



“DIAGNOSIS OF BREAST CYTOLOGY USING INTERNATIONAL ACADEMY OF CYTOLOGY YOKOHAMA REPORTING SYSTEM-HOSPITAL BASED STUDY FROM NORTH EAST INDIA”

Pathology

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ABSTRACT

Background: Fine Needle Aspiration Cytology (FNAC) is an important tool for assessment of both palpable and non palpable breast lumps. Though importance of Core Needle Biopsy (CNB) is increasing, as far as patients' compliance and costs are concerned, FNAC is still a very popular investigation in the preoperative assessment of breast lumps. Here, cytomorphological analysis of different breast lesions in various age groups is studied.

Materials and Method : The patients coming to cytopathology section of Gauhati Medical College & Hospital, Guwahati with different breast lesions. A total of 200 cases were taken for a period of 1 year.

Results: Results were categorized in tabular form as different presenting complains of the patients, locations of different breast lesions, cytological category, comparison of neoplastic and non neoplastic breast lesions as per age and sex and classification of neoplastic and non neoplastic breast lesions. Male to Female ratio is 1:19 and Ratio of Benign to Malignant breast lesions was found to be 4.6:1. Fibroadenoma was found to be the most common benign breast lesion and Duct Carcinoma of breast was found to be the most common malignant breast lesion. Most common age group for benign neoplastic breast lesions is 20-30 years whereas most common age group for malignant neoplastic breast lesions is 40-50 years. This finding is statistically significant (P value < 0.0001).

Conclusion: Benign breast lesions are more frequent than malignant lesions. Though neoplastic lesions are more numerous in females, males often present with non neoplastic breast lesions. Fibroadenoma is still the most common benign breast lump in females and as far as malignant breast lesions are concerned, Ductal Carcinoma of the breast surpasses others.

KEYWORDS

INTRODUCTION:

Fine Needle Aspiration cytology is a widely used accurate initial method of investigation in the diagnosis of both palpable and non palpable (Done under Radiological guidance) breast lumps. It is an important part of Triple Assessment of Breast lumps (Clinical, Radiological and Cytological [1-3]. Its popularity increased as the procedure is simple, safe, quick, cost effective and minimally invasive [4-6]. This procedure has been used to differentiate benign breast lesions from the malignant ones and to further subdivide the benign and malignant breast lumps. Benign breast lesions are heterogenous group of lesions and frequently seen benign lesions are inflammatory lesion, epithelial and stromal proliferative lesions. In case of Malignant tumors, FNAC can reduce the number of open breast biopsies and help in early diagnosis and appropriate management [7]. FNAC has been found to have sensitivity ranging from 82% to 97.5% and specificity of more than 99% [8-10]. Although, Core Needle Biopsy (CNB) is being increasingly used; the procedure is much cumbersome, time consuming and costlier [11-13]. Objective of this study is to evaluate the different breast lesions and to identify the most common breast tumor in North Eastern India.

MATERIALS AND METHOD:

It is a cross sectional study, material for this study has been taken over a period of 1 year from the month of January'2021 till December'2021 in the cytopathology section of the Department of Pathology, Gauhati Medical College and Hospital, Guwahati, Assam. The aspirations of the palpable breast lumps were performed in the Department itself while the aspirations of non palpable lesions were done under Radiological guidance in the Radiology Department of Gauhati Medical College and sent to the Cytopathology Section. Prior to the aspiration, detailed clinical history of the patient as well as physical examination of both the breasts including the examination of the lump were carried out to assess size, mobility, consistency of the lump, condition of the Nipple Areolar Complex, discharge from nipple if any. The axillary lymph nodes of both the sides were also palpated for enlargement.

Fine Needle Aspiration was done with a 21 or 22 gauge needle attached to a 20 cc disposable syringe mounted on a syringe holder. The samples were taken with minimum number of passes under constant negative pressure. Samples were then smeared on glass slides and air dried. The air dried smears were fixed in Methanol to stain further by May-Gruenwald Giemsa stain. Few selected cases were also wet fixed in

Ethanol after smearing in order to stain them by Papanicolaou stain.

All data were analyzed using Microsoft Excel Spreadsheet. A 'P' value <0.05 is considered statistically significant.

CRITERIA FOR INCLUSION:

Both male and female patients of any age group were included in the study.

Criteria for Exclusion: Skin lesions over the anterior chest were excluded from the study.

RESULTS:

Out of the 200 cases, 190 cases were found to be of female and 10 cases were found to be of male patients with Male to Female ratio being 1:19. In our study, maximum cases were found to be in between 20-30 years of age group with the mean age of 25.5 years.

Table No: 1 Distribution According To Presenting Complains

Presenting Complains	Female (Percentage Female)	Male (Percentage Male)
Breast Lump	167 (87.8%)	10 (100%)
Nipple Ulceration	8 (4.2%)	0 (0%)
Nipple Discharge	10 (5.2%)	0 (0%)
Breast Pain	05 (2.6%)	0 (0%)
Total	190 (100%)	10 (100%)

From table 1, it is seen that Maximum no of females (87.8%) and Maximum no of males (100%) presented with breast lump (P=0.71) Male: Female = 1:19

Table No: 2 Distributions of Breast Lesions According to Location

Location	No. of Cases (Percentage)
Inner Upper Quadrant	60 (30%)
Inner Lower Quadrant	20 (10%)
Outer Upper Quadrant	73 (36.5%)
Outer Lower Quadrant	30 (15%)
Central	13 (6.5%)
Below Nipple and Areola	4 (2%)
Total	200 (100%)

From table 2, it is seen that most of the breast lesions in our study were located in upper outer quadrant (36.5%).

Table no: 3 Cytological Category of Breast lumps (As per IAC Yokohama system 2016)

Cytological Category	No of Cases (Percentage)
C1 Inadequate	02 (1%)
C2 Benign	160 (80%)
C3 Atypia Probably Benign	02 (1%)
C4 Suspicious of Malignancy	02 (1%)
C5 Malignant	34 (17%)
Total	200 (100%)

From table 3, it is seen that maximum no of cases (80%) could be cytologically categorized as Benign (C2).

Table no: 4 Distribution of Non neoplastic breast lesions

Non neoplastic breast lesions	Female (Percentage Female)	Male (Percentage Male)
Acute Mastitis	11(18.3%)	0(0%)
Granulomatous Mastitis	2(3.3%)	0(0%)
Fat Necrosis	2(3.3%)	0(0%)
Galactocoele	2(3.3%)	0(0%)
Benign Cystic Lesion	4(6.6%)	0(0%)
Fibrocystic Disease	16(26.6%)	0(0%)
Fibroadenosis	8(13.3%)	0(0%)
UDH	6(10%)	0(0%)
ADH	9(15%)	0(0%)
Gynaecomastia	0(0%)	10(100%)
Total	60(100%)	10(100%)

From table 4, it is seen that most frequent non neoplastic lesion in female was Fibrocystic Disease and in male it was Gynaecomastia. This finding is statistically significant (P value <0.0001).

Table no: 5 Distributions of Neoplastic Breast Lesions A.

Benign Neoplastic Breast Lesions	No of Cases (Percentage)
Fibroadenoma	78 (86.6%)
Intraductal Papilloma	06 (6.6%)
Phyllodes	05 (5.5%)
Tubular Adenoma	01 (1.1%)
Total	90 (100%)

B.

Malignant Neoplastic Breast Lesions	No of Cases (Percentage)
Duct Carcinoma	24 (70%)
Lobular Carcinoma	03 (9%)
Medullary Carcinoma	04 (12%)
Papillary Carcinoma	01 (3%)
Mucinous Carcinoma	01 (3%)
Tubular Carcinoma	01 (3%)
Total	34 (100%)

From table 5; A & B, it is seen that Fibroadenoma was the most frequent benign neoplastic breast lesion and Duct Carcinoma was the most frequent malignant neoplastic breast lesion.

Table no: 6 Comparison of benign neoplastic lesions with age:

Age (Years)	Fibroadenoma	Duct Papilloma	Phyllodes	Tubular Adenoma	Tal
10-20	25	01	00	00	26
20-30	42	00	00	01	43
30-40	10	05	02	00	17
40-50	01	00	03	00	04
50-60	00	00	00	00	00
60-70	00	00	00	00	00
Total	78	06	05	01	90

From table 6, it is seen that most of the benign neoplastic lesions occurred in the age group of 20-30 years. Prevalence is much less above 40 years.

Table no: 7 Comparison of malignant neoplastic lesions with age:

Age (Year)	Duct Carcinoma	Lobular Carcinoma	Medullary Carcinoma	Mucinous Carcinoma	Tubular Carcinoma	Papillary Carcinoma	Total
10-20	00	00	00	00	00	00	00

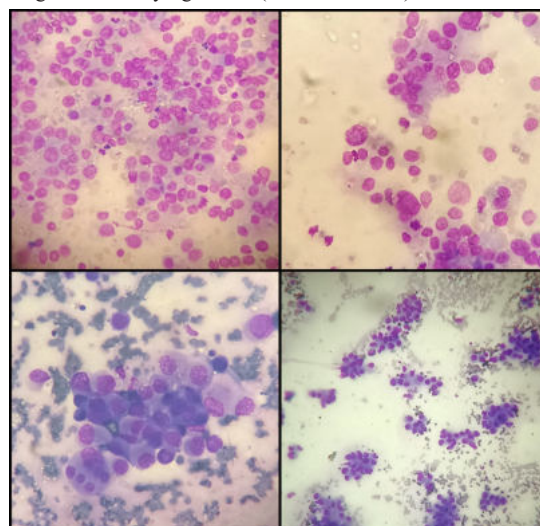
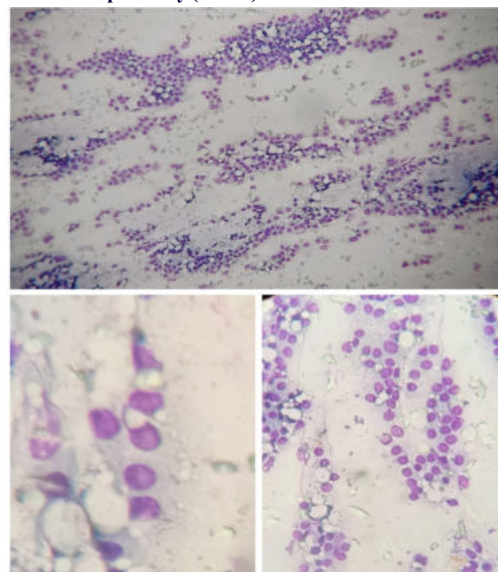
20-30	00	00	01	00	00	00	01
30-40	05	00	01	00	00	00	06
40-50	10	01	02	00	00	00	13
50-60	08	00	00	01	01	00	10
60-70	01	02	00	00	00	01	04
Total	24	03	04	01	01	01	34

From table 7, it is seen that most of the malignant neoplastic lesions occurred in the age group of 40-50 years. Prevalence is much less below 30 years.

Table no: 8 Comparison of Benign and Malignant neoplastic lesions with age:

Age Group (Years)	Benign Neoplastic	Malignant Neoplastic
10-20	26	00
20-30	43	01
30-40	17	06
40-50	04	13
50-60	00	10
60-70	00	04
Total	90	34

From Table 8, it is seen that most common age group for benign neoplastic breast lesions is 20-30 years whereas most common age group for malignant neoplastic breast lesions is 40-50 years. This finding is statistically significant (P value <0.0001).

**Fig 1: Upper Right and Left, Medullary Carcinoma breast (40X,MGG). Lower Right and Left, Ductal carcinoma breast in 10X and 40X respectively (MGG).****Fig 2: Lobular Carcinoma breast (MGG).**

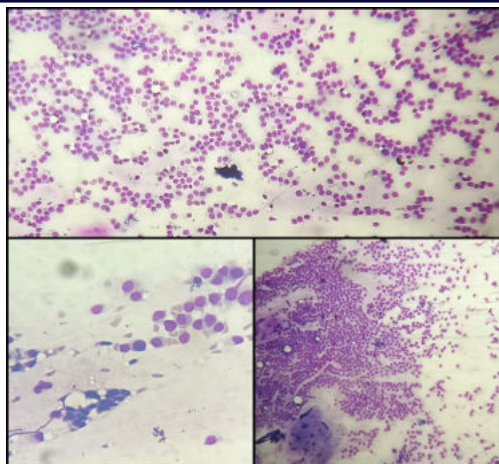


Fig 3: Lobular Carcinoma Breast; Low power (10X) view in upper and lower right, High power (40X) view in lower left (MGG).

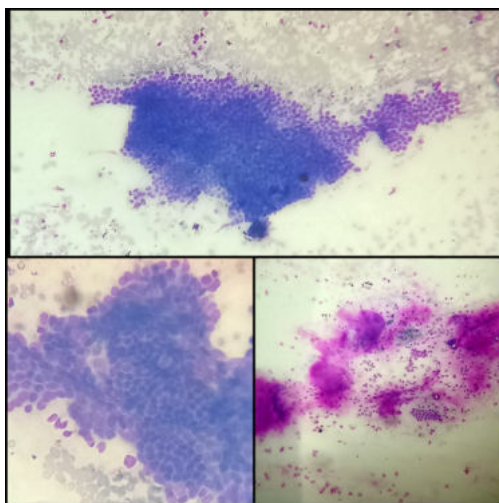


Fig 4: Fibroadenoma Breast; Low power (10X) view in upper and High power (40X) in the lower left. Stromal proliferation is shown in the lower right (MGG).

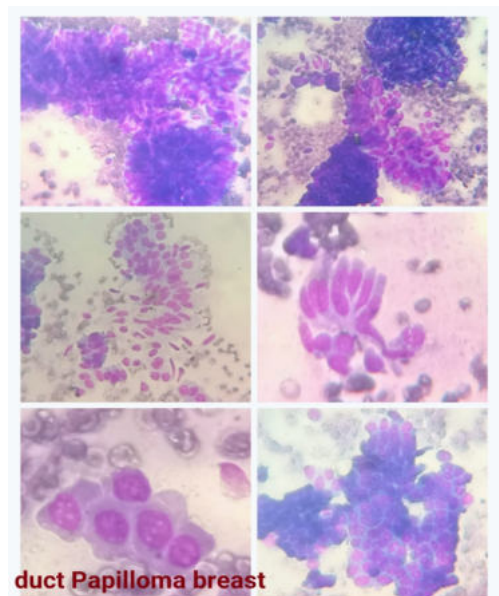


Fig 5: Duct Papilloma Breast.

DISCUSSION:

Breast lump was the most common presenting complains. Aamir Sharif et.al.[14] in their study also found the same result. Upper outer

quadrant was the most involved quadrant in our study. This is in accordance with the studies of Rocha et. al.[15], Reddy and Reddy[16]. Most of the cytologically defined benign neoplastic lesions(48%) presented in the age group of 20-30 years and prevalence was found to be much less above 40 years. This was almost similar to the finding by Rocha et. al.[15]. Most of the cytologically defined malignant neoplastic lesions (38%) presented in the age group of 40-50 years and prevalence is much less below 30 years. A study conducted by Khan et.al. [17] showed similar results.

In this study, we found benign breast lesions are more common than the malignant ones. This is consistent with Mohammad et. al.[18], Yeoh and Chan[19] who also got the similar findings in their study. Smears from 02 out of 200 cases showed inadequate cellularity to comment on the nature and type of the disease. They were advised to repeat the FNAC of the breast lumps. 2 out of 200 cases were reported as suspicious for malignancy. They were advised a biopsy confirmation to arrive at a definitive diagnosis. Non neoplastic lesions were found to be more common in men as compared to that of females and among the females, neoplastic lesions are more frequent. Ken Munene Nkonge[20] also concluded the same in their study. Among the benign non neoplastic lesions of female, fibrocystic disease was found to be the most frequent followed by mastitis. This finding was in agreement with Dominguez et. al.[21]. Gynaecomastia was found to be the most frequent male breast lesion which is in accordance with the study of Ken Muenene Nkonge[20]. As far as benign neoplastic lesions are concerned, fibroadenoma was found to be the most common and as far as malignant neoplastic lesions are concerned, Ductal Carcinoma was found to be the most common. Both of these consistent with the studies of Aamir Sharif et al.[14], Smita Balwantrao et al.[22]. In this study, Duct carcinoma (16%) was followed by Medullary carcinoma (2%), the later was followed by Lobular carcinoma (1.5%). We found very few cases of Papillary carcinoma and Mucinous carcinoma during our study period correlating with many previous studies that these are uncommon types of invasive breast cancers.

CONCLUSION:

Fine needle aspiration cytology is an important tool for preoperative assessment of breast lumps. Along with clinical and radiological examination, its importance as a preoperative diagnostic tool is incomparable. Where, the cellularity is utmost important for cytologists to comment on the nature and type of the lumps; it depends on the experience of the aspirator and the representative site from where the samples to be taken. Malignant neoplastic lesions are increasing in the North Eastern regions, so FNAC is a valuable tool for early diagnosis and management of breast carcinoma. IAC Yokohama system of reporting is helpful and effective. It reduces misinterpretation and increases cytological accuracy.

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