Section: Pathology

Original Research Article

CYTOMORPHOLOGICAL STUDY OF BREAST LESIONS ON FNAC IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: The advantages of the FNA procedure include a fairly precise diagnosis, exceptional patient acceptance, and also a minimal to no morbidity so this was compared with gold standard Histopathology for its accuracy of Diagnosis.

Materials and Methods: After approval from institutional ethical committee this cross-sectional study was carried out in the patients who were referred to Department of Pathology for FNAC. Study period – from sept 2016 to April 2017. during this period total 160 cases were studied. Age range was from from 14 yrs to 70 yrs. Out of the 160 cases 40 were available for histopathological examination. All the FNAC slides and Biopsy slides were fixed and stained by standard pathological protocols. All details of the patients like age, FNAC and Histopathological diagnosis etc. was noted. Cyto-histo correlation was done by calculating the sensitivity and Specificity, Positive predictive value and negative predictive value of FNAC calculated by Medcalc software.

Results: The majority of the patients were in the age group of 21-30 were 33.75%. The majority of the patients were Female i.e. 97.50% followed by Male 2.50%. The majority of the Patients were with the location of left side i.e. 52.50 Lump was the most common symptom i.e. in 100%, followed Pain in 75%, Fever in 68%, Nipple discharge in 59%. the majority of the patients were Benign i.e. 33(20.62%), Malignant were 20(12.50%), Inflammatory lesions were 5 (3.13%), Unsatisfactory were 8 (5.00%). Sensitivity was 100.00% (CI-39.76% to 100.00%), Specificity - 97.22 % (CI-85.47% to 99.93%), Positive Predictive Value was 80.00% (CI-36.67% to 96.51%), Negative Predictive Value-100.00%.

Conclusion: It can be concluded from our study that the FNAC is a rapid, accurate, safe, reliable and cost effective method for preoperative diagnosis of breast lesions. It is having high sensitivity and specificity. Hence FNAC should be used as a routine diagnostic procedure to provide effective healthcare to patients. Among breast lesions benign lesions are more common than malignanat ones. Benign lesions are more common in younger age group and malignant lesions are more common in older age group.

Keywords: Cytomorphological study, Breast lesions, FNAC (Fine Needle Aspiration Cytology), Ca-Breast.

INTRODUCTION

Although the most of the breast lumps are not malignant, the accuracy of diagnosis of breast lump can be increased by a combination of preoperative tests (like physical examination, mammography, fine-needle aspiration cytology, and core needle biopsy). These modalities are more accurate, reliable, and acceptable when compared with a single adopted diagnostic procedure despite of having their own technical limitations.[1,2] "As fine-needle aspiration (FNA) has become a critical component in the investigation of palpable breast masses; false-negative diagnoses have become a major concern,

prompting re-evaluation of the definition of specimen adequacy.

"Fine-needle aspiration (FNA) biopsy is an established and highly accurate method for diagnosing breast lesions." The use of core biopsy (CB) is being increasingly advertised but its procedure is more cumbersome, expensive and time consuming as compared to FNA procedure. Core Biopsy or trucut needle biopsy is not widely used because of its complications, interpretation, and time-consuming results.[3,4]

MATERIALS AND METHODS

After approval from institutional ethical committee this cross-sectional study was carried out in the patients who were referred to Department of Pathology for FNAC. Study period – from sept 2016 to April 2017. during this period total 160 cases were studied. Age range was from 14 yrs. to 70 yrs. Out of the 160 cases 40 were available for histopathological examination. All the FNAC slides and Biopsy slides were fixed and stained by standard pathological protocols. All details of the patients like age, FNAC and Histopathological diagnosis etc. was noted. Cyto-histo correlation was done by calculating the sensitivity and Specificity, Positive predictive value and negative predictive value of FNAC calculated by Medcalc software.

RESULTS

The majority of the patients in the Benign diseases were in the age group of 21-30 were 33.75%, followed by 11-20 were 22.50%, and 31-40 were 18.13% while the malignant patients were in the age group of 41-50, 51-60, 61-70 were 3.75%.

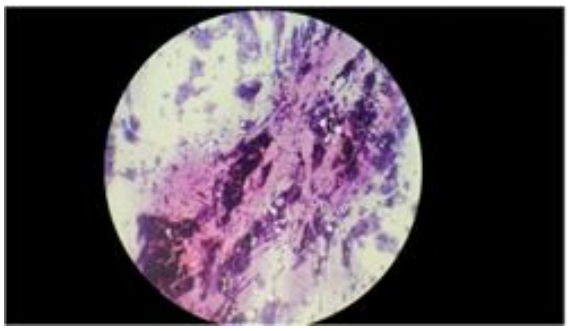

Figure 1: Mucinous Carcinoma of Breast

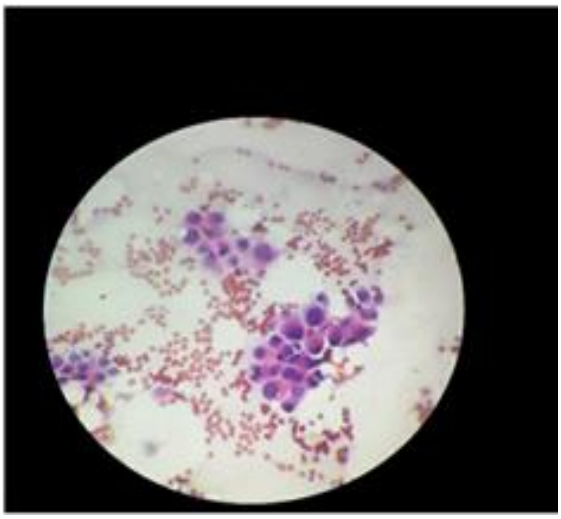

Figure 2: Invasive ductal carcinoma of Breast

Table 1: Age distribution of cases

Age group (Yrs.)	Benign		Malignant	
	No.	Percentage (%)	No.	Percentage (%)
11-20	36	22.50	0	0.00
21-30	54	33.75	2	1.25
31-40	29	18.13	1	0.63
41-50	8	5.00	5	3.13
51-60	4	2.50	6	3.75
61-70	1	0.63	6	3.75

Table 2: Distribution of the patients as per the Sex

Sex	No.	Percentage (%)
Male	4	2.50
Female	156	97.50
Total	160	100.00

The majority of the patients were Female i.e. 97.50% followed by Male 2.50%.

Table 3: Distribution of the patients as per the Anatomical distribution

Location	No.	Percentage (%)
Right	76	47.50
Left	84	52.50
Bilateral	20	12.50
Total	160	100.00

The majority of the Patients were with the location of left side i.e. 52.50% followed by Right -47.50% and Bilateral in 12.50 %.

Table 4: Distribution of the patients as per the symptoms

Symptoms	No.	Percentage (%)
Lump	160	100%
Pain	120	75%
Fever	109	68%
Nipple discharge	94	59%

Lump was the most common symptom i.e. in 100%, followed Pain in 75%, Fever in 68%, Nipple discharge in 59%.

Table 5: Cytological spectrum of breast lumps on FNAC

Cytological spectrum	Lesions	No.	Percentage (%)
Inflammatory lesions	Acute mastitis	5	3.13
	Chronic mastitis	3	1.88
Benign breast lesions	Fibroadenoma	94	58.75
	Fibrocystic disease	6	3.75
	Simple cyst	2	1.25
	Galactocele	5	3.13
	Gynecomastia	4	2.50
	Benign proliferative breast lesion	8	5.00
	Atypical ductal hyperplasia	3	1.88
	Suspicious of malignancy	2	1.25
Malignancy		20	12.50
	Invasive ductal carcinoma	18	11.25
	Mucinous carcinoma	1	0.63
	Positive for malignancy	1	0.63
Unsatisfactory		8	5.00

From above Table the majority of the patients were Benign i.e. 33(20.62%), Malignant were 20(12.50%), Inflammatory lesions were 5 (3.13%), Unsatisfactory were 8 (5.00%).

Table 6: Cyto-histopathological correlation

Cytological diagnosis	Histopathological diagnosis		Total
	Malignant	Benign	
Malignant	4 True positive (a)	1 False positive (c)	5
Benign	0 False positive (b)	35 True positive (d)	35
Total	4	36	40

Out of total 160 cases 40 cases were available for histopathological examination.

Total 40 cases were available for histopathological correlation. Out of those 35 cases were benign and 5 cases were malignant on FNAC.

Out of 35 benign cases – 2 were Fibroadenoma on FNAC found to be benign phyllodes tumor on histopathology, 1 case was fibroadenoma on FNAC was diagnosed as proliferative breast disease on histopathology, 1 case reported as benign breast disease - ? fibrocystic disease on FNAC was reported as proliferative breast disease on histopathology.

Out of 5 malignant cases – 1 case was ADH with high suspicion of malignancy on cytology was found to be lobular carcinoma on histopathology, 1 case given as positive for malignancy was found to be Invasive ductal carcinoma on histopathology, 1 case was found to be mucinous carcinoma on both cytology and histopathology, 1 case was diagnosed as Invasive ductal carcinoma on both cytology and histopathology, 1 case reported as suspicious of malignancy on FNAC was found as lymphocytic mastitis on histopathology.

Table 7: Distribution of the patients as per the Sensitivity and Specificity

Statistic	Formula	Value	95% CI
Sensitivity	$\frac{a}{a+b}$	100.00%	39.76% to 100.00%
Specificity	$\frac{d}{c+d}$	97.22 %	85.47% to 99.93%
Positive Likelihood Ratio	$\frac{Sensitivity}{1-Specificity}$	36.00	5.21 to 248.66
Negative Likelihood Ratio	$\frac{1-Sensitivity}{Specificity}$	0.00	
Positive Predictive Value	$\frac{a}{a+c}$	80.00%	36.67% to 96.51%
Negative Predictive Value	$\frac{d}{b+d}$	100.00	

From above Table it is clear that Sensitivity was 100.00% (CI-39.76% to 100.00%), Specificity 97.22 % (CI-85.47% to 99.93%), Positive Predictive Value was 80.00% (CI-36.67% to 96.51%), Negative Predictive Value- 100.00%.

DISCUSSION

Breast lumps are frequent, easily palpated and almost invariably alarming for the patient.[5] With growing awareness breast lump is one of the commonest presentations in out-patient departments (OPD).[6]

Spectrum of breast lesions is wide ranging from non-palpable lesions to high grade carcinoma in female as well as male patients.[7] Breast cancer is now the most common cancer among Indian females (around 30%) and has speedily replaced cervical cancer.[8,9] Breast lump is a matter of worry to the patient as well as to clinician hence need for reliable, accurate and quick method for correct diagnosis. During the last century much progress has been made for diagnosis, treatment and prevention of breast cancer.[10] The minimally invasive method includes fine needle aspiration cytology (FNAC). It is a simple technique readily tolerated by patients, does not require anesthesia.[11]

In our study we have seen that The majority of the patients in the Benign diseases were in the age group of 21-30 were 33.75%, followed by 11-20 were 22.50%, and 31-40 were 18.13% while the malignant patients were in the age group of 41-50, 51-60, 61-70 were 3.75%. But A study conducted by Khan et al,[12] showed similar results with most affected age group being 41–50 years.

The majority of the patients were Female i.e. 97.50% followed by Male 2.50%. this was similar to Alwahaibi et al,[13] had 1.28% males and 98.72% females.

The majority of the patients in the Benign diseases were in the age group of 21-30 were 33.75%, followed by.[11]

20 were 22.50%, and 31-40 were 18.13% while the malignant patients were in the age group of 41-50, 51-60, 61-70 were 3.75%. The majority of the patients were Female i.e. 97.50% followed by Male 2.50%. The majority of the Patients were with the location of left side i.e. 52.50 The majority of the Patients were with the location of left side i.e. 52.50% followed by Right -47.50% and Bilateral in 12.50 %.Lump was the most common symptom i.e. in 100%, followed Pain in 75%, Fever in 68%, Nipple discharge in 59%.

The majority of the patients were Benign i.e. 33(20.62%), Malignant were 20(12.50%), Inflammatory lesions were 5 (3.13%), Unsatisfactory were 8 (5.00%). Out of total 160 cases 40 cases were available for histopathological examination.

Total 40 cases were available for histopathological correlation. Out of those 35 cases were benign and 5 cases were malignant on FNAC.

Out of 35 benign cases – 2 were Fibroadenoma on FNAC found to be benign phyllodes tumor on histopathology, 1 case was fibroadenoma on FNAC and diagnosed as proliferative breast disease on histopathology, 1 case reported as benign breast disease - ? fibrocystic disease on FNAC was reported as proliferative breast disease on histopathology.

Out of 5 malignant cases – 1 case was ADH with high suspicion of malignancy on cytology found to be lobular carcinoma on histopathology, 1 case given as positive for malignancy was found to be Invasive ductal carcinoma on histopathology, 1 case was found to be mucinous carcinoma on both cytology and histopathology, 1 case was diagnosed as Invasive ductal carcinoma on both cytology and histopathology, 1 case reported as suspicious of malignancy on FNAC was diagnosed as lymphocytic mastitis on histopathology.

Sensitivity was 100.00% (CI-39.76% to 100.00%), Specificity

97.22 % (CI-85.47% to 99.93%), Positive Predictive Value was 80.00% (CI-36.67% to 96.51%), Negative Predictive Value- 100.00%.

This was similar to Smita Pathak et al the overall accuracy was 98.41%. The sensitivity was 88.89%, specificity of 100%, positive predictive value was 100%.[15,16]

CONCLUSION

It can be concluded from our study that the FNAC is a rapid,accurate,safe,reliable and cost effective method for preoperative diagnosis of breast lesions.It is having high sensitivity and specificity.Hence FNAC should be used as a routine diagnostic procedure to provide effective healthcare to patients.Among breast lesions benign lesions are more common than malignanat ones. Benign lesions are more common in younger age group and malignant lesions are more common in older age group.

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