

Original article:

Utility and Diagnostic Accuracy of Fine Needle Aspiration Cytology in Patients with Mammary Gland Lesions

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ABSTRACT

Introduction: FNAC has acquired a very important role in the diagnosis of palpable breast lesions and has largely replaced open biopsy, especially frozen sections. It is a simple, inexpensive, minimally invasive method and relatively painless. This study aim was to determine the utility and diagnostic accuracy of fine needle aspiration cytology in patients with mammary gland lesions.

Materials and Methods: All patients who had FNAC of breast lumps with subsequent histological confirmation over this period were included in the study. The case history of the patient was recorded, includes detail history of pain, nipple discharge, ulceration of nipple, and duration of lesion. The examination of breast lump was done with recording of size and site of lump, consistency, fixation to skin and underline tissue, and retraction of nipple along with regional lymph node involvement. Procedure is done using 24-gauge needle fitted on 10 ml disposable syringe in syringe holder.

Results: All the 150 patients underwent a diagnostic FNAC in our Pathology Department. the data was tabulated methodically and analysed statistically. The extent of correlation between FNAC and histopathology was noted. In the present study, males contributed 3 (2%) cases and females contributed 147 (98%) cases. Age range of patients varied from 15 years to 80 years. In all 3 cases of male patients, diagnosis of gynecomastia was given. Table 1 shows various types of diagnoses given on FNAC.

Conclusion: FNAC is a reliable, fast and accurate diagnostic method for the assessment of breast lesions.

Keywords: FNAC, Breast Lesions, Diagnostic Accuracy.

INTRODUCTION

Fine needle aspiration cytology in patients with mammary gland lesions is an important diagnostic procedure used to evaluate breast lesions and to assist in their pre-operative management and overall therapy. In addition to the initial diagnosis, FNAC is of value in staging the disease, documenting recurrence and identifying tumor transformation. It has acquired a very important role in the diagnosis of palpable breast lesions and has largely replaced open biopsy, especially frozen sections. It is a simple, inexpensive, minimally invasive method and relatively painless. It provides the diagnosis in a short time and has low risk of complications. Increase in cases of breast cancer are related to late marriage, birth of child in the later age, shorter period of breast feeding and nulliparity.¹ Mass in breast, whether benign or malignant is a cause of the anxiety to the patient & her family member.¹ It is difficult to determine whether a suspicious lump is benign or malignant simply from clinical examination. Therefore a method of definitive

diagnosis of patients who present with breast lumps at the out patients clinic is needed. FNAC is accurate method ,easy to perform, acceptable to the patient, carried out in a busy clinic setting, not requires too much preparation, cost effective.¹The application of FNAC for the diagnosis of palpable breast masses was introduced by Martin and Ellis in 1930 and since then it has been established as an important tool in the evaluation of breast lesion.² Histopathological diagnosis is a universally accepted confirmatory mode of diagnosis & follow up.³ FNAC can reduce the number of open biopsy.³FNAC of breast lump is an important partof triple assessment:³ FNAC has various benefits over the open tissue biopsy.⁴ Now-a-days, FNAC is being performed as a pre-operative test to evaluate the breast lump. A study of Khatunet al.⁵ in the year 2000 evaluated the accuracy of FNAC on 310 patients presented with palpable breast lumps showed a very high sensitivity, specificity and accuracy. FNAC can prevent unnecessary surgery also. FNAC could provide a diagnosis with only 10-30% of the cost of surgical biopsy.⁶ 95% accuracy in preoperative diagnosis of mammary cancer by clinicocytological combination was reported in a study.⁷ As FNAC became more reliable in diagnosing malignancy and thereby the use of frozensection histology had been reduced by about 80 %.⁸ That is why FNAC is regarded as preliminary diagnostic procedure, as a screening procedure with or without ultrasonography or stereotactic guidance, or as a follow-up procedure for postmastectomy or lumpectomy.

This study aim was to determine the utility and diagnostic accuracy of fine needle aspiration cytology in patients with mammary gland lesions.

MATERIALS AND METHODS

The present study includes 150 cases of FNACs of breast lesions received at the cytology lab in the department of pathology, SGRRIMHS,Dehradun.

After taking consent and relevant history, All patientswho had FNAC of breast lumps with subsequent histologicalconfirmation over this period were included inthe study. The case history of the patient was recorded,includes detail history of pain, nipple discharge, ulcerationof nipple, and duration of lesion. The examination ofbreast lump was done with recording of size and site oflump, consistency, fixation to skin and underline tissue,and retraction of nipple along with regional lymph nodeinvolvement. Procedure isdone using 24-gauge needle fitted on 10 ml disposablesyringe in syringe holder. The wet smear fixed withether-alcohol mixture stained with hematoxylin and eosinand papanicolaou stain. The air-dried smear stained withMay-GrunwaldGiemsa stain.Demographic dataincluding age, sex and clinical presentation wereobtained from request form. Findings of FNAC werecorrelated with data from histopathology records.Sensitivity, specificity and test efficiency wererecalculated using standard statistical methods.

RESULTS

All the 137 patients underwent adiagnostic FNAC in our Pathology Department.The data was tabulated methodically and analysed statistically. The extent of correlation between FNAC and histopathology was noted. In thepresent study, males contributed 3(2%)cases and females contributed 147(98%)cases.Age range of patientsvaried from 15 years to 80 years. In all 3 cases of male patients,diagnosis of gynecomastia was given. **Table 1** showsvarious types of diagnoses given on FNAC. **Table 2**shows age-wise distribution of various breastlesions. Out of all breast lump lesions, benign tumors were more common than malignant tumors (82.7%). Among benign tumor,

fibroadenoma [Figure 1] was the most common tumor which constituted 94 cases (74.2%). FNAC diagnosis were shown in table 1 in which Benign breast lesions were found in 124 cases, fibrocystic disease were found in 12 patients, Inflammatory breast disease were found in 10 cases Malignant breast lesions in 4 cases, Invasive lobular carcinoma in 1 and Invasive duct carcinoma were found in 3 cases. Figure 2 shows the fine needle aspiration cytology of periductal mastitis in which smear shows plenty of anucleated squames. Most of the lesions were seen between 25-45 years of age group. The present study of FNAC of breast lesions is found to be reliable and it is simple, cost effective and less traumatic method for diagnosis of breast lump. It is highly sensitive and specific also, and can reduce the needs for open biopsies.

Table 1: Fine-needle aspiration cytology diagnosis of cases of breast lesions

FNAC diagnosis	No. of cases	Percentage
Fibroadenoma	94	75.2%
Lactating adenoma	3	2.4%
Galactocele	6	4.8%
Fibrocystic disease	12	9.6%
Benign phyllodes	1	0.8%
Inflammatory breast disease	10	8%
Malignant breast lesions	4	3.2%
Invasive lobular carcinoma	1	0.8%
Invasive duct carcinoma	3	2%
Gynaecomastia	3	2.4%

Table 2: Age-wise distribution of various breast lesions

Diagnosis	15-20	21-30	31-40	41-50	51-60	61-70	71-80	Total
Benign breast lesions	8	34	49	17	11	3	2	124
Fibroadenoma	6	28	36	13	7	3	1	94
Lactating adenoma	-	3	-	-	-	-	-	3
Galactocele	-	5	1	-	-	-	-	6
Fibrocystic Disease	-	3	5	2	2	-	-	12
Benign phyllodes	-	-	-	-	1	-	-	1
Inflammatory breast disease	-	1	6	3	-	-	-	10
Malignant breast lesions	-	-	-	-	2	1	1	4
Invasive lobular carcinoma	-	-	-	-	1	-	-	1
Invasive duct carcinoma	-	-	-	-	1	2	-	3
Gynecomastia	-	-	1	-	2	-	-	3

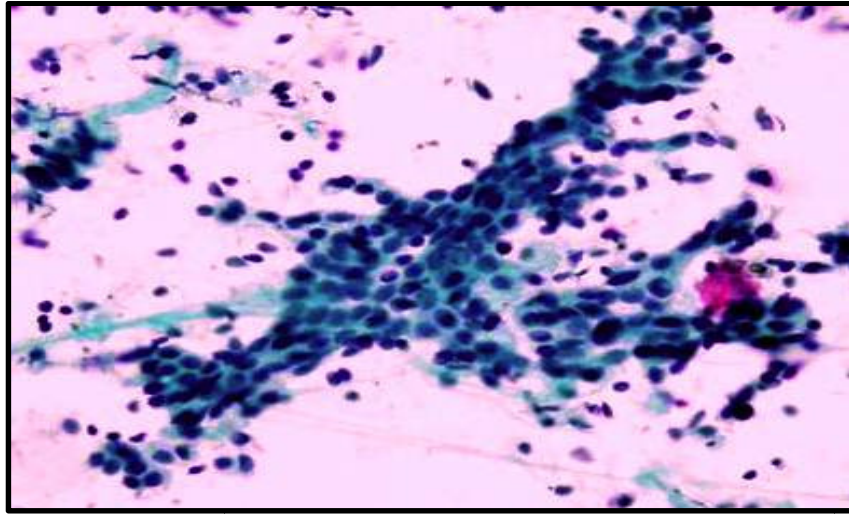


Fig 1: Fibroadenoma

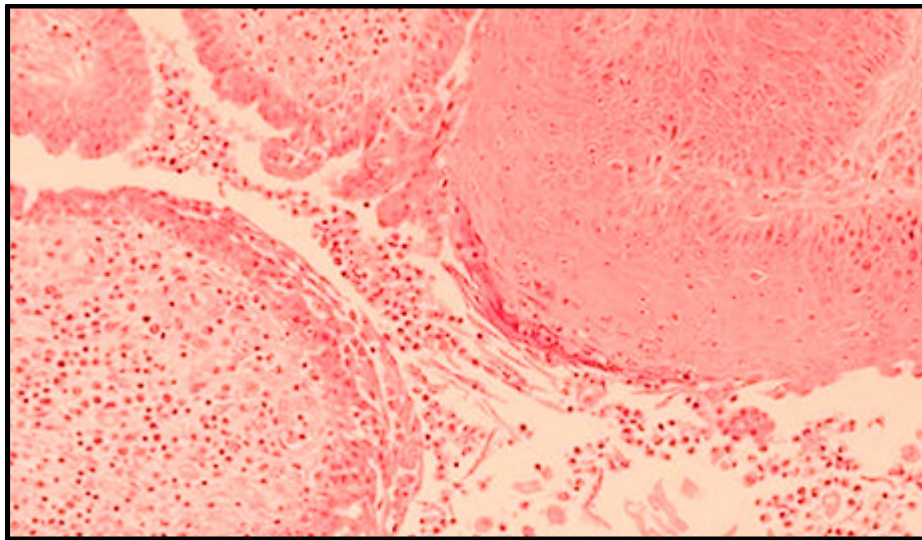


Fig 2: Peiductal Mastitis

DISCUSSION

In the present study, males contributed 3 (2%) cases and females contributed 148 (98%) cases. Age range of patients varied from 15 years to 80 years. In all 3 cases of male patients, diagnosis of gynecomastia was given. Benign breast lesions were found in 124 cases, fibrocystic disease were found in 12 patients, Inflammatory breast disease were found in 10 cases Malignant breast lesions in 4 cases, Invasive lobular carcinoma in 1 and Invasive ductal carcinoma were found in 3 cases.

The present study confirms the view that FNAC has high ability to detect benign and malignant lesions with high efficacy and accuracy. Thus fine needle aspiration cytological study can be a safe, simple and effective tool for

defining and diagnosing breast lesions. This study documented the fact that the benign lesions of breast are the most common lesions. This increased case of benign lesions indicates increase in awareness of patients. In such lesions the reassurance is the main line of treatment though close follow up is mandatory. FNAC of breast lump is an accepted and established method to determine the nature of breast lump with high degree of accuracy⁹⁻¹². The application of FNAC for the diagnosis of palpable breast masses was first introduced by Martin and Ellis² in 1930, and since then, it has been established as an important tool in the evaluation of breast lesions. FNAC is simple, cost effective and less traumatic as well as highly sensitive and specific method for assessment of breast lumps. Most of the patients with breast lump are in a state of anxiety, so to reduce anxiety and unnecessary surgical procedures as well as to minimize delay in diagnosis, FNAC plays an important role.

In a similar study done by Hussain on 50 patients, the age distribution was between fifteen and sixty-five years and the maximum patients were seen in the thirty one to forty year group (30%).¹³ Similar studies done by Homesh¹⁴ et al and Tiwari¹ showed similar age patterns.

Patel et al showed that FNAC results were influenced by the number of needle maneuvers performed with less than ten needle maneuvers being associated with a 54% unsatisfactory aspiration rate, as compared to 25% when more than ten maneuvers were performed.¹⁶ They concluded that experience and technique are the most important factors in obtaining a satisfactory aspirate from breast lumps. Ljung et al¹⁶ also reported on the influence of training and experience in aspiration cytology of the breast with a maximum influence on sensitivity values which dropped sharply from 98.2% to 75% with an untrained person performing the aspiration. We therefore concluded that FNAC is a reliable diagnostic tool of breast lumps in our centre. Being a fast and cheap diagnostic tool as highlighted by previous studies, we advocate that clinicians should continue to embrace this diagnostic technique in the surgical management of breast lesions. FNAC serves as a rapid, economical, and reliable tool for the diagnosis of palpable breast lesions because the cytopathological examination of these lesions before operation or treatment, serves as an important diagnostic modality.

CONCLUSION

FNAC is a very important preliminary diagnostic test in palpable breast lesions, and done by expert hands, the results show a high degree of correlation with the final histopathology report. FNAC is a reliable, fast and accurate diagnostic method for the assessment of breast lumps. It has few manageable complications and can be done on outpatient basis. It is our conclusion therefore that the surgeons and pathologists should continue to deploy the procedure towards the early detection of breast cancer.

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