

The Value of Fine Needle Aspiration Biopsy in the Management of Breast Disease

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Abstract

Fine needle aspiration biopsy is a technique used all over the world in the diagnosis and management of breast lumps. It is safe, quick, accurate, cost effective and acceptable to the patients. We reviewed 234 fine needle aspiration biopsies performed over a period extending from 1991-1993 for diagnosis of breast lesions. Majority of the patients presented with breast lumps (89.7%). On FNAB 144 (61.4%) cases were reported as benign and 60 (25.6%) as malignant. Histological diagnosis was available in 116 cases. On comparison with open biopsy diagnosis, FNAB was found to have a sensitivity of 96.4%, a specificity of 95.5% and efficiency rate of 96.2%. The results of the study endorse the use of FNAB as an accurate and effective technique in the management of breast ailments in our set-up (JPMA 45:120,1995).

Introduction

The role of fine needle aspiration biopsy (FNAB) in the management of breast diseases has now been irrefutably established in the West^{1,2}. This is the first investigation recommended in dealing with breast lump and is considered to have a high rate of accuracy³⁻⁶. Different workers have shown a variety of results with accuracy ranging from 76%³ to 95%⁴. It has not been long since this technique was introduced in Pakistan. This study carried out at the Armed Forces Institute of Pathology in collaboration with one of the surgical units at Combined Military Hospital Rawalpindi was done to study the efficacy of this technique in our setup.

Patients and Methods

All patients presenting with breast complaints and considered suitable for FNAB by the surgeons, during the period 1991-1993, were included in the study. The FNAB was performed either by a member of the surgical team or a pathologist using a 5 or 10cc syringe and 21 gauge needle. No local anaesthetic was used. Upto three passes were made in each case. The slides were wet fixed in absolute alcohol for thirty minutes and then were stained with Haematoxylin and Eosin and Papanicolaou stains. Each case was reported independently by two pathologists. A diagnosis of malignancy was only made when both of them agreed. When there was a difference of opinion regarding malignancy the cases were reported as suspicious. The results were divided into five categories: (a) Malignant; (b) Suspicious - Suggest frozen section/excision biopsy for confirmation of malignancy; (c) Non-diagnostic - Suggest excision biopsy; (d) Benign and (e) Inadequate. Retrospectively the FNAB data was analyzed. The cytological reports were correlated with the histology in cases where biopsy results were available. The predictive value model of Galen and Gambino⁷ was used to calculate sensitivity, specificity, positive predictive values and efficiency of FNAB in the diagnosis of breast cancer. All cases diagnosed as being suspicious for malignancy on FNAB were categorized as true or false positive.

Results

During the period extending from 1991 to 1993, 234 FNAB were carried out for breast lumps. Of these 211(90.1%) were done for primary diagnostic purposes and 23 (9.9%) for detection of recurrence in patients with previously diagnosed breast cancer. The age of the patients was known in 175 cases. The majority, 95(40.6%) were in 30-49 years age group. The mean age was 42 years and range from 14-86 years. One hundred and thirty (74.2%) patients were less than 50 and 45 (25.7%) above 50 years. There were four male patients and all the remaining were female.

Table I. Clinical presentation.

Presentation	No. of Cases
Breast lump	210
Illdefined nodularity	6
Skin dimpling	6
Pain	5
Nipple discharge	4
Gynaecomastia	3

Table I shows the mode of clinical presentation. Majority (89.7%) of patients presented with breast lumps. In three male patients the clinical diagnosis was gynaecomastia, while the fourth was suspected of having carcinoma.

The size of the lumps was known in 67 cases. Fifty (74.6%) ranged from 2-5 cms, 7(10.4%) were less than 2 cms and the remaining 10 were more than 5 cm in size. Results of FNAB are shown in Table II.

Table II. FNAB diagnosis.

FNAB Diagnosis	No. of Cases
Malignant	60
Benign	118
Suspicious	14
Non-diagnostic	12
Inadequate	30

One hundred and forty-four (61.5%) were reported as benign (Table III)

Table III. Benign diagnoses on FNAB.

FNAB Diagnosis	No. of cases (n=118)
Acute inflammation	29
Benign	48
Fibroadenoma	18
Fibrocystic disease	18
Chronic inflammation	4
Gynaecomastia	1

and 60 (25.6%) as malignant. Of 30 specimens reported as inadequate, 9 (8.8%) out of 102 were done at histopathology and 21(15.9%) out of 132 at surgical departments. None of the patients had any complications. Biopsy results were available in 116 cases. A comparison of histological and FNAB diagnosis is given in Table IV.

Table IV. Comparison of FNAB and histological diagnosis.

FNAB Diagnosis	N=116	Histopathological Diagnosis	
		Benign	Malignant
Malignant	58	0	58
Benign	47	45	2
Suspicious	6	2	4
Non-diagnostic	5	3	2

Histological examination confirmed the diagnosis of malignancy in all cases reported as malignant on FNAB. Two cases reported as suspicious on FNAB were benign and two reported as benign were malignant on histological examination. The performance parameters are given in Table V.

Table V. Comparison of performance parameters with other series.

Parameters	AFIP	Frable ⁴	Zajdela ⁶	Palombini ¹³	Kline ⁵
Sensitivity (%)	96.4	90.1	92.9	95.7	89.9
Specificity (%)	95.5	97.5	95.8	89.6	92.4
Efficiency	92.7	94.6	93.3	94.0	91.6
Positive Predictive value	96.4	95.7	97.5	95.2	95.3

The positive predictive value was 96.4% and efficiency was 92.7%.

Discussion

Fine needle aspiration biopsy in the management of breast disease is becoming increasingly common. The advantage of safety, accuracy, efficiency and rapid availability of results have made it extremely popular¹⁻⁶. It has been reported superior to Trucut needle biopsy in establishing the diagnosis in breast lumps⁸. FNAB is now recommended as the first investigation to be carried out in any patient presenting with a breast lump⁹. Breast carcinoma is one of the commonest tumours in the female population of Pakistan¹⁰ and the majority of these patients have fairly large tumours¹¹. The sizes of the breast lumps in our patients were mostly between 2 and 5 cms in diameter with only 7 (10.4%) being less than 2 cm. The large size of the breast tumours may be responsible for adequate aspirates in 87% of our cases despite the fact that both the pathologists as well as surgeons performing FNAB had no previous experience of this technique. This is comparable with other series¹²⁻¹⁴. It is however interesting that like other workers^{4,12,13} a higher percentage of inadequate aspirates were reported when the aspirations were done by a surgeon than by a pathologist. The reason usually given is the continuity of the procedure of aspiration, staining and reporting when the aspirator is a pathologist. Our results

(sensitivity 96.4%, specificity 95.5% and efficiency 96.2%) are comparable with the best results published in literature^{4-6,9} (Table V). A similar study from Pakistan also reports sensitivity of 96.5%, specificity of 96.4% and accuracy of 96.5%¹⁵. Comparable results have also been reported by Latif et al¹⁶ in their study of fine needle biopsy without aspiration. A very high degree of accuracy despite lack of previous experience may also be attributed to the fact that all the malignant tumours in our material were mostly high grade invasive carcinomas of fairly large size. In addition, a definite diagnosis of malignancy was made only in those cases where both the pathologists examining the slides were certain of the nature of the lesion. Many of the breast lumps reported as benign on aspiration were managed conservatively and not biopsied. These included those reported as acute inflammation (abscess), chronic inflammation and fibrocystic disease. An attempt was made to make a definite diagnosis rather than just reporting as a benign aspirate. Two cases which were reported as suspicious and proved benign on histology were the only false positive ones. These were cases of fibrocystic disease. As frozen section/excision biopsy had been suggested in the report the patient management was not affected. The two false negative cases on review were found to be due to sampling error rather than an error of interpretation. Strict criteria for diagnosis of malignancy are essential if we are to keep false positive cases at a minimum¹⁶. In cases where a definite diagnosis is not possible, repeat FNAB or excision biopsy along with follow-up are mandatory. In order for FNAB to be effectively and accurately used as a guide to patient management, close cooperation between the clinicians and pathologists is essential.

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