



## **Cytohistological Correlation of Breast Lesions in Patients with Breast Lumps in A Tertiary Care Centre**

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### **ABSTRACT**

#### **Introduction**

Most commonly diagnosed cancer in females is breast cancer and is the leading cause of death worldwide, Early diagnosis and prompt treatment plays an important role in decreasing the mortality due to breast cancer. Fine-needle aspiration cytology (FNAC) is safe, reliable, and time saving outdoor procedure with little discomfort to the patient. FNAC is useful in diagnosis and further planning of treatment without need for biopsy. The current study was carried out to study the frequency of various breast lesions on FNAC and its histopathological correlation.

#### **Materials & Methods**

In this prospective observational study FNAC was done over a period of 1 year on 70 breast lesions. The FNAC results are correlated with the available histopathological results to calculate the sensitivity, specificity of FNAC

#### **Results**

The Maximum number of cases was in the age group of 30-50 years in benign breast lesion and in the age group of 51-70 years in malignant breast lesion. In the 70 cases, 38 cases are benign, 28 cases are malignant in which both biopsy & FNAC are correlating. The sensitivity was 92.6% and specificity was 96.5%.

Benign breast lesions are common than malignant lesions. Fibroadenoma & Invasive duct cell carcinoma are common benign & malignant lesions

### **Conclusion**

FNAC is a very reliable method for the differential diagnosis of benign from malignant breast masses, as it exhibits a high rate of specificity and sensitivity. It can be employed as the initial diagnostic procedure for patients who present with breast lumps, particularly in developing countries with restricted resources.

### **Keywords**

Fine needle aspiration cytology (FNAC), histopathology examination (HPE), breast cancer

### **INTRODUCTION**

Breast cancer is the most frequently diagnosed cancer in women and is the primary cause of death worldwide.<sup>[1]</sup> Breast cancer is the second most prevalent form of cancer, accounting for approximately 11.6% of all malignancies.<sup>[2]</sup>

The mortality rate associated with breast cancer is significantly reduced by early diagnosis and prompt treatment. The complaint that is presented in the majority of cases is a palpable tumor in the breast. The open surgical biopsy is the gold standard for the diagnosis of a palpable breast tumor. However, in recent years, minimally invasive techniques such as core needle biopsy (CNB) and fine needle aspiration cytology (FNAC) have become increasingly important for the purpose of making a diagnosis.<sup>[3]</sup> Today, the "triple test" is the gold standard for the diagnosis of breast tumors, consisting of a clinical examination, mammography and FNAC.<sup>[4]</sup>

FNAC is inexpensive, rapid, and straightforward, and it has been demonstrated to be dependable. It is

employed as the initial diagnostic method for breast lesions. The primary benefit is that it is swift and decreases the frequency of open surgical biopsies [4]. FNAC is a component of the Triple Test, which includes physical examination and radiological imaging, and it is used to differentiate between benign and malignant lesions. In both screening and symptomatic patients, FNAC is the primary pathological investigation in the majority of countries. [5] FNAC is more accurate in diagnostics, particularly in resource-limited environments, when combined with cell block preparations. [6]

The objective of this study was to examine the efficacy and accuracy of FNAB by comparing the cytopathology results of FNAB with the postoperative histopathology results.

### **MATERIALS & METHODS**

This prospective study was conducted among 70 patients who visited the department of Pathology at Viswabharathi Medical College and Hospital in Kurnool after receiving approval from the institutional ethics committee. The study was conducted over a one-year period, from July 2022 to July 2023. The study included patients of both sexes and ages ranging from 10 to 100 who presented with complaints of palpable breast enlargement, ill-defined swelling, and pain as requested by the surgeon. This included patients with or without nipple discharge. Patients who were undergoing neoadjuvant chemotherapy, had recurrence of tumors following prior surgeries or chemotherapy/radiotherapy, or had metastatic breast cancer were excluded from the study.

Written informed consent was obtained from each patient. FNAC was performed on 70 cases with a variety of breast lesions using a 23 G needle that was

attached to a 5 ml syringe. The material was delicately smeared onto clean 2 to 3 glass slides after aspiration. The smeared slides were promptly fixed in a coplin jar containing 99% isopropyl alcohol and stained with hematoxylin and eosin. Sediment was distributed and subsequently stained with H&E if fluid was aspirated. FNAC was conducted once more in the event that the smears were insufficient. Notes were taken regarding the radiological findings. The stained slides were investigated using a light microscope. The lesions are classified in accordance with the IAC Yokohama reporting system. The categories are as follows: C1-Insufficient, C2-Benign, C3-Atypical, C4-Suspicious of malignancy, and C5-Malignancy. The biopsies were fixed in 10% formalin overnight. The tissues were subsequently grossly dissected, and representative areas were selected for processing using an automatic tissue processor. Subsequently, sections were prepared on glass slides. The transparencies were stained with H&E, and the results were observed using a light microscope. The microscopic findings of FNAC were recorded and

correlated with the histopathological findings. A statistical analysis was conducted.

**STATISTICAL ANALYSIS**

The obtained parameters were evaluated using descriptive statistical analysis. sensitivity, & specificity, for the breast cytology was calculated. Statistical analyses were performed using (SPSS) statistics (version 20.0).

**RESULTS**

Fine needle Aspiration cytology was performed on 70 cases and all the 70 cases were received in the department for histopathological examination. The Maximum number of cases was in the age group of 30-50 years in benign breast lesion and in the age group of 51-70 years in malignant breast lesion. Among them only 4% cases were male and 96% were female.

In that 70 cases 38 cases are benign, 28 cases are malignant in which both biopsy & FNAC are correlating. 4 biopsy cases are not correlating with FNAC as shown in Table 1. This study shows 92.6% sensitivity & 96.5% specificity

**Table 1: Benign and malignant lesions diagnosed by FNAC and their comparison with HPE**

FNAC		HISTOPATHOLOGY	
		BENIGN	MALIGNANT
BENIGN	39	38 (true negative)	1 (false negative)
MALIGNANT	31	3 (false positive)	28 (true positive)

Benign breast lesions are common than malignant lesions. Fibroadenoma & Invasive duct cell carcinoma are common benign & malignant lesions respectively as shown in table 2 and table 3

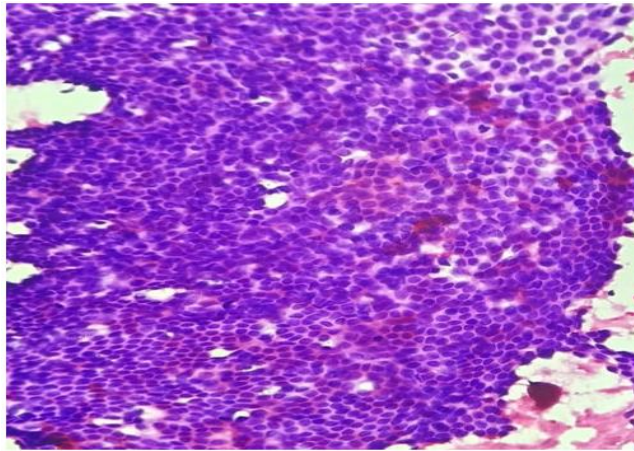
**Table 2: Benign Breast lesions correlated by FNAC and HPE**

Benign	Frequency (n)	Percentage (%)
fibroadenoma	29	76.31
Fibrocystic disease	5	3.1
Breast abcess	3	7.89
gynecomastia	1	2.63

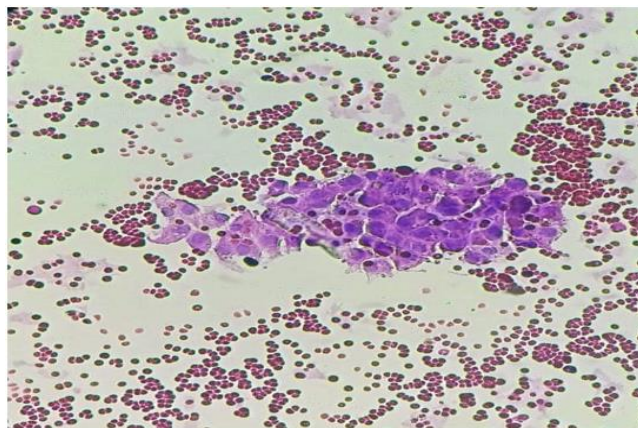
**Table 3 Malignant breast lesions correlated by FNAC and HPE**

Malignant	Frequency (n)	Percentage (%)
Invasive duct cell carcinoma	23	82.1
Mucinous carcinoma	5	17.9

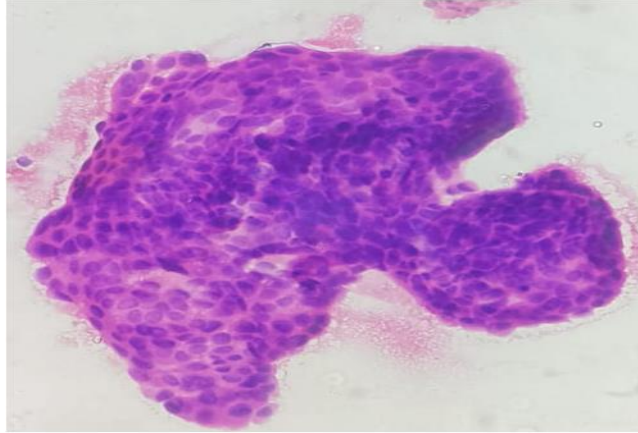
**Fig 1: Fibroadenoma**



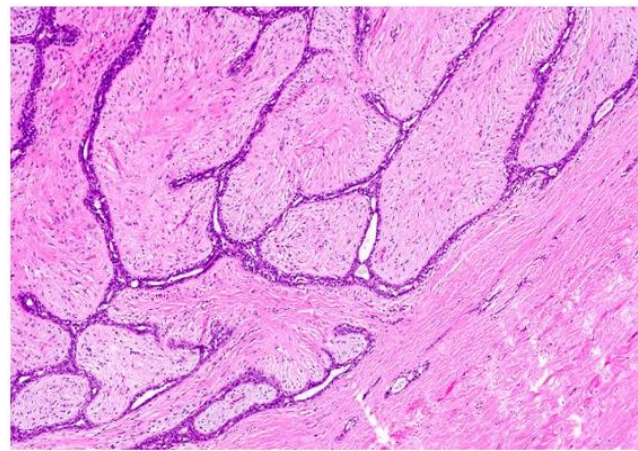
**Fig 2: Fibrocystic disease**



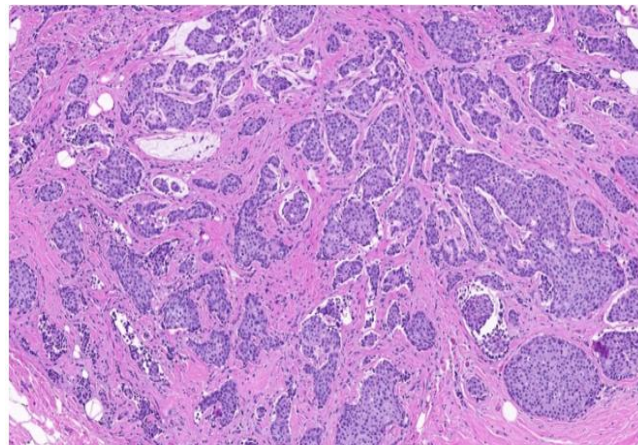
**Fig 3: Invasive duct cell carcinoma**



**Fig 4: Fibro adenoma**



**Fig 5: invasive duct cell carcinoma**



## DISCUSSION

The diagnostic tool of fine needle aspiration cytology for palpable breast lumps is well-established and widely accepted, with a high degree of accuracy in

identifying whether the lesion is benign or malignant.<sup>8</sup> The objective of this study is to evaluate the diagnostic accuracy of FNAC in breast lesions by

conducting a cytology-histopathology correlation.

Fibroadenoma was the most prevalent benign breast lesion in our investigation, which is consistent with the findings of Dominguez et al, Tiwari, Qasim et al, Srikanth, Yalavarthi et al, and Risaldar et al. [7-12] The majority of benign breast lesions were observed in the age range of 10 to 40 years (Table 1) in the current analysis, which is consistent with the findings of Rocha et al (14-40 years) and Khemka et al (15-44 years).[13,14].

The most prevalent malignant breast lesion in our investigation was infiltrating ductal carcinoma (94%), which is consistent with the findings of Risaldar et al and Srikanth et al investigations. [12, 10] The age range of malignant lesions in the current investigation was 41-70 years, which is consistent with the findings of other studies conducted by Risaldar et al (30-70 years), Khemka et al (35-84 years), Srikanth et al (31-70 years), and Rocha et al (41-75 years). [12, 14, 10, 13] The findings indicate that breast malignancies may manifest as early as the fourth decade of life.

The specificity of 96.5% and sensitivity of 92.6% that were achieved in our study were consistent with the sensitivity of 86-99% and specificity of 92-100% that have been reported in previous studies. [15-20]

## CONCLUSION

the results of this study suggest that FNAC is a very reliable method for the differential diagnosis of benign from malignant breast masses, as it exhibits a high rate of specificity and sensitivity. It can be employed as the initial diagnostic procedure for patients who present with breast lumps, particularly in developing countries with restricted resources.

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