma can occur any time in fertile age group though the commoner age is less than 30 years. [7] In a study by Tiwari and Quasim et al, Fibroadenoma is the most common as is found in our study, however in present study the second most common is fibroadenosis (24.02%) followed by fibrocystic disease (9.80%) which is not similar to Tiwari and Quasim et al. [8,9] Total number of aspirated malignancy cases were 42 (20.59%) found in most common age group of 41-50 years. Out of 204 cases, cytohistopathological correlation was done in 183 cases. [Table 4] 81 cases of fibroadenoma was correlated with 100% accuracy, however among 49 cases of fibrocystic change / fibroadenosis (Suspicious probably benign), 45 cases correlated and 4 cases were found to be positive for malignancy. In 11 cases of atypical ductal hyperplasia. (suspicious probably malignant), 7 turned to be malignant. 42 cases reported malignant in FNAC were also found to be malignant in histopathology. Hence total 53 cases were reported as Ductal carcinoma in histopathology. [Fig 1&2] Out of 53 cases of malignancies, 11 cases (20.75%) were Grade I, 36 cases (67.92%) were Grade II and 6 cases (11.33%) Grade III. [Table 3] 32 cases showed nodal metastases and 2 cases with skin involvement. In the present study for malignant lesions the maximum number of patients were between age group (41-50) years followed by (51-60) years of age. Hence malignant lesions were common in age group (41-70) years similar to that of study by Rocha et al. [10] In the present study, sensitivity was 97.67% and specificity 97.14% similar to that of Sharma et al. [Table 6] Our accuracy was 97.27% similar to that of Sreedevi CH and Sharma et al. [11,12]

### **V. Conclusion**

FNAC of breast lesion is a rapid and safe method with good patients compliance. It does not require anesthesia and has less false positive results which makes FNAC an ideal initial diagnostic modality in breast lump evaluation. In addition, proper clinical and mammographic details are required for subcategorizing the lesions. Hence Triple assessment approach which includes clinical, radiological and pathological examination, is an excellent tool for evaluating palpable breast lesions.

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Table 1: Agewise Distribution Of Various Breast Lesions n = 204

Age	Fibroadenoma	Inadequate	Fibrocystic change	Granulomatous lesion	Fibro Adenosis	Abscess	Atypical DuctalHyperplasia	Phylloides tumour	Malignancy
11-20	19	0	-	0	4	0	0	0	0
21-30	35	2	4	0	7	3	1	0	0
31-40	5	2	7	2	25	4	5	1	8
41-50	1	3	9	0	10	2	2	0	15
51-60	0	2	0	0	1	0	3	0	12
61-70	0	1	0	0	1	0	0	0	5
71-80	0	0	0	0	1	0	0	0	1
>80	0	0	0	0	0	0	0	0	1
Total	60	10	20	2	49	9	11	1	42
%	29.41	4.90	9.80	0.99	24.02	4.41	5.39	0.49	20.59

Table 2: 5 - Tier System Of Fnac Reporting With Histopstiological Correlation

CYTOLOGY		HISTOPATHOLOGY	
5- Tier System	No of cases	Benign	Malignant
C1 (Inadequate)	10	0	0
C2 (Benign)	81	81	0
C3 ( Suspicious Probably Benign)	49	45	4
C4 ( Suspicious Probably Malignant)	11	4	7
C5 ( Malignant)	42	0	42
TOTAL	193	130	53

Table 3: Histopathological Grading Of Invasive Breast Carcinoma

Tumor Grade	No Of Cases	Percentage
Grade I	11	20.75%
Grade Ii	36	67.92%
Grade Iii	6	11.33%
Total	53	100%

Table 4: Comparision Of Accuracy Of Fnac In Breast Lesion

SL.No.	Lesions	Cytology	Histopathological Correlation		Accuracy
			Correct	Incorrect	
1.	Fibroadenoma	81	81	0	100%
2.	Fibrocystic Change / Epithelial hyperplasia	49	45	4	91.83%
3.	Atypical Ductal hyperplasia	11	7	4	63.64%
4.	Ductal Carcinoma	42	42	0	100%

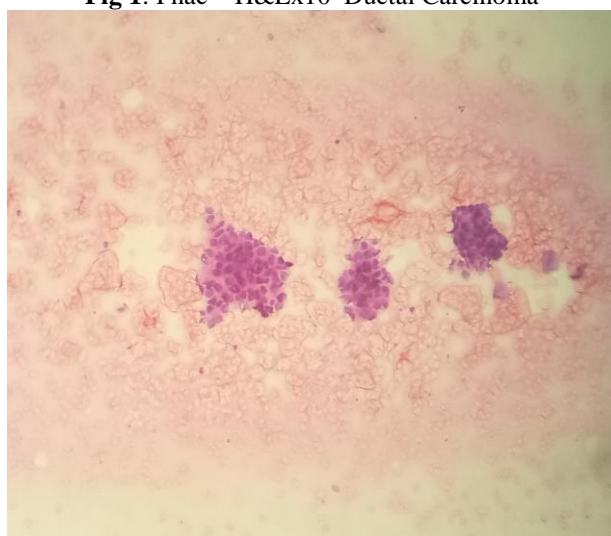
**Table 5:** The Diagnostic Accuracy of FNAC in 183 histologically correlated Cases

FNAC	Histological Diagnosis		Total
	Positive	Negative	
Positive for malignancy	42(TP)	4(FP)	46
Negative for malignancy	1(FN)	136(TN)	137
Total	43	140	183

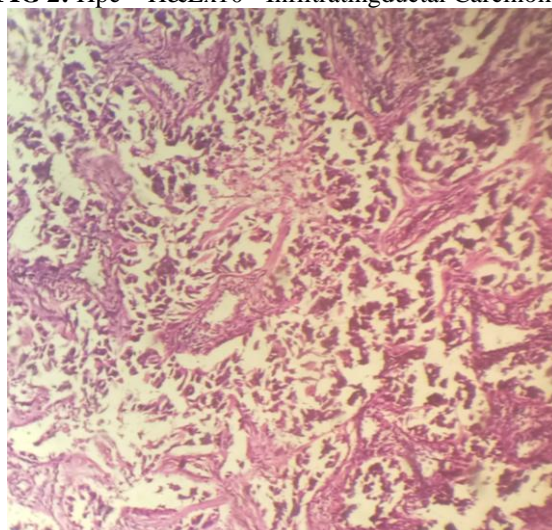
**Table 6:** Statistical Analyses Of Fnac As A Diagnostic Test

Study	Sensitivity %	Specificity %
Choi Et Al <sup>[13]</sup>	77.0	99.20
Park And Ham Et Al <sup>[14]</sup>	76.90	91.60
Mohammed Et Al <sup>[15]</sup>	90.62	100
Sharma Et Al <sup>[12]</sup>	97.56	97.82
Present Study	97.67	97.14

**Fig 1:** Fnac – H&Ex10 Ductal Carcinoma



**FIG 2:** Hpe – H&Ex10- Infiltrating ductal Carcinoma



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