Spectrum of Breast lesions – A one year study of FNACs in palpable breast lumps.

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Abstract

Breast cancer is the most common cancer in women both in developed and developing countries worldwide. Early and accurate diagnosis of cancer is very important for deciding further treatment modalities.

The aim of this study is to determine frequency and distribution of various breast lesion on FNAC and to correlate FNA diagnosis with histopathological diagnosis for statistical analysis.The 144 patients presented to cytopathology department with complaints of breast lump were included in the study irrespective of age and sex of patients. The Cytological diagnosis of breast lumps was correlated in 91 cases with histopathological diagnosis.

Cytological diagnosis correlated well with histological diagnosis. So, Clinical breast examination followed by radiological investigations like Sono-mammographic evaluation along with FNAC should be encouraged for early detection and pre-operative evaluation of breast lump.

Introduction

Most breast diseases produce palpable breast lumps associated with other symptoms. Breast lump is a source of anxiety for the patient 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.[1]

There are several competing approaches to 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." Therefore, 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]

Aim and Objectives

* To look into the frequency and distribution of various breast lesions on FNAC.

* To correlate the FNAC diagnosis with histopathology where-ever possible.

* To find out sensitivity, specificity, positive and negative predictive value of FNAC

Materials and Methods

This study was done over a period of one year from January 2014 to December 2014 in the Department of Pathology, KIMS, Karad.

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.

Categorizations of FNACs were done according to five broad categories which were further split into sub-categories:

1. Unsatisfactory : Inadequate/inadequate on repeat

2. Non neoplastic : Inflammatory and Unremarkable (no obvious pathology)

3. Benign neoplastic: EPL without atypia.

4. Atypical (grey zone) : EPL with atypia

5. Malignant neoplastic: Suspicious for malignancy and malignant breast lesions.

Results and Observations

From January 2014-December 2014, total 144 patients with breast lump underwent FNAC. Out of 144 cases, 8 cases had inadequate aspirates. Therefore adequacy of FNAC procedure was 136/144: 94.4% out of total 144

cases. 07 (4.8%) were males and 137 (95.2%) were females.

Table 1: Distribution of breast lump cases according to sex

SEX	Number of cases	Percent (%)
Male	07	4.8
Female	137	95.2
Total	144	100

According to age wise distribution, maximum number of patients i.e. 25.7% were from age group of 31-40 years followed by 18.9% from 41-50 years. Least number of patients 4.1% was from age group of 71-80 years.

Table 2: Age wise distribution of cases

Age (years)	Number of cases	Percent (%)
11-20	20	13.9
21-30	21	14.6
31-40	37	25.7
41-50	27	18.9
51-60	17	11.8
61-70	16	11
71-80	06	4.1
Total	144	100

According to site of lump, 68 (47.2%) were right sided and 76 (52.8%) were left sided.

Table 3: Distribution of breast lump as per site

Location	Number of cases	Percent(%)
Right	68	47.2
Left	76	52.8
Total	144	100

Table 4: Category wise distribution of FNAC cases

Cytology category	Number of cases	Percent (%)
Unsatisfactory	8	5.5

Non-neoplastic	17	11.8
Benign-neoplastic	54	37.6
Atypical (benign etiology)	14	9.7
Malignant neoplastic	51	35.4
Total	144	100

Maximum number of cases (37.6%) was from benign neoplastic category followed by 35.4% cases 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   granulmatous inflammation and 8 were diagnosed to have breast abscess.

In 54 cases of benign neoplastic, 30 were FA, 17 were FCD, 4 Gynecomastia, 2 were benign phyllodes and 2 were diagnosed as JFA.

In 14 atypical cases (benign etiology), all were given diagnosis of EPL with atypia

In 51 malignant neoplastic cases, 42 were IDC, 2 malignant phyllodes, 1 DCIS and 6 were diagnosed to be suspicious for malignancy.

Out of total 144 cases of cytology, histopathology diagnosis was available for 91 cases.

Table 5: Distribution of cases according to sex

SEX	Number of cases	Histopathology available	Percent (%)
Unsatisfactory	8	2	25
Non-neoplastic	17	5	29.4
Benign-neoplastic	54	28	53.8
Atypical	14	8	50

(benign etiology)			
Malignant neoplastic	51	48	94.1
Total	144	91	63.2

In unsatisfactory category, out of 8 cases 2 specimens were received for histology and one each was diagnosed to have fibrocystic change and fat necrosis.

Table 6: Distribution of non-neoplastic cases according to cytology/histology diagnosis and cyto-histo correlation

Cytology diagnosis	Number of cases	Histopathology available	Histopathology diagnosis	Cyto-histo correlation
Acute on Chronic	4	2	1- Acute mastitis, 1-IDC	50 %
Abscess	8	1	1-Breast abscess	100%
Granulomatous inflammation	5	2	2-Granulomatous inflammation	100%
Total	17	5		

Table 7: Distribution of benign-neoplastic cases according to cytology/histology diagnosis and cyto-histo correlation

Cytology diagnosis	Number of cases	Histopathology available	Histopathology diagnosis	Cyto-histo correlation
Fibroadenoma	30	15	15-Fibroadenoma	100%
Juvenile fibroadenoma	2	1	1-Juvenile fibroadenoma	100%
Gynaecomastia	4	3	2- Gynaecomastia	100%
Bening Phyllodes	2	2	1- Benign phyllodes, 1-Invasive lobular carcinoma	50%
Fibro cystic change	17	7	7-Fibrocystic change	100%
Total	54	28		

Table 8: Distribution of Atypical cases (benign etiology) according to cytology/histology diagnosis and cyto-histo correlation

Cytology diagnosis	Number of cases	Histopathology available	Histopathology diagnosis	Cyto-histo correlation
EPL with atypia	14	8	5-Fibroadenoma. 3-fibro cystic	100%
Total	14	8		

Table 9: Distribution malignant cases according to cytology/histology diagnosis and cyto-histo correlation.

Cytology diagnosis	Number of cases	Histopathology available	Histopathology diagnosis	Cyto-histo correlation
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	51	48		

Table10: Overall Cyto-histo correlation for benign and malignant cases

Cytology diagnosis	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: true positive / total malignant lesions-a/a+c = 95.9%

Specificity: true negatives/total benign lesions- d/b+d= 97.6%

Positive Predictive value: a/a+b=97-9%

Negative predictive value: d/c+d= 95.3%

Accuracy: TP + TN/Total cases = 96.7%

Discussion

Early diagnosis of breast lesions and categorization into different groups is important. This is helpful in accurate management of Breast tumors.

Majority of breast cancers are diagnosed at a relatively advanced stage.[5] Early diagnosis helps to prevent patient's discomfort and anxiety .[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 other Asian countires.[7]

Asian women get carcinoma a decade earlier than in western countries; it is attributed to lesser life expectancy and different gene pool.[8]

Our study showed 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 in benign breast lesions fibroadenoma is most common. Same has been reported by Ferguson, as fibroadenoma the most common benign breast lesion.[11]

Singh A, et al[10] reported that invasive ductal carcinoma is the most common breast malignancy in age group 41-60 years. Present study showed similar findings.

In this study 5.5% cases were inadequate/unsatisfactory, Sudarat et al.[12] 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 negative.

One false negative (FN) was acute inflammatory lesion on cytology which was came out to be invasive duct carcinoma. Other false negative was reported as Phyllodes tumor on cytology and on histopathology as Invasive lobular carcinoma.

False positive (FP) 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.

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