

A DIAGNOSTIC ROLE OF FINE NEEDLE ASPIRATION CYTOLOGY AND ITS HISTOPATHOLOGICAL CORRELATION IN MALIGNANT BREAST LESIONS

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ABSTRACT

BACKGROUND:

Breast lesions in women are most common, which require pathological confirmation by FNAC and histopathological correlation. Recent approach to breast masses is to get cytopathological diagnosis before surgery.

Aim of study:

To study the diagnostic role of Fine Needle Aspiration Cytology and its histopathological correlation in Malignant breast lesions.

METHOD:

The study was conducted in department of pathology; AMC MET Medical College, Maninagar, Ahmedabad, Gujarat, India, for duration of 1 year from January 2019 to December 2019. During the study period, 40 cases of fine needle aspiration cytology of malignant breast lesions were performed. Formalin fixed (10%), resected specimens were received and were prepared for histopathological diagnosis. The cytological and histopathological slides were stained, studied, analyzed and correlated.

RESULT:

During the study period 918 FNAC were undertaken of which 40 FNAC were of malignant breast lesions. Correlation of FNAC with histopathologic tissue was possible in 20 cases, for which FNAC data was available. 99% were from female and 01% was from male patients. The age of patient ranged from 26 to 95 Years.

CONCLUSION:

FNAC is useful in diagnosing malignant breast lesions, as this procedure is easy, cost effective and less time consuming.

KEY WORDS: Cyto-histological correlation, carcinoma breast, fine needle aspiration

INTRODUCTION:

Diseases of breast are very common in all age groups. The overall incidence of breast cancer is increasing throughout the world. Breast cancer is the second most cancer affecting females in the developing countries. It is the most common cause of morbidity and mortality in females¹. Palpable mass, nipple discharge and pain are being the most common presenting symptoms. The FNAC is a known non operative procedure used for diagnosis of breast lesions. It was first done by Martin and Ellis in 1930². It is a well established method which allows rapid diagnosis and is a cost effective outpatient procedure³. Early breast carcinomas are asymptomatic and most of them are discovered during breast screening programs⁴. The main concern of women with the breast masses is the probability of breast cancer⁵. Pain is not usually a symptom of breast cancers⁶. Both FNAC and biopsy have roles to play in the evaluation of malignant breast lesions⁵. In the recent years, mammary cytology has been considered as an effective means of early diagnosis of breast masses⁵. The diagnostic process involves the "Triple test" consisting of clinical examination, mammography and FNAC⁷. However, the aspiration cytology is not a substitute for histopathology as a definitive diagnosis is not always possible by cytology, but differential diagnosis and category of disease can be provided in the majority of cases. With this, an attempt was made to evaluate the breast tumors in FNAC and to compare it with histopathological study.

AIMS AND OBJECTIVES:

1. To correlate the FNAC and histopathological diagnosis of malignant breast lesions.
2. To find out the sensitivity and specificity of FNAC of malignant breast lesions in our institute.
3. To identify the patterns of etiology of malignant breast lesions in our institute.

MATERIAL AND METHODS:

The present study was undertaken from January 2019 to December 2019 at the AMC MET Medical College, Ahmedabad, which comprised of 40 cases of malignant breast lesions which were diagnosed by FNAC. The nodule of interest was palpated and fixed with the thumb and index finger of one hand. Under aseptic precautions, a 10cc syringe with a 22-25 gauge needle was introduced into the nodule. The material was aspirated and smears were spread onto clean slides. The air dried and methanol fixed smears were stained with H and E stain. Formalin (10%) fixed specimens were received in the department of pathology, processed and stained with H and E for histopathological examination. The FNAC diagnosis and details were compared with that from histopathological investigations for correlation of the results.

RESULT:

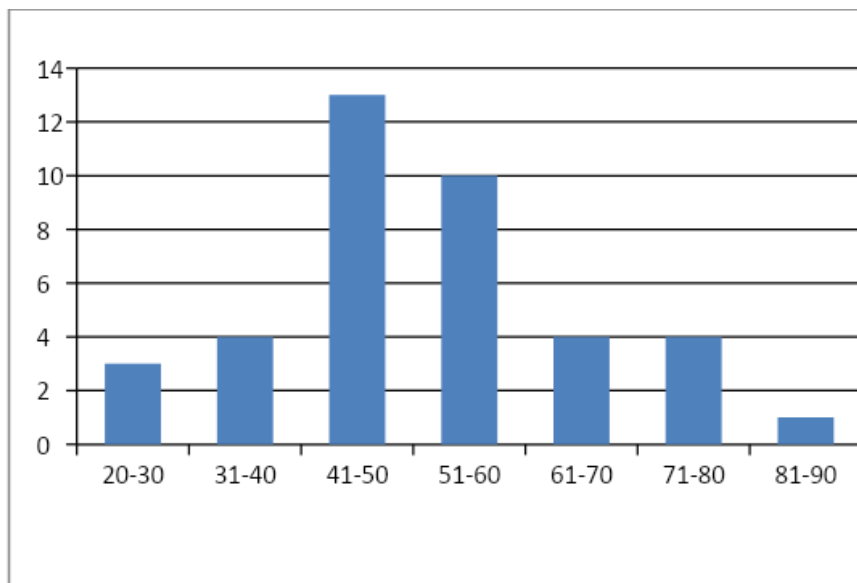
During this period total 918 FNACs were performed in the department, of which 40 FNACs were of malignant breast lesions.

Table 1: According to site of distribution

Site	No of cases
Upper outer quadrant	18
Upper inner quadrant	06
Lower outer quadrant	05
Lower inner quadrant	03
Axillary	03
Central	05

Most commonly the mass was located in the upper outer quadrant in 18 aspirates followed by upper inner quadrant in 06 aspirates and lower outer quadrant in 05 aspirates. Thus, most common location for malignant breast lesion was upper outer quadrant (45%).

Table 2: According to Age:



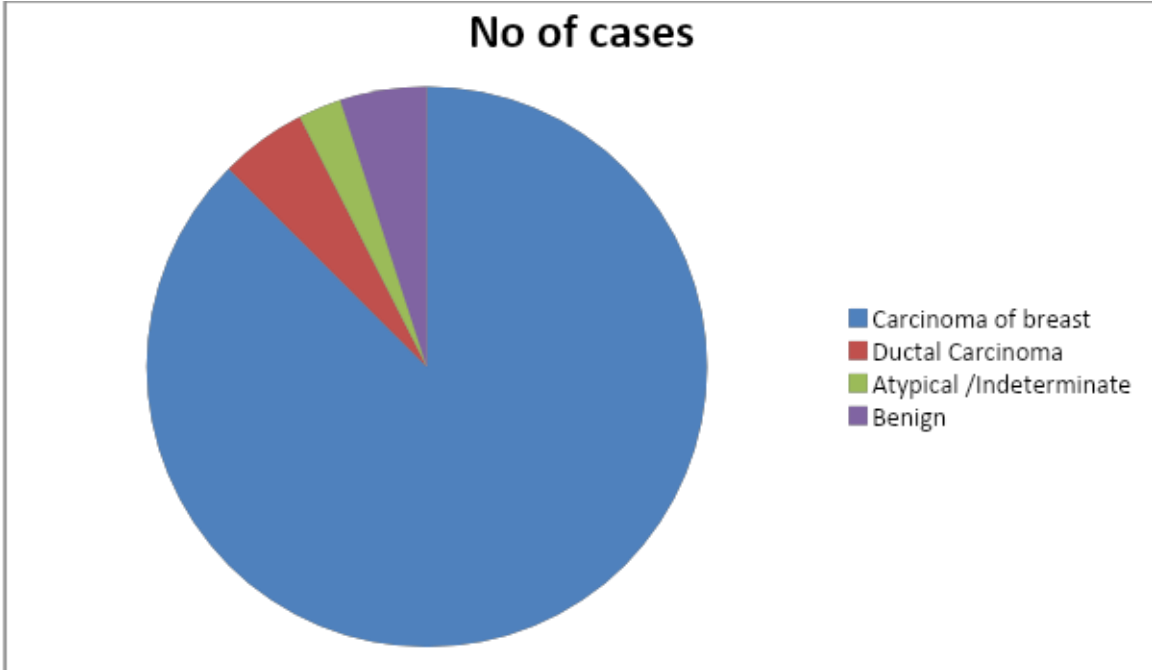
In the present study, the age of patients ranged from 26-95 years. Majority of cases 13 (32.5%) belonged to 41-50 years age group followed by 10 cases (25%) in 51-60 years age group.

Table 3: Distribution of cases according to side of breast

Side	Cases
Right side	19
Left side	21

In the present study, out of 40 cases 21cases (52.5%) presented with lesion in Left breast and 19 cases (47.5%) presented with lesion in Right breast.

Table 4: Distribution of cases according to Cytological diagnosis



Cytologically, most common diagnosis was Carcinoma of breast 87.5% (35 cases), followed by 5% (02 cases), Benign 5% (02 cases) and atypical/indeterminate 2.5% (01 case).

Table 5: Distribution of cases according to Histopathological study

Histopathological diagnosis	No of cases
Lobular carcinoma	5%
Ductal carcinoma	70%
Medullary carcinoma	15%
Atypical/Indeterminate	5%
Adenocarcinoma	5%

Histologically, most common diagnosis was Ductal carcinoma in 70% of cases followed by Medullary carcinoma in 15% of cases.

Table -6 Cases of correlation between FNAC and Histopathological diagnosis of malignant breast lesions:

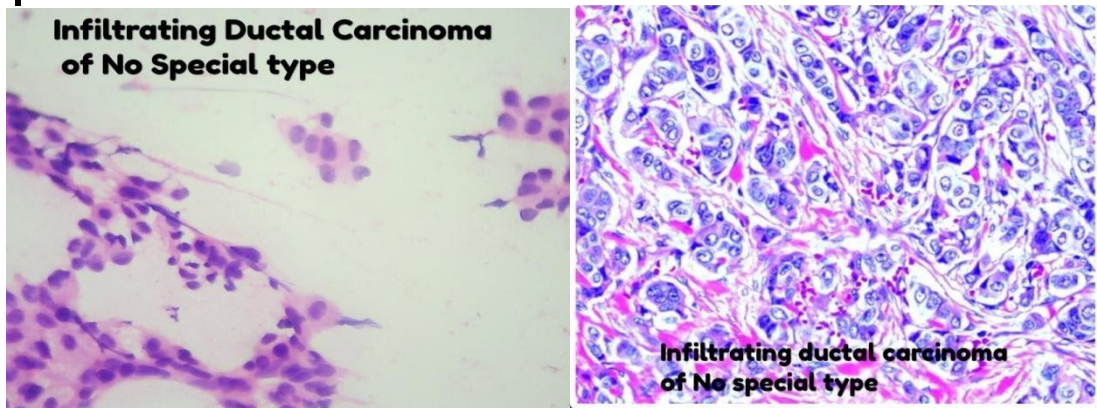
SR. NO.	FNAC DIAGNOSIS	HISTOPATHOLOGICAL DIAGNOSIS
1	Carcinoma of breast	Invasive breast carcinoma (Medullary change)
2	Carcinoma of breast	Invasive carcinoma of No special type
3	Carcinoma of breast	Infiltrating ductal carcinoma
4	Atypical/ Indeterminate	Ductal carcinoma in situ
5	Carcinoma of breast	Invasive Lobular carcinoma with signet ring
6	Carcinoma of breast	Suspicious of malignancy
7	Benign proliferative lesion	Infiltrating Ductal carcinoma of No special type
8	Granulomatous Inflammation	Adenocarcinoma

DISCUSSION:

The study included the cytological findings in malignant breast lesions in 40 patients. FNAC findings were compared with the histopathological findings. Age of patient in our study ranged from 26-95 years. 41-50 years age group is commonly affected. The most commonly involved side is Left side. This is similar to the study conducted by Khan et al⁸. Breast lesions were most common on Left side-21cases (52.5%) and most common location was upper outer quadrant-18 cases (45%). Hussain MT et al. reported left breast involvement in 27 patients (54%) and right breast involvement in 23 cases (46%) and concluded similarly that left breast was involved more commonly than right⁹. . Early diagnosis and treatment of breast cancers are very important because of high incidence and mortality rates. Therefore, in clinically suspicious breast masses, evaluation of tissue diagnosis is essential. The sensitivity of FNAC for carcinomas varies from 35% to 95% and specificity varies from 48% to 100% in the literature^{10,11,12,13,14}. False positivity of the procedure is low, and the rate was reported as <1% in the literature.^{15,16,17}. The most common reason for a false negative result is failure to localize the lesion exactly.

This can be overcome by performing the test under image guidance¹⁸. Cellular samples limit identifying the grade or invasiveness of the tumor. It is well known that FNAC has high sensitivity and specificity for mass lesions; however, in terms of low-grade malignancies and papillary lesions, diagnosis using FNAC might be difficult.^{15,19}

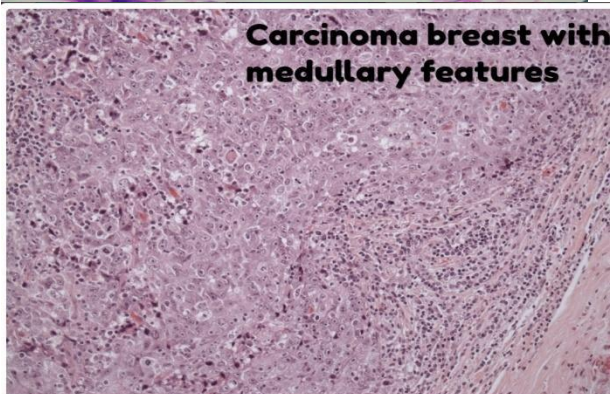
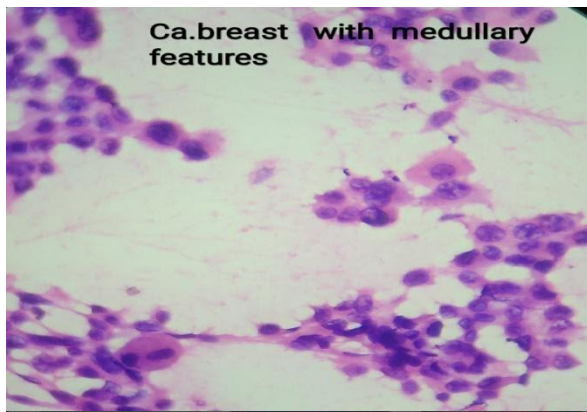
Infiltrating Ductal Carcinoma of No Special type



Microscopic description:

- Consists of sheets, nests cords or individual cells.
- Tumor cell are more pleomorphic than lobular carcinoma
- Stroma is usually desmoplastic and may obscure tumor cells
- Mitotic figures are often prominent.

Carcinoma of Breast with Medullary features



Microscopic (Histologic) description

- It has sharply circumscribed and pushing borders.
- Sheets of cells with indistinct cell borders in greater than 75% of tumor
- Pleomorphic cells with large nuclei and prominent nucleoli (multiple nucleoli)
- Shows numerous mitosis with atypical mitosis and no desmoplastic reaction.

CONCLUSION:

Considering patient's comfort, lack of requirement of anesthesia, rapid analysis and reporting and an absence of false positive results makes FNAC an ideal initial diagnostic modality in breast lumps. However, cytologically it is difficult to subcategorize the lesions without clinical and mammographical details. The accuracy of the FNAC depends on the representative material present on the smears, the staining of the cytology slides and the experience of the pathologist reporting the aspiration cytology. Adhering to the principle of Triple test, with the acquisition of technical, observational and interpretative skills will further enhance the diagnostic accuracy of lesions of the breast.

List of Abbreviations:

FNAC: Fine Needle Aspiration Cytology

Conflicts of interest: Nil

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