



STUDY OF FNACS IN PALPABLE BREAST LUMPS WITH HISTOPATHOLOGY CORRELATION

Pathology

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ABSTRACT

Palpable breast lumps are not uncommon in females, which is the cause of fear and concern to patients. This study was carried out to see the spectrum of Breast lesions presenting as palpable breast lumps. It was one year prospective study, histology correlation was done where-ever possible. Total 144 cases were studied and 91 histology biopsy specimen were correlated. All patients presenting with palpable breast lumps underwent FNACs and were grouped into Unsatisfactory, Non neoplastic, Benign neoplastic, Atypical (grey zone) and Malignant neoplastic lesions. Majority patients were from benign neoplastic (36%) followed by malignant neoplastic group (35%). In cyto-histo correlation we found FNAC sensitivity to be 95.9%, Specificity 97.6%, Positive predictive value 97.9% and Negative predictive value 95.3%. Overall accuracy of FNAC was 96.7%. Hence, FNAC is a simple, rapid, inexpensive procedure with high sensitivity and specificity. Overall accuracy makes it an easy tool in evaluation of palpable breast lumps.

KEYWORDS

Breast lump, Breast lesions, FNAC, Cyto-Histo correlation

INTRODUCTION:

Most breast diseases produce palpable breast lumps associated with other symptoms. Breast lumps are often a source of anxiety for the patients because of fear of cancer and potential cosmetic disfigurement following surgery. It is difficult to determine whether a lump is benign or malignant from clinical assessment alone. There are several competing approaches to diagnose breast lesions like surgical excision, core needle biopsy and fine needle aspiration cytology (FNAC). The primary goal of FNAC is to separate malignant lesions that require more radical therapy from benign ones that may be conservatively managed. So FNAC plays a major role as an important preoperative assessment along with clinical and mammography examination, which together are frequently referred to as "triple test". That is why FNAC scope has now extended into identifying the subtypes of benign, malignant lesions and residual disease for the purpose of planning the therapeutic protocol and eventual follow up.^{2,3} The ultimate benefit of aspiration cytology, however, rests in its demonstration of malignant disease, when other diagnostic modalities are inconclusive.⁴

MATERIALS AND METHODS:

It was a prospective study carried over a period of one year from January 2015 to December 2015, in the Department of Pathology, KIMS, Karad to look into the frequency and distribution of various breast lesions and to correlate their FNAC diagnosis with histopathology where-ever possible. The other objective was to know the sensitivity, specificity, positive and negative predictive value of FNAC.

All patients with palpable breast lumps who underwent FNAC were included in study, irrespective of age and sex. Fine needle aspiration was done according to standard aseptic procedure. Aspirated material was smeared onto slides, wet-fixed smears were stained with H&E stain, while air dried smears were stained with Giemsa stain.

Out of total 144 cases, 91 surgical specimens were received for histopathological examination and cyto-histo correlation was done accordingly.

Categorization of FNACs was done into 5 broad categories which were further split into subcategories.

1. Unsatisfactory: Inadequate/ Inadequate on repeat
2. Non neoplastic: Inflammatory and Unremarkable (no obvious pathology)

3. Benign neoplastic: Epithelial proliferative lesion without atypia. (fibroadenosis, benign phyllodes tumor, fibroadenoma, fibrocystic disease)
4. Atypical (grey zone): Epithelial proliferative lesion with atypia (intermediate phyllodes tumor, positive for atypical cells)
5. Malignant neoplastic: Suspicious for malignancy and Malignant breast lesions.

Wherever the biopsy specimen was received, corresponding category wise cyto-histo correlation was done.

RESULTS AND OBSERVATIONS:

Out of 144 cases, 8 cases had inadequate aspirates. Therefore adequacy of FNAC procedure was 94.4%. Out of total 144 cases, 07 (4.8%) were males and 137 (95.2%) were females. Maximum number of patients (25.7%) were from age group of 31-40 years, 18.9% were from 41-50 years and 4.1% were from 71-80 years age group. 47.2% lumps (68) were right sided and 52.8% (76) were left sided.

Maximum number of cases (52), were from benign neoplastic category followed by (51) from malignant neoplastic category. In 8 unsatisfactory cases, 4 cases were inadequate (did not turn up for repeat FNAC) and rest 4 were inadequate on repeat aspiration as well. In 17 Non-neoplastic cases, 4 were acute on chronic inflammation, 5 were granulomatous inflammation and 8 were diagnosed to have breast abscess. In 52 cases of benign neoplastic, 30 were fibroadenoma, 17 were fibrocystic disease, 4 Gynecomastia, 2 benign phyllodes and 2 with juvenile fibroadenoma. In 14 Atypical cases, a diagnosis of epithelial proliferative disease with atypia was given. In 51 Malignant neoplastic cases, 42 were infiltrative ductal carcinoma, 2 malignant phyllodes, 1 ductal carcinoma in situ and 6 were diagnosed to be suggestive for malignancy. Out of total 144 cases of cytology, histopathology diagnosis was available for 91 cases.

Table 1: Category wise availability of histopathology diagnosis

Cytology Category	Number of cases	Histopathology available	Percent
Unsatisfactory	08	2	25
Non-neoplastic	17	5	29.4
Benign neoplastic	52	28	53.8
Atypical (benign etiology)	16	8	50
Malignant neoplastic	51	48	94.1
Total	144	91	63.2

Table2: Distribution of cases according to five categories with cytology/histology diagnosis and cyto-histo correlation

Cytology diagnosis	Number of cases	Histology available	Histology diagnosis	Cyto-histo correlation
Category-1				
Unsatisfactory	8	2	Fat necrosis-1, fibrocystic disease-1	100%
Category-2				
Ac. on chr. inflammation	4	2	1-acute mastitis, 1 -IDC	50%
Abscess	7	1	1-Breast abscess	100%
Granulomatous inflammation	5	2	2-Granulomatous inflammation	100%
Category-3				
Fibroadenoma	30	15	15-Fibroadenoma	100%
Juvenile fibroadenoma	2	1	1-Juvenile fibroadenoma	100%
Gynaecomastia	4	3	3-gynaecomastia	100%
Benign Phyllodes	2	2	1-benign phyllodes, 1-invasive lobular carcinoma	50%
Fibro cystic change	17	7	7-Fibrocystic change	100%
Category-4				
Epithelial proliferative lesion with atypia	14	8	5-fibroadenoma, 3-fibrocystic disease	100%
Category-5				
Suspicious for carcinoma	6	5	5-IDC	100%
Positive for carcinoma	42	40	37-IDC, 2 Invasive lobular ca., 1-Medullary ca.	100%
Malignant phyllodes	2	2	2-malignant phyllodes	100%
DCIS	1	1	1-Fibroadenoma	0%
Total	144	91		

Table3: Over all Cyto-histo correlation for benign and malignant cases

Cytology	Histopathology		Total
	Malignant	Benign	
Malignant	True positive(a) 47	False Positive (b) 1	48
Benign	False negative (c) 2	True negative (d) 41	43
Total	49	42	91

Sensitivity of FNAC was calculated as true positive/total malignant lesions (a/a+c) came out to be 95.9%. Specificity is true negatives/total benign lesions (d/b+d) was 97.6%. Positive predictive value (a/a+b) was found to be 97.9% and negative predictive value (d/c+d) was 95.3%. Overall accuracy was calculated as TP+TN/Total cases was 96.7%.

DISCUSSION:

Early diagnosis of breast lesions and categorization into different groups is important, this is helpful in accurate management. Majority of breast cancers are diagnosed at a relatively advanced stage.⁵ Early diagnosis helps to prevent patient's discomfort and anxiety too.⁶ In our study, age of patients ranged from 16-77 years with male to female ratio of 1:19. Similar age-group was observed in studies done in Asian countries.⁷ Asian women get carcinoma a decade earlier than in western countries; it is attributed to higher life expectancy and different gene pool.⁸ Our study showed that 62.5% patients had benign breast lesions, which is in concordance with other studies which have shown similar trends and these benign lesions need only reassurance.^{9,10} This study showed, that fibroadenoma is the commonest benign breast lesion. Same has been reported by Ferguson et al.¹¹ Singh A, et al¹⁰ reported that invasive ductal carcinoma is the most common breast malignancy in age group 41-60 years. Present study shows similar findings. In this study 5.5% cases were inadequate/ unsatisfactory. Sudarat et al¹² and Choksi et al found 4.2% and 6.9% unsatisfactory smears respectively, which further needed repeat aspiration for diagnosis. Responsibility of cytopathologist is to give accurate report of breast lumps as further management relies on that. In this study we encountered one false positive and two false negatives. One false negative was acute inflammatory lesion on cytology which came out to be invasive ductal carcinoma, other false negative was reported as Phyllodes tumor on cytology and on histopathology found to be invasive lobular carcinoma. False positive was reported as ductal ca. in-situ on cytology which came out to be fibroadenoma on histopathology. To minimize these FP and FN pathologist should give importance to clinical examination, mammography and other radiological findings as well and should correlate these finding with FNAC. In doubtful situation, pathologist should not hesitate in getting second opinion and should always include differential diagnosis. There are some gray zones as well, e.g. in our case; Acute inflammatory lesion turned out to be IDC, it could be due to tumor necrosis and/or some tumors are inflammatory in nature which can be misdiagnosed by experienced pathologist as well.

CONCLUSION:

Benign breast lesions constitute majority of breast lumps, fibroadenoma being most common and seen in early age group, while in malignant invasive duct carcinoma is the most common lesion constituting around 87% of cases and are seen in older age group. FNAC is indispensable, safe, cost effective and a reliable technique for evaluation of palpable breast lumps. It is a powerful pre-operative diagnostic tool which aids in diagnosing breast lumps with high sensitivity and specificity if done in conjunction with clinical exam and mammography (triple test). Since in our study the overall sensitivity of FNAC in diagnosing the palpable breast lump is more than 93% and specificity is nearly 95% it clearly aids in making correct diagnosis of breast lesions.

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