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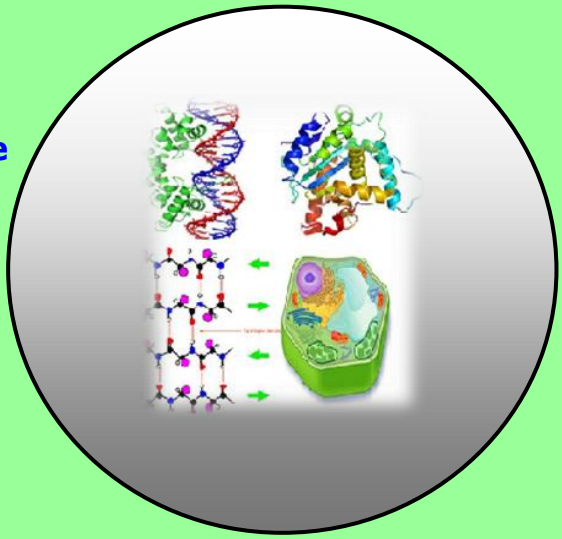

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RESEARCH PAPER

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Fine Needle Aspiration in the Evaluation of Breast Lumps with its Histological Correlation

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ABSTRACT

To study the patient with breast lesion and correlate the cytological findings with histological findings .To determine the accuracy of aspiration cytology in the diagnosis of breast lesion .To analyze the cause of the diagnostic error and ways to overcome them.

The present study included 108 cases presenting with palpable breast lump in the outpatient department of Career Institute of Medical Sciences and Hospital, Lucknow. FNA was carried out on all of them and the material studied in the Department of Pathology. Surgery was performed in 64 patients and final histopatholgical diagnosis was done on surgical biopsy or mastectomy.

Material adequate for cytological examination was obtained in 104 cases out of 108 (96.2%). Out of 104 cases 73 cases were diagnosed as benign breast lesions and 26 cases were diagnosed as malignant breast lesions on cytology. On histological examination out of 34 benign lesions only 01 shows carcinoma while of 22 malignant lesions 20 confirmed for carcinoma Out 4 suspicious lesion 2 were benign and 2 malignant. The sensitivity, specificity, and accuracy were 95.2%, 94.2% and 94.6% respectively. In conclusion, the simplicity, rapidity, lack of morbidity, a high sensitivity, a high specificity and cost effectiveness of FNAC makes it the most valuable tool in the evaluation of the breast lesion.

Keywords: Breast Lump, Histopathological Diagnosis, Mastectomy and Carcinoma.

INTRODUCTION

A palpable breast lump remains a common clinical problem and always tends to cause diagnostic dilemma both to physician and to the surgeon. The presence of breast lump raises the question of malignancy, although less than 15% of clinically suspicious lumps are actually malignant as studied by **Sandhu, et al. 2010.**

The development and application of fine needle aspiration cytology and mammography in parallel as compliments to clinical examination (Triple Diagnosis) have been useful in distinguishing benign from malignant lumps and in selecting patients for surgery (**Mohammad, et al, 2009).**

During the last decade, confidence in F.N.A.C. as a reliable test has grown considerably and it has emerged as the most direct and accurate diagnostic procedure in the management of breast lump and has gained worldwide acceptance.

MATERIAL AND METHODS

One hundred and eight cases of breast lump were examined during a period of two years and were retrospectively analyzed. F.N.A.C. was carried out in all patients by the pathologists using a standard technique.

After a brief explanation of procedure, the patients were kept in a supine position. No local anaesthetic was used. Fine needle aspiration cytology was performed using a 22 gauge needle attached to a 10 m1 disposable syringe & few cases were done by non-aspiration technique as described by **Zajdela 1987.** Averages of 2 attempts per lump were performed usually resulting in four direct smears, which were subsequently stained by **May-Gruenwald** and **Giemsa technique**. The cytodiagnostic terminology was based on four categories: Positive for malignancy, suspicious for malignancy, negative for malignancy (benign) and non-diagnostic (indeterminate) as done **by Rupom et al 2011.**

Surgery was performed in 64 out of 108 patients (59.2%) and the final histopathological diagnosis on permanent paraffin sections of surgically dissected specimens was reviewed.

The comparison between cytology and histology (Gold Standard) was made at the end of the study and the results were evaluated following statistical methods. The sensitivity (True positive/True positive + False negative) gives the probability of the methods detecting a breast malignancy, while the specificity (True negative/True negative + False positive) gives the probability of the methods confirming the absence of a malignant tumor.

RESULTS

Material adequate for cytological examination was obtained in 104 cases out of 108 (96.2%). Only cases with adequate material were included in the statistical evaluation. In 4 cases in which the numbers of cells were considered insufficient, the subsequent histological diagnosis showed one fibro adenoma with marked sclerosis, one hypertrophied fat with normal breast tissue, and one mastitis together with one schirrous carcinoma.

The categorical F.N.A.C. diagnosis listed in **Table 1** shows the 73 benign cases out of 104. Most frequently diagnosis was the fibro adenoma (26 cases or 24%) in **Table 2**, followed by fibrocystic disease (17 cases, or 15.7%). Five (4.6%) of the lesions were not classified as being either benign or definitively malignant and those are labeled as suspicious of malignancy. This pattern was quite similar to the **Singh et al 2011.**

Table 1. F.N A.C. Diagnosis of Breast Lesions.

F.N.A.C. Diagnosis	No.of Cases		% of Total cases
Benign	**73**		**67.5**
Malignant	**26**		**24**
Suspicious for Malignancy	**5**		**4.6**
Non-diagnostic (Indeterminate)	**4**		**3.7**
Total	**108**		**100**

Table 2. Benign F.N.A.C Diagnosis of Breast.

F.N.A.C. Diagnosis	No. Cases	% of Total Cases
(A) Benign disease with specification	**64**	**59.2**
• Fibroadenoma includ- including Giant Fibroadenoma	**26**	
• Fibro cystic disease	**17**	
• Breast abscess	**7**	
• Mastitis including Granulonatous mastitis	**3**	
• Duct ectasia	**1**	
• Simple cyst	**2**	
• Galactocele	**4**	
• Gynaecomastia	**4**	
(B) Benign disease without specification	**9**	**8.3**

Out of 73 benign F.N.A.C. diagnosis histological follow up was obtained in 34 cases (46.5%), which confirmed benign diagnosis in 33 cases. False negative diagnosis was obtained in one case, where cytodiagnosis was made as an abscess and on histology, a carcinoma was noticed adjacent to an abscess and obscured by this. Out of 26 malignant F.N.A.C. diagnoses histological follow up was obtained in 22 cases (84.6%) and histology confirmed the F.N.A.C. diagnosis in 20 cases. Similar results were observed by **Alhelfy, 2010**. So there were two false positive F.N.A.C. diagnoses which on histology proved to be atypical epithelial hyperplasia and atypical fibro adenoma. Four patients with suspicious F.N.A.C. diagnosis underwent surgery and two of them showed malignant tumor' on histology.

Table 3. ENAC. Diagnosis-Histological Follow-Up.

F.N.A.C.	F. N.A.Cs.	Histological Follow-Up Benign/ Malignant	
Benign	**34**	**33**	**1**
Malignant	**22**	**2**	**20**
Suspicious for Malignancy	**4**	**2**	**2**
Non-diagnostic	**4**	**3**	**1**
Total	**64**	**40**	**24**

Finally the result for sensitivity, specificity and diagnostic accuracy were calculated (Table 3 and 4).

Table 4. Statistical Analysis of F.N.A.C Diagnosis of Breast Lesions.

Statistical Analysis of F.N.A.C. Diagnosis	Total No. of cases	Accuracy tp+tntp+tn+fp+fn	Sensitivity tptp+tn	Specificity tptn+tp
F.N.A.C./ Histological diagnosis	**56/108**	**94.6%**	**95.2%**	**94.2%**
Positive	22			
True Positive	20			
False Positive	2			
Negative	34			
True negative	33			
False negative	1			

Eight patients who have undergone surgery but with F.N.A.C. diagnosis of suspicion of malignancy and non diagnostics are excluded.

DISCUSSION

Concerning the F.N.A.C. technique we obtained a very high rate of adequate material, to achieve this we follow the same technical consideration, as described **by Orell et al 1989 and Zajdela 1987**. In two cases unsatisfactory smears were obtained proved' to be sclerosed fibroadenoma and schirrous carcinoma, on histology. As we know that we cannot expect to obtain many cells from these lesions, the cellular smears from these lesions were not unsatisfactory. So the actual rate of adequacy in our study is 98.1% (106 out of 108 aspirates). For the cytological diagnosis, we applied the same criteria as described **by Koss et al 1984**. Some particular points have to be emphasized.

The greatest diagnosis difficulty was encountered with suspicious F.N.A.C. diagnosis or cytological atypia not diagnositic of malignancy. We consider that such reports are neither false positive nor false negative and should be understood as expressing the need for a formal surgical biopsy. In our study five such diagnosis on F.N.A.C. were made and two of them proved to be malignant on histology. Two benign lesions were misinterpreted cytologically as possibly malignant belong to fibrocytic disease with marked epithelial proliferation, similar difficulty was also noticed by **Pinto et al 2004, Kartik, 2004 and Dawson et al 1995**. We also agree with other authors' that cytological distinction between atypical ductal hyperplasia and intraductal carcinoma cannot be made on cytology alone, since the differential diagnosis between these two conditions are based on cytological as well as architectural criteria as seen on tissue section.

In experienced hands the technique is highly reliable as, we obtained the sensitivity of 95.2%, specificity of 94.2% and diagnostic accuracy of 94.6%. The average sensitivity of F.N.A.C. breast as reported in the literature is about 87% and specificity close to 100%) Several centres recorded a significant improvement of diagnostic accuracy as a result of increasing experience. Even skill and experience of cytologist is important but again there are short comings in F.N.A.C., so we agree with **Kline et al 1979** that this technique used to supplement, and compete with, histological examination. Most important, that negative or inconclusive cytological findings are not to be regarded as the definitive diagnosis if there is clinical suspicion of a malignant neoplasm.

So we conclude and agree with **Bukhari et al 2011** that F.N.A.C. breast is a simple, inexpensive, safe, quick and reliable procedure with a high rate of sensitivity and specificity and should be performed in every patient with palpable breast lump.

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