



Comparison of the diagnostic accuracy of FNAC and BIOPSY in the diagnosis of a palpable breast lump

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ABSTRACT

OBJECTIVE: To study and compare the results of FNAC of breast lumps preoperatively with that of the post operative histopathological examination and analyse the accuracy of FNAC in their diagnosis

DESIGN: The study conducted was prospective (Canadian Task Force Classification II-I)

PATIENTS: The present study included 200 patients who presented with breast lumps and admitted to the surgery department of IMS Medical College & SUM Hospital, Bhubaneswar and who underwent FNAC and subsequent breast lump excision as per their nature. The period of study was from October 2014 to September 2016 over a 2 year period.

MEASUREMENTS AND MAIN RESULTS: Patient average age was 40.5 yrs. The female to male ratio was 32.3: 1 with a female preponderance. The majority of the lumps were benign and premenopausal. FNAC gave 71% lumps to be benign and 29% as malignant. Histopathology confirmed 65.5% to be benign 2.5% to be inflammatory and 32% to be malignant. The sensitivity and specificity in detecting malignancy was 90.6% and 100% respectively. The overall accuracy of FNAC was 97%.

CONCLUSION: In our experience of 200 patients who underwent FNAC and subsequent excision for their breast lumps and histopathological confirmation, it was found that FNAC, though not confirmatory is a reliable screening method for diagnosis of breast lumps and correlates well with histopathology. The findings in our series were more or less similar to those deduced in other series.

KEYWORDS : Breast lumps, FineNeedleAspirationCytology (FNAC), Histopathology (HP),

Introduction

A lump in the breast results in extreme anxiety for the woman and her family and is the most important reason for her to seek physicians consultation. Hence breast lumps are the most common presenting symptoms in females of all groups. It includes disorders of normal physiologic function, inflammation disorders and benign or malignant neoplasms. A disorder of the breast that raises the most of the concern is the malignant neoplasm. The breast is the second most common cause of cancer amongst females in India next only to carcinoma cervix. In India the problem cancer breast is worse because of ignorance, illiteracy and poverty. Any breast lump needs a cytohistological diagnosis as even in expert hand the sensitivity of clinical diagnosis is 75% [1]. For an accurate diagnosis of the breast lump FNAC (Fine Needle Aspiration Cytology) has gained wide popularity and acceptance as a quick, simple and reliable diagnostic procedure that can be carried as outpatient service. However it has its own limitations in terms of sensitivity and specificity [2]

Materials and Methods

The present study was conducted in the department of surgery, IMS and SUM Hospital, Bhubaneswar, Odisha over a period of two years from October 2014 till September 2016. The study included all female and male patients who presented with breast lump. The study excluded patients with acute breast abscess. All the patients were examined clinically with detailed history and provisionally diagnosed as benign or malignant. Then they were subjected to FNAC preoperatively followed by excision. All the removed specimens were subjected to histopathological examination and confirmation. Finally the results of FNAC of the lumps were compared with the histological finding to assess and evaluate the efficacy and accuracy of FNAC. Both FNAC and histopathology procedures were undertaken by the department of Pathology.

The skin over the breast lump was cleaned with spirit cotton swab. The lesion was held with one hand and stabilised while an average 2-6 passes were made by the other hand using a 10 ml. airtight syringe with 23/25 gauge needle under constant negative pressure. Multidirectional sampling was done by moving the needle back and

forth as per the recommendations of the American consensus meeting on breast needle procedures. Negative pressure was released before removal of the needle. Initial assessment for specimen adequacy was performed on smears by Diff QUICK method. The sample was considered to be adequate if it contained at least three well preserved groups of epithelial cells per slide and no fixation artefacts in the thin smears. The smears were stained with Haematoxylin Eosin (H&E) stains.

study was carried out in all breast lumps following lumpectomy, mastectomy or excisional biopsy for confirmatory as well as treatment options according to the stage in a malignant tumour and confirmation only in a benign one.

OBSERVATIONS

Table 1. FNAC outcome of breast lumps

		NO.OF CASES	PERCENTAGE
Benign lumps			
Granulomatous mastitis	GM	2	1
Chronic non-specific mastitis	CNSM	3	1.5
Galactocele	GALT	2	1
Fibroadenoma	FA	106	53
Fibrocystic disease	FCD	17	8.5
Benign phylloides tumour	BPT	6	3
Gynaecomastia	GM	6	3
Total		142	71%
Malignant lumps			
Infiltrating duct carcinoma	IDC	53	26.5
Medullary carcinoma	MC	3	1.5
Malignant phylloides tumour	MPT	2	1
Suspicious of malignancy		0	0
Inadequate/insufficient tissue		0	0
Total		58	29%

Table 2. Histopathological diagnosis of excised breast lumps

Inflammatory lumps		NO.OF CASES	PERCENTAGE
Granulomatous mastitis	GM	2	1
Chronic non-specific mastitis	CNSM	3	1.5
Total		5	2.5%
Benign lumps			
Galactocele	GALT	0	0
Fibroadenoma	FA	99	49.5
Fibrocystic disease	FCD	15	7.5
Benign phylloides tumour	BPT	11	5.5
Gynaecomastia	GM	6	3
Total		131	65.5%
Malignant lumps			
Infiltrating duct carcinoma	IDC	57	28.5
Medullary carcinoma	MC	3	1.5
Malignant phylloides tumour	MPT	4	2
Suspicious of malignancy		0	0
Inadequate/insufficient tissue		0	0
Total		64	32%

Table 3. Inconsistency of FNAC results with HP results

Lump type	FNAC	HP	Inconsistent	Remarks
Inflammatory				
GM	2	2	0	No inconsistency
CSNM	3	3	0	No inconsistency
GALT	2	0	2	2 cases found to be GALT in FNAC Were detected as FA in HP
Total	7	5	2	
Benign				
FA	106	99	7	Out of 106 cases of Fain FNAC 4 were found to be BPT, 1 was FCD and 4 were IDC in HP(-9); 2 cases found to be GALT in FNAC were found to be FA in HP(+2) Total -9+2=-7
FCD	17	15	2	Out of 17 cases of FCD in FNAC 1 was detected as BPT and 2 were MPT in HP(-3); 1 case of FA detected in FNAC was found to be FCD in HP(+1); Total 3+1=4
BPT	6	11	5	4 cases of FA detected as BPT and 1 case of FCD in HP as BPT
GYM	6	6	0	No inconsistency
Total	145	131	14	
Malignant				
IDC	53	57	4	4 cases of FA in FNAC were found to be IDC in HP
MC	3	3	0	No inconsistency
MPT	2	4	2	2 cases of FCD in FNAC and found out to be MPT in HP
Total	58	64	6	

DISCUSSION

Age of the patients varied from 11 – 70 years with the highest incidence seen 21-40 with 55% belonging this age group. The incidence of malignant lesions showed a rising trend from second decade onwards. Thus breast cancer appears a decade earlier in Indian women than western women. Similar observations were reported by **Costa et al & Rocha et al [3]**.

Table 1 shows the results of FNAC study of the breast lumps. Out of 200 cases 142 (71%) were diagnosed as benign lesions while rest 58(29%) were found to malignant lesions. Commonest benign tumour was fibroadenoma whilst the commonest malignancy was infiltrating ductal carcinoma similar to studies as reported by **Kher et al[5] and Rocha et al[3]**.

Table 2 shows histological diagnosis after surgical intervention of the breast lumps. Total 131 breast lumps were diagnosed as benign, of which fibroadenoma the most common was followed by Fibrocystic disease, benign phylloids tumour and gynaecomastia. The most common malignancy was infiltrating duct carcinoma followed by malignant phylloids and medullary carcinoma. A total of 68% were found out to be of benign nature while 32% were of malignant variety. Similar high incidences of malignant lesions were reported by **Palombine et al[10] and Colaco et al[5]**. Benign lumps were common below 30 years and malignant above 30 years age, **Rocha et al [3]**

Table 3 shows the overall histopathological correlation. In inflammatory lesions 2 cases of Galactocele were diagnosed as FA in HP study. In benign lesions a total of 9 cases were found to be different in HP study to that of FNAC. More **importantly 4 cases of FA were found to actually IDC**. Bell et al[6] in their study concluded that benign cytologic diagnosis cannot be considered as absolute assurance that a lump is benign and does not replace tissue biopsy or careful follow up in a patient with clinically suspicious lump. **Collaco et al [3]** described that many of the false negative cases were associated with fibrocystic changes. In this series the findings were similar and consistent with the observation made by **Bell et al Collaco et al [5]**

The sensitivity and specificity of FNAC in detecting malignancy was found to be 90.6% and 100% respectively. The positive predictive value and the negative predictive value for FNAC in detecting malignancy were found to be 100% and 95.8% respectively. The negative likelihood ratio of FNAC was found to be 0.094. The test result was very strong for ruling out disease (<0.1) which means that a person found to negative with FNAC are only 0.009 times likely to have a negative result also with HP. All values are consistent with the previous studies performed by **Bell, Hajdu et al [11]** (sensitivity 97.5% and specificity 100%). **Westenend et al[12]** (sensitivity 92% and specificity 100%). **Rubin et al [13]** (sensitivity 86% specificity 98%). **Collaco et al [5]** (sensitivity 92.1% specificity 98.6%). **Rocha et al[10]** (sensitivity 93.5% specificity 98.21%).

Conclusion

From the above study we conclude that FNAC is a simple, quick, reliable, cosmetically accepted as well as effective method of determining the diagnosis of breast lumps. Diagnostic accuracy of FNAC is very high when performed by an expert pathologist. It provides evaluation of patient and planning of patient protocol in outpatient basis. As this study has shown, FNAC has very high specificity (100%) and equally high negative value (98.4%). FNAC has a high over all accuracy (97%) in diagnosis of breast malignancy but biopsy gives a definite diagnosis and thus is the gold standard for confirming the diagnosis of a breast lump and further treatment planning.

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