ORIGINAL RESEARCH PAPER

Pathology

KEY WORDS: Breast Cytology; International Academy Of Cytology; Reporting System; Yokohama System; Fine Needle Aspiration Cytology.

CATEGORIZATION OF BREAST FINE NEEDLE ASPIRATES USING THE INTERNATIONAL ACADEMY OF CYTOLOGY YOKOHAMA SYSTEM IN A TERTIARY CARE CENTER

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ABSTRACT

Background: The International Academy of Cytology (IAC) Yokohama System has developed a standardized system of reporting breast cytology by classifying them into five categories - insufficient, benign, atypical, suspicious of malignancy, and malignant. **Aims And Objectives**: The main objectives of our study were to classify breast fine needle aspirates according to the IAC Yokohama system. **Materials And Methods:** It was a retrospective study carried out from May 2022 to November 2022. A series of 133 breast FNAs were retrieved and classified into five categories according to the IAC Yokohama system. **Results:** The 133 cases were classified as follows: Category I (insufficient)-7cases(5.26%) , Category II (benign)-99 cases (74.43%), Category III (atypical)-3cases(2.25%), Category IV (suspicious of malignancy)-1 case (0.75%), and Category V (malignant)- 23 cases(17.29%). **Conclusion:** The IAC Yokohama system is an excellent system for accurately diagnosing breast fine needle aspirates with greater reproducibility of reports and better communication between the cytopathologist and clinician.

INTRODUCTION

Reporting of Breast Cytology had been descriptive earlier.(1) .It lacked standardization and reproducibility with no clear guidelines.(1).The International Academy of Cytology(IAC) has convened an expert panel and proposed the IAC Yokohama System for reporting breast fine needle aspirates. The system is based on cytomorphology and includes key diagnostic cytological criteria for each of the many lesions and tumors found in the breast.(2)It defines five categories for reporting breast cytology, each with a precise descriptive term for the category.(3) Breast carcinoma is one of the most life-threatening carcinomas and is the leading cause of death all over the world.(1) Palpable mass, mastalgia, and nipple discharge are some of the breast symptoms for which patients seek medical attention, and the commonest one is a breast lump. Although not all breast lesions are malignant, concern remains with the patient as well as the treating physician to rule out carcinoma.

AIM

This study aims to categorize the demographic and cytological findings of breast fine needle aspirates according to IAC Yokohama system.

MATERIAL AND METHOD

This study was conducted at Department of Pathology, GRMC ,Gwalior. 133 cases who had undergone breast FNAC between April 2022 to November 2022 were included. FNAC was carried out with informed consent. Conventional smears were made and stained with Giemsa stain.

Inclusion Criteria

- Patients of all age groups and gender who presented with breast lump with informed consent.

Exclusion Criteria

- Patients without breast lump and only nipple discharge.
- Patients who were unable to tolerate the FNAC procedure.

YOKOHAMA SYSTEM FOR REPORTING OF BREAST FNAB CYTOPATHOLOGY

NO.	CATEGORY	CRITERIA	MANAGEMENT
1.	Insufficient/Inadequate	Adequacy criteria : 6-7 epithelial cell fragments with 10-20 cells seen EXCEPTION - (1) Abscess (2)Cyst contents / fluid (3)Lipoma/Fatty Nodule (4)Spindle cell Lesion (5)Scar (6)Fat necrosis (7)Hyalinized/Sclerotic fibroadenoma	Repeat upto total 3 times
2.	Benign	(1)Acute mastitis (2)Granulomatous mastitis (3)Fat necrosis (4)Cyst (5)Fibrocystic change (6)Normal breast tissue (7)Epithelial hyperplasia (8)Fibroadenoma (9)Intraductal papilloma (10)Lactational change (11)Adenosis of sclerosing adenoma (12)Gynecomastia (13)Infective lymph nodes	Follow-up depends on nature of lesion
3.	Atypical	Mostly benign feature butpresence of = prominent single = intact cell = Nuclear enlargement = Pleomorphism = High cellularity = Necrosis = Mucin = complex micropapillary = cribriform archite pattern.	- Core needle biopsy - If technical issue-FNAB
4.	SUSPICIOUS FOR MALIGNANCY	Insufficient feature of definite malignancy (a)Limitation of specimen quality (1) Low cellularity (2) Thick smear (3) Crushing Artefact (4) Drying Artefact (b) Pitfalls -High cellularity in benign lesion -Low cellularity in lobular carcinoma -Cribriform or micropapillary architecture (DCIS) - Necrosis - Lymphoma v/s carcinoma in setting of basal like carcinoma or carcinoma with medullary like feature	- Core needle biopsy - Core needle biopsy

RESULTS

Demographic Distribution

Table 1:Majority belonged to 20 to 40 years.

AGE (IN YEARS)	NO. OF CASES
<10	0
11-20	25
21-30	37
31-40	38
41-50	17
51-60	12
61-70	04
71-80	00
81-90	00
TOTAL	133

> 40 years had only 33 cases were as 100 cases were in < 40 years.

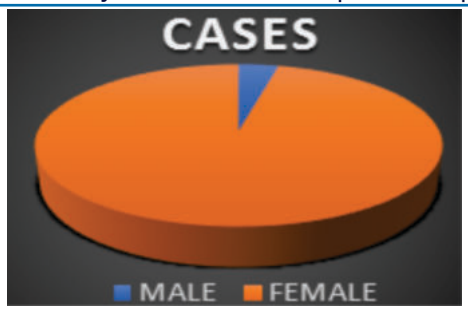

Fig 1: 128 cases were female and 5 were male, female to male ratio -25.6:1

Table 2:Quadrant distribution

BREAST QUADRANT	TOTAL CASES	PERCENTAGE
UPPER OUTER QUADRANT	69	51.8
UPPER INNER QUADRANT	25	18.7
LOWER OUTER QUADRANT	17	12.7
LOWER INNER QUADRANT	12	9.0
CENTRAL QUADRANT	09	6.7
TOTAL	133	100

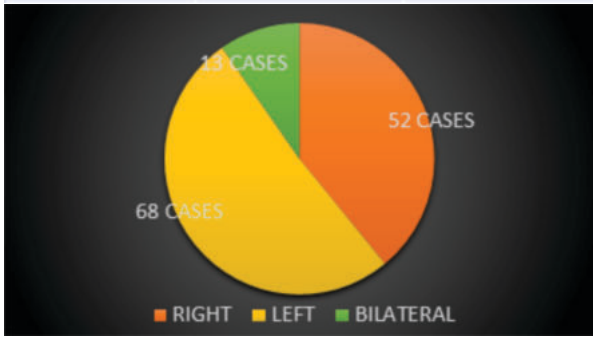

Figure 2-: Laterality

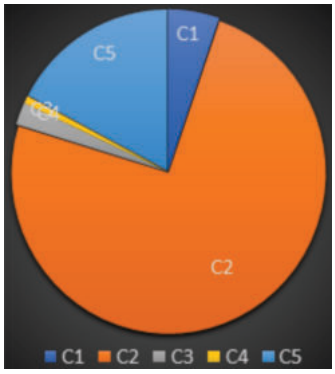

Figure 3: Categories distribution

Table 3: Clinical Scenario

S.No.	Clinical Scenario	Total	%
1	Breast Lump Without Tenderness	105	78.9%
2	Breast Lump With Tenderness	28	21%
3	Breast Lump With Nipple Discharge	05	3.7%
4	Breast Lump With Nipple Retraction	04	3.0%

Upper outer quadrant and left breast involvement was seen more commonly. Breast lump without tenderness was the most common clinical scenario. Fibroadenoma (C2 category) was present in majority of cases without tenderness in upper outer quadrant of left breast.Ductal cell carcinoma(c5 category) was present in lower quadrant with nipple retraction

Table4: Classification According To IacYokohama System

Category	Types	Number Of Cases
C1(Insufficient)	Less Than 10 Cells Seen	7
C2(Benign)	Fibroadenoma	71
	Fibrocystic Disease	10
	Abscess	8
	Gynecomastia	5
	Lactational Adenoma	1
	Galactocele	3
	Duct Papilloma	1
C3(Atypia)	Papillary Lesion With Atypia	3
C4(Suspicious For Malignancy)	Suspicious For Malignancy	1
C5(Malignant)	Ductal Cell Carcinoma	23

In this study, 5.26 % of cases were inadequate and were included in the C1 category, 74.43% cases were in the C2 category, 2.25 % cases in the C3 category, 0.75% cases included in category C4 and 17% cases in the C5 category.

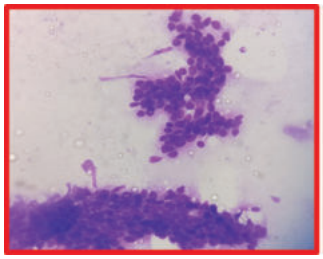

Fig 4: Fibroadenoma-branching sheets of cohesive cells in staghorn pattern (400x Giemsa)

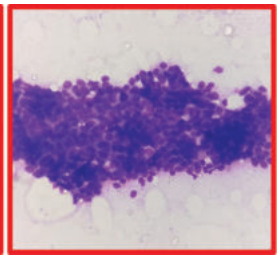

Fig 5: Gynecomastia-clusters of cohesive cells (400x Giemsa)

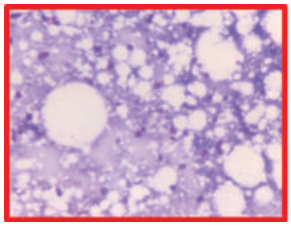

Fig 6: Breast abscess– background of inflammatory cells (400x Giemsa)

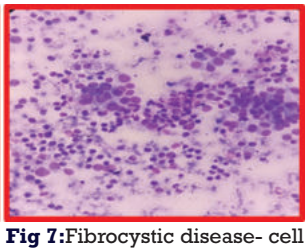

Fig 7: Fibrocystic disease- cell clusters with foamy histiocytes (400x Giemsa)

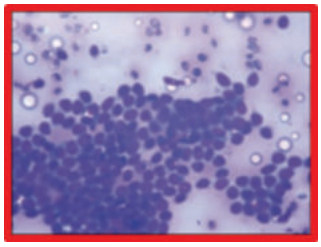

Fig 8: Duct papilloma-papillary arrangement of cells (400 x Giemsa)

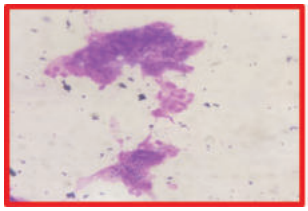

Fig 9: Lactating adenoma-loose cohesive cluster of cells(400x Giemsa)

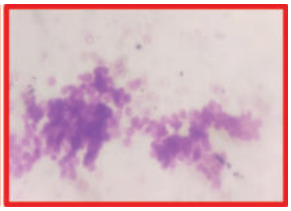

Fig 10: Papillary lesion with atypia (400 x Giemsa)

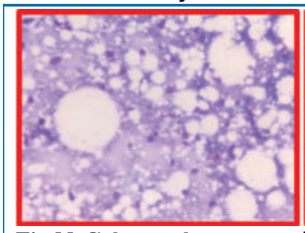

Fig 11: Galactocele (400 x Giemsa)

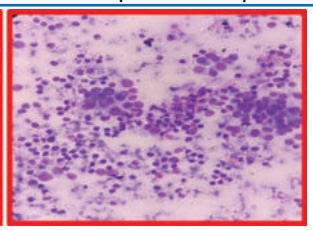

Fig 12: Suspicious for malignancy (400 x Giemsa)

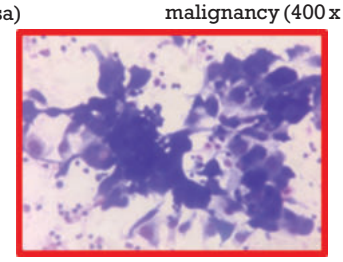

Fig 13: Ductal Cell Carcinoma breast(400x Giemsa)

DISCUSSION

In this study,56.4% of the cases belonged to the age group of 20-40 years , there were 5 male cases and 128 female cases, more number of lesions were seen in the left breast and upper outer quadrant was involved in majority of cases.Out of 133 cases, cytological diagnosis made according to IAC Yokohama criteria in our study, 7 of cases were inadequate i.e. less than 10 cells were included in the C1 category. Majority of cases i.e. 99 cases were in the C2 category which included fibroadenoma, fibrocystic disease , gynecomastia, lactating adenoma, galactocele, duct papilloma and breast abscess.3 cases in the C3 category were of papillary lesion with atypia and C4 included 1 case of suspicious for malignancy and 23 cases of ductal cell carcinoma were in the C5 category. These findings were in concordance with various other studies. David et al. (4), Aarthi et al. (2), Arul et al. (5) showed maximum number of lesions in C2 category similar to present study.In this study, C5 category showed 17.29% cases similar to Arul et al (5) which showed 17% cases.Aarthi et al(3) showed 2.7% cases in C3 category similar to present study.In this study, C1 and C4 category showed 5.26% and 0.75% cases which was similar to Karthik et al(6).

CONCLUSION

Hence, we would like to conclude that when FNAC reporting is done using a structured format like the IAC Yokohama reporting system, it standardizes the report, brings uniformity and universality in reporting and interpretation. Fibroadenoma in C2 category and ductal cell carcinoma in C5 category were commonly seen in this series. FNAC is a reliable, cost-effective, and minimally invasive procedure for diagnosing breast lesions.Thus it would help clinicians for better management and proper treatment of the patients.

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