A Study Of Cyto-Histological Correlation Of Breast Lesions

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Abstract: Aim & Objective: To study the morphological aspects of various breast lesions in patients with an apparent breast lump. To correlate the cytological findings with histopathological examination. To determine the accuracy of aspiration cytology in the diagnosis of the breast lesions. To analyse the causes of the diagnostic error and ways of overcoming them. Materials & Methods: The present study included 65 cases presenting with palpable breast lump in the outpatient department of the Shri Sayaji General Hospital Vadodara. FNA was carried out on all of them and the material studied in the Department of pathology, Medical College, Baroda, from January 2009 to September 2010. All cases were also subjected to surgical biopsy or mastectomy. Results: Out of 65 cases 21 cases were diagnosed as benign breast lesions and 44 cases were diagnosed as malignant breast lesions on cytology. On histological examination out of 21 benign lesions only one shows carcinoma while all malignant lesions were confirmed. The sensitivity, specificity, positive predictive value, negative predictive value and accuracy was 95.2%, 100%, 100%, 95.2% and 98.4% respectively. Conclusion: 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 lesions. [Chavda J et al NJIRM 2013; 4(2) : 54-56]

Key Words: Breast, Carcinoma, FNAC

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Introduction: The breast is a complex glandular structure subjected to endocrine influences, and is predisposed to a number of pathological conditions. Breast lumps are frequent, easily palpated and almost invariably alarming to the patient with the result that any breast lump, at any age, comes to medical attention. Clinical diagnosis of a palpable breast lesion is notoriously misleading at times. A possibility of malignancy cannot be dismissed with reasonable certainty without microscopic examination of the tissue. To increase the accuracy of clinical judgement, a number of non-invasive methods e.g. mammography, thermography etc. are available, but not all patients can afford them. On the other hand, biopsy though accurate is mutilating and at times unnecessary. The simplest, most cost effective, non-invasive investigation procedure of choice is the Fine Needle Aspiration Cytology (FNAC). FNAC now forms part of the clinical workup of all patients with palpable lump especially in the breast.

Material and Methods: The present study included 65 cases presenting with palpable breast lump in the outpatient department of the Shri Sayaji General Hospital Vadodara from January 2009 to September 2010. FNA was carried out using 10 ml plastic disposable syringe and disposable needles of 22-23 gauge on all of them, stained with H & E and Giemsa stain and the material studied in the Department of pathology, Medical College, Baroda. All cases were also subjected to surgical biopsy or mastectomy. FNA was performed on all the palpable lumps without local anaesthesia.

Observation & Discussion: This study includes 65 cases presenting with a palpable breast lump which were subjected to fine needle aspiration. The cases studied include 64 females and 01 male. Histopathological confirmation was available for all cases. For benign cases which were diagnosed on cytology, histological correlation was available in all cases. Out of 08 cases of benign breast lesions 02 were fibroadenoma, 03 were fibrocystic disease, 02 were benign Phyllodes tumour and 01 was Sclerosing adenosis. Thus all cases diagnosed as benign breast lesions on cytology also showed benign lesions on histology giving an accuracy rate of 100%. Out of 45 cases one diagnosed as benign breast lesion on cytology had morphology of infiltrating duct carcinoma on histology. Out of 44 remaining cases 42 had histology of infiltrating duct carcinoma, one had histology of medullary carcinoma and one had histology of cribriform carcinoma.Thus out of 45 cases, in 44 cases

cytological diagnosis was consistent with histological diagnosis giving accuracy rate of 97.77%.

Table1: Cyto-histological correlation of benign lesion

Cytological Diagnosis	Histological diagnosis				Total
	Fibroadenoma	Fibrocystic disease	Phyllodes Tumour	Sclerosing Adenosis	
Benign breast lesions	02	03	02	01	08
Fibroadenoma	11	00	00	00	11
Non specific Inflammation	00	01	00	00	01
Total	13	04	02	01	20

Table2: Cyto-histological correlation of malignant lesions

Cytological Diagnosis	Histological diagnosis			Total
	Infiltrating duct carcinoma	Medullary carcinoma	Cribriform carcinoma	
Benign breast Lesions	01	00	00	01
Mammary Carcinoma	42	01	01	44
Total	43	01	01	45

Table3: Cyto-histological correlation of all breast lesions

Cytological Diagnosis	Histological diagnosis		Total
	Benign breast lesions	Malignant breast lesions	
Benign breast lesions	20	01	21
Malignant breast lesions	00	44	44
Total	20	45	65

Out of 65 cases 21 cases were diagnosed as benign breast lesions and 44 cases were diagnosed as malignant breast lesions on cytology. On histological examination out of 21 benign lesions only one shows carcinoma while all malignant lesions were confirmed.

Analysis of the results of the present study shows the following:
True positive: 44
False positive: 00
True negative: 20
False negative: 01
Sensitivity = [TP/ (TP+FN)] x 100: 95.23%
Specificity = [TN/ (TN+FP)] x 100: 100%

Positive predictive value =
[TP/ (TP+FP)] x 100: 100%
Negative predictive value =
[TN/ (TN+FP)] x 100: 95.23%
Accuracy rate =
[(TP+TN)/ (TP+TN+FP+FN)] x 100: 98.46%.

The sensitivity of 95.2% in the present study is comparable to that obtained by Willis[1] (90%), Suen[2] (95%) and Ritu[3] (96.5%).

Suen MWM and Chan MKM[2] in their study stated that the positive predictive value for malignancy should be greater than 95% with a false positive rate of less than 1% and false negative rate of less than 5%. In present study, the positive predictive value for malignancy was 100% with no false positive and false negative rate was 1.5% which meets the criteria mentioned by Suen.

In present study, there was no false positive giving specificity of 100% and positive predictive value of 100% which is comparable with Wollenberg[4], Barrow5, Silver man[6], Ritu[3] and Tiwari[7]. Thus false positive diagnosis is relatively rare in breast FNA if the interpretations are made by experienced cytopathologists.

Yeoh and Chan[8] in their study reported six cases as false negative which include one heavily bloodstained smear that had mixed cytological features, which was interpreted as a cyst, two misdiagnoses due to well differentiated tumours in the benign category, and three cases that were

reported as atypical. False negative diagnosis might be due to technical failure, misdiagnosis, or the presence of mixed benign and malignant cytological features. Technical failure include acellular or insufficient cellular material, heavily blood stained smears, partial air drying , and smearing artefact resulting in cell disruption.

Bell[9] had stated that aspiration cytology was accurate, rapid and of value in the assessment and management of patient in office practice. Documentation of the presence of breast cancer by FNAC might obviate the need for a two stage procedure in the surgical management of breast cancer. In our institution also FNAC is being used as basic test for surgical management of malignant breast lesions; after surgery the whole specimen is submitted for histopathological examination and confirmation of malignancy.

Halevy[10] has stated that in order to achieve good results, three rules must be borne in mind. First, a trained cytopathologists should perform the FNAC and interpret the result. Second, close cooperation between surgeon and cytopathologists is necessary. Finally, a negative FNAC finding does not rule out a malignant condition.

Triple diagnosis is the combination of clinical examination, mammography and FNA. The use of all three modalities in parallel has led to further improvement of preoperative diagnosis. If all three investigations are in agreement that a lesion is benign or malignant, diagnostic accuracy is over 99%.[11]

Conclusion: 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 lesions. However due to the false negative cytologic diagnosis seen in most series, all clinically malignant or suspicious masses should have a biopsy in the face of a benign cytology. Besides, since definitive therapy including mastectomy is performed on the basis of the FNA, a conservative approach is warranted. There should be no hesitation in recommending surgical biopsy or frozen section for the group of smears that are atypical or suspicious for malignancy, thus keeping the false positive rate as close to zero as possible. This ensures that patients continue to receive the benefits of FNA without the risks.

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