

# EFFICACY OF FINE NEEDLE ASPIRATION CYTOLOGY IN THE DIAGNOSIS OF BREAST LUMPS

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## ABSTRACT

**Objective:** To determine the sensitivity and specificity of fine needle aspiration cytology (FNAC), by comparing the results with excision biopsy.

**Material and Methods:** This observational and comparative study was conducted in Surgical B Ward of Khyber teaching hospital Peshawar, Pakistan from August 2002 to May 2003. A total of 50 women, who had a clinically palpable breast lump were subjected to concurrent FNAC and excision biopsy.

**Results:** Out of 12 malignant lesions on excision biopsy, FNAC correctly diagnosed 9, and 2 were diagnosed suspicious, and the remaining one was misdiagnosed as non malignant. So false negative being 1/12 (8.3%). Of 38 benign cases on excision biopsy, FNAC diagnosed correctly duct ectasia 3, tuberculosis 2, and galactocoele 1, while out of 22 fibroadenoma, FNAC diagnosed 20, and 2 were diagnosed as unsatisfactory. Ten cases diagnosed as fibrocystic disease on excision biopsy, FNAC picked only 6 cases correctly. The one case diagnosed on FNAC as fibrocystic disease, turned out to be malignant on histology. The remaining 4 cases of fibrocystic disease diagnosed on histopathology were either reported as unsatisfactory (3 cases) or suspicious (1 case) on FNAC. The sensitivity and specificity of FNAC was 91.66% and 96.96% respectively.

**Conclusion:** Breast cytology was an effective and rapid method of diagnosis of breast diseases. It helps in deciding which patient needs early open biopsy. A negative cytology does not exclude the possibility of malignancy, as there was a false negative rate of 8.3%.

**Key Words:** Breast lump, Fine needle aspiration cytology (FNAC), Open Biopsy.

## INTRODUCTION

Breast disorders/lumps are fairly common presenting feature in our outpatient department, mostly benign (about 90%) and of no serious consequences<sup>1,2</sup> but malignancy contribute a significant percentage of palpable lumps. There is increasing awareness and the associated anxiety and stress, particularly, among women who perceive every symptom in the breast as cancer, which compels the patient to seek medical advice.<sup>4</sup> However, it is some times difficult to determine whether a suspicious lump is benign or malignant simply from clinical assessment. Therefore a method of definitive diagnosis of patients who present with breast lump at the outpatient department is needed, in order to re-assure the patient and to offer the best possible treatment. A confident diagnosis can be made in 95% of the cases through a combination of clinical

examination, imaging (mammography, and or ultrasound) and fine needle aspiration cytology (FNAC) i.e. triple assessment.<sup>5,6</sup> FNAC is a relatively simple reliable, atraumatic, economical, complication-free technique for evaluation of mass lesions. It can be easily repeated if an adequate sample is not obtained. Different studies shows that FNAC have a sensitivity ranging from 80% to 98% and a specificity of more than 99% to 100%.<sup>7</sup> This study was conducted to determine the sensitivity and specificity of fine needle aspiration cytology (FNAC), by comparing the results with excision biopsy.

## MATERIAL AND METHODS

It was a comparative study conducted in surgical B ward of Khyber Teaching Peshawar from August 2002 to May 2003. The study includes 50 patients, all female, presented with

## FNAC CATEGORIES

Benign	There was no evidence of malignancy
Suspicious	Doubtful malignancy
Malignant	Cancer
Unsatisfactory	When there are too few cells, air-drying has occurred, or there was obscuring blood

Fig. 1

breast lump/lumps to our unit. In preparation for FNAC all patients were evaluated with a detailed history and clinical examination. The FNAC was performed using a 23G needle and 10 mL syringe with an average of four to six passes. FNAC was classified into one of the four categories (Fig.1).

The patients were then admitted to our unit, the lump excised on the next OT list under general anesthesia, and sent for histopathological examination. All patients were given oral antibiotics and analgesics. Patients were allowed to go home on the next day.

### RESULTS

Of 12 malignant cases diagnosed on excision biopsy, FNAC suggested the same diagnosis in 9 (75%) cases and 2 (16.7%) were diagnosed as suspicious and the remaining 1 (8.3%) was misdiagnosed as fibrocystic disease, so the false negative being 1 out of 12 (8.3%). Of 38 benign cases diagnosed on excision biopsy, FNAC diagnosed correctly duct ectasia in 3(7.9%) cases, tuberculosis in 2 (5.2%) cases, and galactocele in 1 (2.6%) case. Out of 22 fibroadenomas, FNAC correctly diagnosed 20 (90.9%), and 2 (9.1%) were diagnosed as unsatisfactory. Of 10 cases diagnosed as fibrocystic disease on excision biopsy, FNAC picked up only 6 (60%) cases correctly. The one case diagnosed on FNAC as fibrocystic disease, turned out to be malignant on histology. The remaining 4 cases of fibrocystic disease diagnosed on histopathology were either reported as unsatisfactory 3, or suspicious 1 on FNAC (table 1). The sensitivity and specificity of FNAC was 91.66% and 96.96% respectively.

### DISCUSSION

FNAC of the breast is an excellent, safe and cost-effective diagnostic procedure. The cost of FNAC is minimal, equipment is inexpensive and the technique is simple. Breast aspiration can be done anywhere, at the patient bed, at physician office or at clinic. The most significant advantage of FNAC is the high degree of accuracy, rapid results, and a less invasive procedure than a tissue biopsy. FNAC of the breast can reduce the number of open breast biopsies.<sup>10</sup> Of 12 malignant cases diagnosed on excision biopsy, 9 cases were diagnosed as malignant both on cytology and biopsy, 2 cases were diagnosed suspicious and 1 case (false negative) was diagnosed benign on FNAC, which turned out to be malignant on excision biopsy. False positive results were zero. False negative result in this study was 1 (8.3%). Different studies have shown false positive results, ranging from 0-2% and false negative ranging from 7-22%.<sup>11-13</sup> The different reasons given are usually the sampling errors, microscopy errors and the interpretative errors by the cytologists.<sup>11,14</sup> In the literature the suspicious results range from 3-18%.<sup>15,16</sup> In this study it was 3 (6%). Out of 3 suspicious results 1 turned out to be benign and 2 malignant on excision biopsy. In the study of Kamal F et al, the suspicious results were 3.39%.<sup>17</sup> Thirty two cases were found benign both on FNAC and biopsy, and 1 case diagnosed as fibrocystic disease on FNAC turned out to be malignant on biopsy. The sensitivity and specificity of fine needle aspiration cytology in this study for malignant lumps was 91.66% and 96.96% respectively, while in the study of Qayyum A et al<sup>18</sup> it was 96.3% and 91.4%, in the study of

## FINE NEEDLE ASPIRATION CYTOLOGY VS HISTOPATHOLOGY (n=50)

FNAC (results)		Histopathology (results)	
FNAC	No. of patients	Benign (histology) (n=38)	Malignant (histology) (n=12)
Benign	33	32	1
Malignant	9	0	9
Suspicious	3	1	2
Unsatisfactory	5	5	0

Table 1

Qureshi et al<sup>12</sup> it was 80% and 100%, while in other studies it was 96.5% and 96.4%<sup>19</sup> and 87% and 98%.<sup>20</sup> In the literature, the sensitivity ranges from 80 to 98% and the specificity may be up to 100%.<sup>7,15,21,22</sup> Dysplasia also has a role in the false negative results.<sup>5,23</sup> Small size of the tumour and certain histological types (lobular carcinoma, mucinous, tubular or medullary carcinoma) may contribute to false negative results.<sup>24,25</sup> Five cases were unsatisfactory on FNAC; all were benign on excision biopsy. Fine needle aspiration cytology is the simplest method to evaluate breast lesions, the results of this procedure are mostly dependent on the size of the lump, experience of the individual performing the procedure and the experience of the cytologist.<sup>26</sup> FNAC has proven to be an effective diagnostic procedure in the evaluation of human breast lesions, and have a high degree of accuracy.<sup>27-29</sup>

## CONCLUSION

The sensitivity and specificity of fine needle aspiration cytology in this study was 91.66% and 96.96%. FNAC is recommended for the diagnosis of breast lumps, however before going for definitive treatment, tissue diagnosis is necessary as there have been cases of false negative results for FNAC.

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