

Role of Fine Needle Aspiration Cytology in Breast Lump and Its Histopathological Correlation

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Abstract:

Background: The most frequent type of cancer among women is breast cancer. Breast lump diagnosis using fine needle aspiration cytology is a simple, affordable treatment. The purpose of this study is to identify the frequent causes of breast lumps and to assess the FNAC's sensitivity and specificity for breast lump detection.

Materials and Methods: This research is a retrospective analysis of breast FNAC performed between October 2022 and March 2023 at the KMCH in Katihar, Bihar. To ascertain the sensitivity and specificity of FNAC, FNAC results were compared to information from histopathological reports.

Results: 16% of all FNACs were breast-specific FNACs. The patients' age ranged from 17 to 56 years old, with a mean of 32. The most frequent diagnosis was fibroadenoma. Only 6.6% of the cases had malignancy identified. In 21 cases, histological correlation was carried out. It was discovered that the breast FNAC's sensitivity and specificity were 83.3% and 100%, respectively.

Conclusion: Breast FNAC is a straightforward, affordable, and less traumatic way of diagnosing breast lumps. It can lessen the need for open biopsies and is also very sensitive and selective. Therefore, FNAC should be utilized as a standard procedure to identify the type of breast masses.

Keywords: FNAC, Breast Lump, Neoplasm.

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Introduction

The second most frequent type of cancer in women is breast cancer. Increased breast cancer cases are linked to delayed marriage, childbirth at an older age, shorter breast-feeding durations, and nulliparity or low parity. Clinically, breast illnesses manifest as a breast lump or nipple discharge. Breast masses, whether benign or malignant, are a source of worry for the patient and her family.

Although fine needle aspiration cytology (FNAC) of breast lumps is a crucial component in the triple assessment (clinical examination, imaging, and FNAC) of palpable breast lumps, histopathology diagnosis is still a widely accepted confirmatory mode of diagnosis & follow up. The majority of breast lump cases are benign[1], however until they have undergone specialized evaluation, the required investigations, and eventually reassurance[2,3] most of these individuals are in a state of increased concern. Even after a clinical examination, it can be challenging to identify whether a mass is benign or cancerous.

Therefore, a technique for making a firm diagnosis of individuals who visit to an outpatient clinic with breast lumps is required. This procedure must be precise, simple to use, and repeatable. Additionally,

it must be acceptable to the patient, practicable in a busy clinic setting, and need little advance planning or expensive equipment. When it is challenging to ascertain the type of a breast lump by clinical examination, fine needle aspiration cytology (FNAC) of the lump may be crucial. It is an acknowledged and well-established way to do so. There is evidence that FNAC can lower the frequency of open breast biopsies [4]. According to studies, FNAC has a specificity of more than 99% and a sensitivity that ranges from 82% to 97.5%[5,6,7]. In addition to determining the sensitivity and specificity of FNAC for breast lumps in our hospital, the goal of this study is to identify the common causes of breast lumps.

Materials and Methods

This research was carried out retrospectively at Katihar Medical College and Hospital (KMCH), Katihar, Bihar. From FNAC data, information on breast FNAC performed between October 2022 and March 2023 was obtained. Age, sex, and clinical presentation demographic information were gleaned from the request form. Data from histopathology records were correlated with the results of FNAC. Standard statistical techniques

were used to calculate test efficiency, sensitivity, and specificity.

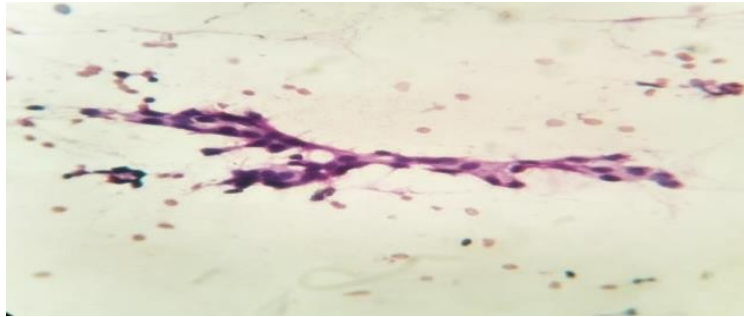


Figure 1: Ductal epithelial cells arranged loosely in irregular sheet against haemorrhagic background, reported as atypical. (H and E, × 40)

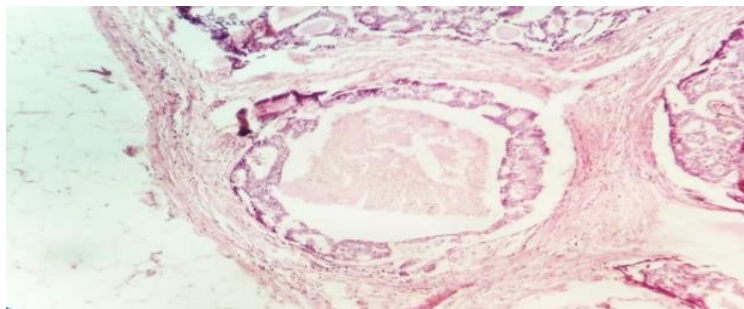


Figure 2: On histopathology, same lesion turned out to be ductal carcinoma in situ showing comedo pattern. (H and E, × 40)

Results

A total of 91 cases of breast FNAC were discovered, accounting for 16% of all FNACs in the department over the course of three years. The patient population was made up of 2 men and 89 women, with ages ranging from 17 to 56 with a mean of 32. Table 1 displays the FNAC diagnosis of breast lumps, while Table 2 displays the histopathological association.

Table 1: FNAC diagnosis of breast lumps

Diagnosis	No. of cases (%)
Fibroadenoma	36(39.6%)
Sub areolar abscess	7(7.7%)
Invasive ductal carcinoma	6(6.6%)
Breast abscess	6(6.6%)
Fibrocystic diseases	5(5.5%)
Duct ectasia	5(5.5%)
Galactocele	5(5.5%)
Others	21(23%)
Total	91(100%)

Table 2: Correlation of histologic diagnosis with FNAC diagnosis of breast lump

FNAC ↓	Histological Diagnosis				
	Fibroadenoma	IDC	Duct ectasia	Gynaecomastia	Fibrocystic disease
Fibroadenoma	8				1
IDC		5			
Duct ectasia			3		
Gynaecomastia				2	
Inflammatory		1			
Atypical epithelial hyperplasia	1				

The most frequent cause of breast lumps, accounting for 36 (39.5%) of all cases, was fibroadenoma, followed by subareolar abscess. The

percentage of invasive ductal carcinoma (IDC) instances is only 6.6%.

Samples from three cases were not sufficient for assessment, primarily because blood was present. Only 21 of the 91 FNAC instances had a biopsy performed.

By biopsy, every occurrence of malignancy in the FNAC was determined to be a malignant lesion. One instance only had inflammatory and necrotic materials visible on FNAC, and a biopsy confirmed the presence of a malignant tumor. In order to diagnose cancer, breast FNAC's sensitivity and specificity were determined to be 83.3% and 100%, respectively. The 90% test efficacy rate.

Discussion

An approved and well-established approach to accurately ascertain the nature of breast lumps is FNAC [8, 9, 10, 11]. Martin and Ellis[12] were the first to use FNA for the identification of palpable breast masses in 2020, and since then it has been well-established as a crucial technique in the assessment of breast lesions. FNAC is an easy, affordable, less stressful, highly sensitive, and focused approach for evaluating breast lumps. The majority of women who have breast lumps are anxious, therefore FNAC serves a crucial role in reducing anxiety, unneeded surgical procedures, and delays in diagnosis.

The most frequent lesions in the breast are benign, according to this study. This rise in benign lesions is a sign that patients are becoming more aware. Although frequent follow-up is required, reassurance is the primary form of treatment for these lesions.

Young females are more likely to get these lesions. The results of the other studies [5,6,7] showed that the sensitivity and specificity of breast FNAC in the diagnosis of cancer were 83% and 100%, respectively. FNAC classified one case of cancer as an inflammatory lesion. This was caused by the FNAC's presence of significant necrosis and inflammation without living cancer cells. Therefore, it is preferable to match the findings with clinical diagnosis and do a core biopsy if there is significant inflammation in the FNAC in order to prevent misdiagnosis. In this investigation, there were no instances of false positives.

Conclusion

Breast FNAC has a low probability of false positive and false negative diagnoses and is very accurate. It is safe to use as a preoperative diagnostic technique in patients with breast lumps, typically in the outpatient setting. Therefore, its usage for the diagnosis of suspicious breast masses should be encouraged. The patient can be directed toward additional treatment based on the FNAC results. Only 21 of the 91 cases of FNAC breast lumps in this study had a biopsy. So, just these 21 examples

were used to determine the sensitivity and specificity. The results (sensitivity and specificity) of this investigation may not be valid because to the small sample size, although they were comparable to the results of previous studies with larger sample sizes.

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