

**Original Research Article****Role of Fine Needle Aspiration Cytology (FNAC) In the Diagnosis of Breast Lump and Its Histopathological Correlation in Tertiary Care Hospital at Muzaffarpur, Bihar**

Authors

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Abstract

Objective: For the diagnosis of breast lumps, Triple Assessment methods, which include clinical assessment, radiological imaging and pathological diagnosis is the most accepted Worldwide, in which FNAC is the most important methods of cytopathology diagnosis. The aim of present study was to evaluate the result of aspiration cytology of breast lump and to establish the diagnostic accuracy of the technique by comparative evaluation with histopathological diagnosis of respective breast lump.

Materials and Methods: Present study was conducted in the department of Pathology, Sri Krishna Medical College, Muzaffarpur, Bihar during the period of August 2015 to December 2016. A total of 76 Patients with breast lump attending the Gynaecological or surgical OPD and IPD were included in the study. After thorough clinical history, all the patients were subjected to proper clinical examination. Prior to F.N.A.C. all the relevant routine investigation (CBC, ESR, LFT, KFT, BT, CT, Blood Sugar, Viral Markers) were performed and written consent were taken. Tight fitting 10 ml plastic disposable syringes with fine 22 Gauge needles of 38 mm length were used for FNAC. Specimens were immediately smeared on glass slides and air dried for May Grunwald Giemsa stain. Wet fixed smears were stained by Papanicolaou and H and E stains and seen under oil immersion lens. After FNAC every patient underwent a definitive surgical procedure for breast lump and after that all the tissue undergone histopathological examination. The results thus obtained from FNAC and histopathology was matched and a correlated.

Results: In this study the maximum number of 34 (44.73%) cases were belong to the age group of 21-30 years followed by age group of 31-40 years in which there were 16 (21.05%) cases, while the minimum incidence of 4 (5.26%) cases were in the age group of 51 years and above. Out of 76 patients a total of 62 patients (81.75%) were diagnosed as benign breast lesion (Fibroadenoma 44.73%, Fibroadenosis 21.05%, Mastitis 15.75%), malignant lesion in 08(10.52%), suspicious or atypical lesion in 05 cases (6.57%) by FNAC and 01(1.31%) cases had scanty aspirates. Out of 76 cases studied, 10 cases were histologically confirmed cases of carcinoma. Remaining 66 cases were of benign lesions, of which there were 37 cases of fibroadenoma, 17 cases of fibroadenosis and 12 cases of chronic mastitis. 10 cases of carcinoma and 66 cases of benign breast lesions were diagnosed correctly by fine needle aspiration cytology. The accuracy rate in diagnosing fibroadenoma and fibroadenosis was 91.89% and 94.11% respectively. Thus overall diagnostic accuracy rate found to be 91.5%.

Conclusion: FNAC of breast is simple, safe, cheap, and easy to perform, without anaesthesia, less traumatic and OPD procedure for diagnosis of breast lump. FNAC can provide a preoperative diagnosis with reasonable accuracy as compare to histology and gives guidelines to management In advanced carcinoma.

Keywords: FNAC, breast lump, neoplasm, histopathology.

Introduction

Fine Needle aspiration cytology in the diagnosis of malignancy has been a controversial issue since its inception. Although the technique of aspiration cytology has been clinically available since it was first introduced in the year 1930 by Martin and Ellis, the use of this procedure as a diagnostic and therapeutic measure has gained wide spread acceptance in the last few years only. Reactions to this procedure vary from enthusiastic acceptance to almost total rejection. The main objections have been the possibility of tumor spread along the needle track or distal embolisation through the efferent lymph or blood vessels. These objections have been ruled out by the work of Berg et al (1962), Engzell (1971), Robbins et al (1974), Zajicek (1979), Z A Karcioğlu (1985), S. Shinohara (2001) and M A Silva (2008).

For a technique to be accepted, it should be easy to perform, causing minimum discomfort to the patient, little time consuming with early availability of results and have good diagnostic accuracy. Aspiration cytology meets with all these requirements and hence the reasons for its gaining popularity.

FNAC of breast lesions help in rapid diagnosis and useful for allaying the apprehension and anxiety of the patient whose apparent solid mass may turn to be a cyst thus reducing the anguish and morbidity associated with unnecessary surgical procedures. If the lesions turn to be malignant, the patient can be plan for immediate treatment, so that prompt treatment can be given to the patients.

FNAC is used for the diagnosis of benign and malignant lesions of the breast. Moreover the results of aspiration cytology do not carry the same weight for different people and its diagnostic accuracy needs to be evaluated. Needless to say that diagnostic accuracy and its clinical acceptance depends upon the experience and keen interest of the reporting cytologists.

The present study aims at evaluating our results of aspiration cytological diagnosis of breast lump and to establish the diagnostic accuracy of the

technique by comparative evaluation with histopathological diagnosis.

Materials and Method

Present study was a prospective study conducted in the department of Pathology, Sri Krishna Medical College, Muzaffarpur, Bihar during the period of August 2015 to December 2016. A total of 76 Patients with breast lump attending the Gynaecological or surgical OPD and IPD were included in the study. After thorough clinical history, all the patients were subjected to proper clinical examination. Prior to F.N.A.C. all the relevant routine investigation (CBC, ESR, LFT, KFT, BT, CT, Blood Sugar, Viral Markers) were performed and written consent were taken.

The skin overlying the lump was cleansed with antiseptic solution after determining the site by palpation. Local anaesthesia was not used. The lump was gripped by one hand in position suitable for needling. Lesions were held between the index finger and thumb of one hand and were punctured. When the needle had entered the lump mass, the plunger of the syringe was retracted to create a vacuum in the system while the needle was guided in a straight line through the lesion. This was maintained with the thumb and index finger of another hand, and the needle was moved through the lump three or four times in different directions. Throughout this procedure the negative pressure was maintained by keeping the plunger retracted. When the aspiration was completed, the syringe was allowed to equalize before the needle was withdrawn.

The needle was then removed from the lump and the syringe was disconnected from the needle. The syringe was filled with air and reconnected to the needle. The contents of the needle were then carefully expressed on clean dry slides and smears of adequate density was prepared by gentle pressure with the flat surface of another slide. Aspirate containing blood or cystic fluid were spread like that of a case of ordinary blood smears and large tissue fragments that were collected at

the end of the smear, then gently squeezed with the flat pressure with the glass slide.

Air dried smears followed by staining with May-Grunwald-Giemsa stain for Fine Needle Aspiration cytology, and alcohol (95%) fixed smears followed by staining with Haematoxylin-Eosin stain for tissue sections were used and seen under oil immersion lens.

After FNAC every patient underwent a definitive surgical procedure for breast lump and after that all the tissue undergone histopathological examination. The results thus obtained from FNAC and histopathology was matched and a correlated.

Results

Table-1 shows Age distribution of patients with breast Lump

Age of Female with breast Lump (in years)	Total no. of Female with breast Lump	Percentage
14-20	8	10.52
21-30	34	44.73
31-40	16	21.05
41-50	14	18.42
More than 51 yrs	4	5.26
Total no. of Female	76	

In this study the maximum number of 34 (44.73%) cases were belong to the age group of 21-30 years followed by age group of 31-40 years in which there were 16 (21.05%) cases, while the minimum incidence of 4 (5.26%) cases were in the age group of 51 years and above.

Table-2 shows Cytological diagnosis of patients with breast Lump

Cytological diagnosis n=76		Total no. of cases	Percentage
Benign Lesion n=62 (81.75%)	Fibroadenoma	34	44.73
	Fibroadenosis	16	21.05
	Mastitis	12	15.75
Malignant Lesion		8	10.52
Suspicious or Atypical Lesion		5	6.57
Scanty Lesion		1	1.31

Table-3 shows Histopathological diagnosis of patients with breast Lump

Histopathological diagnosis n=76		Total no. of cases	Percentage
Benign Lesion n=62 (81.75%)	Fibroadenoma	37	48.68
	Fibroadenosis	17	22.37
	Mastitis	12	15.79
Malignant Lesion		10	13.16
Suspicious or Atypical Lesion		0	0
Scanty Lesion		0	0

Table- 4 shows cytological and histopathological correlation of breast lump.

Types of Lesion	Total No. of cases diagnosed by cytology	Total No. of cases diagnosed by Histopathology	Accuracy %
Fibroadenoma	34	37	91.89
Fibroadenosis	16	17	94.11
Mastitis	12	12	100
Malignant Lesion	8	10	80
Suspicious or Atypical Lesion	5	0	00
Scanty Lesion	1	0	00
Total	76	76	

Discussion

For the diagnosis of breast lump FNAC is a most accepted and established procedure to determine the nature of breast lump and degree of accuracy. The application of FNAC for the diagnosis of palpable breast masses was first introduced by Martin and Ellis 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. 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 important role.

The present study was done on 76 cases of breast lump to determine the diagnostic accuracy of fine needle aspiration cytology and its histopathological correlation. In all 76 cases, Fine needle aspiration cytology was done and subsequently histopathological examinations of the tissue were also done after surgery. So a

correlation between cytological and histopathological finding were available.

Out of 76 cases studied, 10 cases were histologically confirmed cases of carcinoma. Remaining 66 cases were of benign lesions, of which there were 37 cases of fibroadenoma, 17 cases of fibroadenosis and 12 cases of chronic mastitis. 10 cases of carcinoma and 66 cases of benign breast lesions were diagnosed correctly by fine needle aspiration cytology with a diagnostic accuracy of 91.5%. The cytological diagnosis of fibroadenoma was easy in most cases and a correct diagnosis was given in 34 (91.89%) out of 37 cases, while one case yielded scanty smear. Correct cytological diagnosis was made in 16 (94.11%) out of 17 cases of fibroadenosis. Hyperplastic epithelium mixed with foamy histiocytes, apocrine cells and cells showing suspicious changes of malignancy were found in one case. There were 05 suspicious smears in aspiration cytology, of which 02 were proved to be carcinoma and 01 case of fibroadenosis, 03 cases of fibroadenoma histologically.

Aspiration cytology was found to be useful in not only differentiating benign from malignant lesions, but it could also pin point the exact histological type of lesions.

The most series (including present study), the overall diagnostic accuracy of aspiration Cytology has been above 90% or near to 90%. In the majority of series the diagnosis was more correct for malignant than benign lesions. The relative better accuracy in malignant disease is probably due to loss of adhesive power of malignant cells.

Table- 5 shows Diagnostic accuracy of FNAC by different workers with present study

Name of Authors	Total no. of cases with available histopathological report	Diagnostic accuracy in (%)
Gupta et al (1979)	152	84.86
Dandapatet al (1986)	81	93.83
Sreenivaset al (1989)	182	91.35
N A Homesh (2005)	91	90
A. Khemka (2009)	50	96
A. F. Kocaay (2016)	123	95
Present study (2015-2016)	76	91.5

Conclusion

FNAC can be used as an outpatient procedure as it is easy to perform causing minimal discomfort to the patient, is little time consuming with early availability of results and have good diagnostic accuracy. FNAC can provide a pre operative diagnosis with reasonable accuracy. FNAC can suggest further investigation without delay if carcinoma could be diagnosed.

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