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Spectrum of Breast lesions using the International Academy of Cytology (IAC) Yokohama System for reporting Breast cytopathology in a Tertiary Care Centre, Raigarh, Chhattisgarh

[1]Aarti Bansal, Assistant Professor in Pathology, MBBS, MD (Pathology), Govt. Medical College (LSLAMMC) Raigarh, Chhattisgarh.

[2]Reena Naik, Associate Professor in Pathology, MBBS, DNB (Pathology), Govt. Medical College (LSLAMMC) Raigarh, Chhattisgarh.

[3]Kiranlata Bhagat, Assistant Professor in Pathology, MBBS, MD (Pathology), Govt. Medical College (LSLAMMC) Raigarh, Chhattisgarh.

[4]Megha Gajendra, Demonstrator in Pathology, MBBS MD (Pathology), Govt. Medical College (LSLAMMC) Raigarh, Chhattisgarh.

[5]Manoj K Minj, Professor and HOD, Dept of Pathology, Govt. Medical College (LSLAMMC) Raigarh, Chhattisgarh.

Corresponding Author: Aarti Bansal, Assistant Professor in Pathology, MBBS, MD (Pathology), Govt. Medical College (LSLAMMC) Raigarh, Chhattisgarh.

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Abstract

Introduction: Breast carcinoma is the most common malignant tumor and the leading cause of carcinoma death in females. Fine Needle Aspiration Cytology (FNAC) for breast lesions has been widely used as an important diagnostic tool as a part of triple assessment. In May 2016, a meeting was held, sponsored by the International Academy of Cytology (IAC), with an aim of developing a standardized structure for Breast Fine Needle Aspiration Cytology reporting that provides better evaluation and management of the patients.

Objectives: The objectives of our study was- 1) To estimate the FNA cytology of various breast lesions 2) To categorize the breast fine needle aspirates according to the IAC Yokohama reporting system. 3) To correlate the spectrum of breast lesions categorised according to IAC Yokohama reporting system with demographic factors.

Materials and Methods: This was a 5 years retrospective study done on all breast FNACs over a period from January 2017 to December 2021. A total of 402 cases were included. All breast FNAs done in the above period were retrieved and all the cases were categorised according to the IAC Yokohama System.

Results: Total 402 cases were included. Age group of patients ranged from 9 years to 83 years. Commonest age group affected was 21-30 years (27.61%). 68.41% of the patients were married. Most common cytological diagnosis was fibro adenoma (44.03%) followed by IDC (19.40%). The categorization wise percentage according

to IAC Yokohama system was calculated as Category I - 3.23%, Category II -72.14%, Category III- 2.24%, Category IV- 2.74% and Category V -19.65% patients. In younger and middle-aged groups Category II and in the advanced age groups Category V was found the commonest.

Conclusion: FNAC is still considered as an essential test in the evaluation of breast lesions. The utilisation of the IAC Yokohama reporting system for breast cytology aids in better diagnosis and management of lesions.

The IAC Yokohama system is an excellent system for the accurate diagnosis of breast FNACs and also increases the reproducibility of reports and better communication between cytopathologists and clinicians.

Keywords: Breast Lesions, Fine Needle Aspiration Cytology, IAC, Yokohama system, Carcinoma

Introduction

Breast lesion is a very common clinical condition. Most of the breast lesions are benign with the commonest being fibroadenoma, fibrocystic diseases etc. Breast carcinoma is one of the most frequent malignant tumors and the leading cause of carcinoma death in females, with more than 10, 00,000 cases occurring worldwide annually (1). Therefore, it is necessary to categorize the various breast lesions as benign, premalignant and malignant respectively, in order to reduce the morbidity and mortality of the patients.

Fine Needle Aspiration Cytology (FNAC) has been widely used as an important diagnostic tool as a part of triple assessment. Earlier the categorization for reporting breast lesions was not so clear, that was the main cause of dilemma, causing difficulty in sharing the information amongst different clinicians and cytopathologists. In May 2016, the standardized system for reporting breast fine needle aspiration cytology was formed by the International Academy of Cytology (IAC) which consists of group of cytopathologists, surgeons, radiologists and oncologists (2). The IAC Yokohama System has classified them into five categories, category number C1 to C5 for insufficient/inadequate, benign, atypical, suspicious of malignancy, and malignant respectively (3). This standardized structured reporting system can result in better communication between cytopathologists and clinicians that increases the quality and reproducibility of the reports. It also aids in better diagnosis of the lesions by further recommending the use of ancillary diagnostic and prognostic tests that results in proper management of the patients.

Materials and Methods

This was a 5 years retrospective study of all the cases of breast lesions who had undergone FNAC, received at the Department of Pathology, LSLAM Medical College and Hospital, Raigarh, C.G. during the period from January 2017 to December 2021. A total of 402 cases were included.

Archival records of the retrospective cases were procured from the Department of Pathology and relevant clinical demographic details such as clinical history, age, marital status etc. were noted. Old stained slides (MGG Stain) of all the cases were retrieved from the records of the Department of Pathology. All the slides were studied microscopically and were restained with Modified Geimsa stain wherever required. All the parameters of the selected cases were identified and tabulated in each case. These parameters were divided into demographic group and cytological diagnosis. All the cases were assessed and further categorised according to the IAC Yokohama System for reporting breast cytopathology into five categories. The data collected according to the IAC Yokohama System was then analysed.

Results

A total of 402 cases were included in this study. Age group of patients with breast lesions ranged from 9 years to 83 years. Most number of patients was seen in the age group of 21-30 years (111/27.61%) followed by 31-40 years (79/19.65%) (Table 1).

Marital status revealed that maximum number of the patients were married (275/68.41%) (Table 2).

In the present study, most common cytological diagnosis found was fibroadenoma (Fig. 1) which included 177 (44.03%) patients followed by IDC (Fig. 4) which included 78 (19.40%) patients (Table 3).

All the breast fine needle aspirates were categorized according to the IAC Yokohama reporting system. The categorization wise percentage according to IAC Yokohama system is shown in Table 4. Category I includes 13 patients (3.23%), Category II includes 290 (72.14) patients, Category III includes 9 (2.24%) patients, Category IV includes 11 (2.74%) patients and Category V includes 79 (19.65%) patients.

In the age groups of 11-20 years and 21- 30 years, most of the patients presented with IAC Yokohama Category II followed by Category I. In the age groups of 31-40 years and 41- 50 years, most of the patients presented with IAC Yokohama Category II followed by Category V. In the higher age groups from 51-60 years to 81- 90 years, most of the patients presented with IAC Yokohama Category V (Table 5).

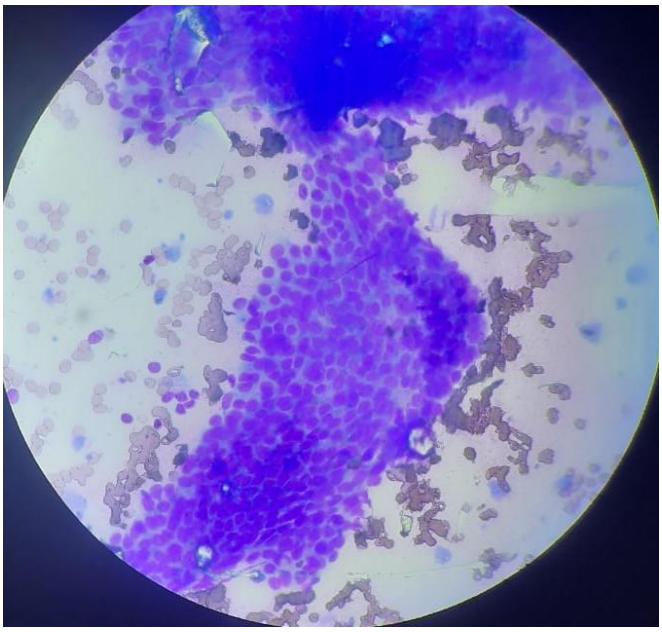

Figure 1: MGG stain- Fibroadenoma showing benign ductal epithelial cell cluster under 40x

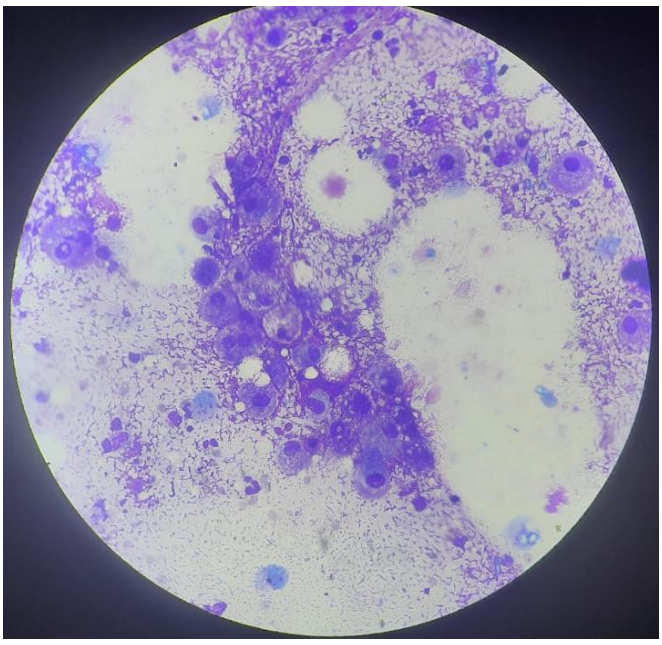

Figure 2: MGG stain- Fibrocystic disease under 40x

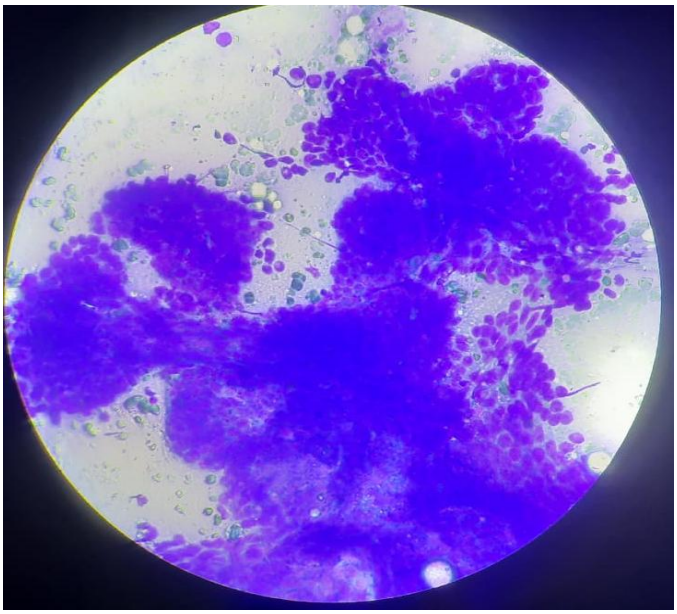

Figure 3: MGG stain-Proliferative disease under 40x

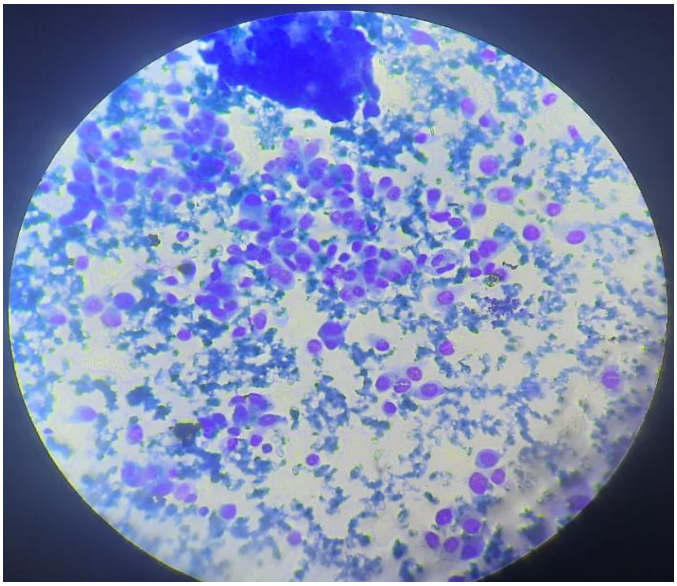

Figure 4: MGG stain-Carcinoma of the breast under 40x

Table 1: Age wise distribution

Age (in years)	No. of Cases	Percentage (%)
0-10	2	0.50
11-20	75	18.66
21-30	111	27.61
31-40	79	19.65
41-50	72	17.91
51-60	36	8.96
61-70	22	5.47
71-80	4	0.99
81-90	1	0.25
Total	402	100

Table 2: Marital Status wise distribution

Marital Status	No. of Cases	Percentage (%)
Married	275	68.41
Unmarried	127	31.59
Total	402	100

Table 3: Cytological diagnosis wise Distribution

Cyto-diagnosis	No. of Cases	Percentage (%)
Fibroadenoma	177	44.03
IDC	78	19.40
Abscess	41	10.20
Benign Cystic lesion	20	4.98
Fibrocystic disease	17	4.23
Inadequate	13	3.23
Suspicious of malignancy	11	2.74
Benign Proliferative breast disease	9	2.24
Borderline Phyllodes tumor	8	1.99
Granulomatous Mastitis	8	1.99
Galactocele	7	1.74
Fat necrosis	4	0.99
Lipoma	4	0.99
ADH	2	0.50
Benign Phyllodes tumor	2	0.50
Lymphoma	1	0.25
Total	402	100

Table 4: IAC Yokohama Category wise distribution

IAC Yokohama Category	No. of Cases	Percentage (%)
I (Insufficient/Inadequate)	13	3.23

II (Benign)	290	72.14
III (Atypical)	09	2.24
IV (Suspicious of malignancy)	11	2.74
V (Malignant)	79	19.65
Total	402	100

Table 5: Correlation of age groups and IAC Yokohama Category

Age (in years)	I	II	III	IV	V	Total
0-10	1	1	0	0	0	02
11-20	1	74	0	0	0	75
21-30	3	105	1	0	2	111
31-40	5	58	2	4	10	79
41-50	1	38	4	2	27	72
51-60	1	10	2	2	21	36
61-70	1	4	0	3	14	22
71-80	0	0	0	0	04	04
81-90	0	0	0	0	01	01
Total	13	290	9	11	79	402

Discussion

A palpable breast lump is the most common symptom in the patients noted by the clinicians. All breast lesions should be evaluated by “triple test” approach. The triple test includes clinical examination, mammography, and FNAC(4).Current practices also utilize other radiological imaging and core needle biopsy for the diagnosis of various breast lesions.

Inspite of various diagnostic procedures, Fine needle aspiration cytology (FNAC) is still considered as the first choice in the investigation of breast lesions. It is rapid, accurate and minimally invasive diagnostic procedure (4).The main advantage of FNAC is the low cost and providing a diagnosis to the surgeons and patients at the time of procedure that helps in planning proper treatment protocols and thus reduces the need of unnecessary surgeries (5).

In the present study, 402 cases of breast fine-needle aspirates were retrospectively categorized according to the IAC Yokohama Reporting System. In the present study, the earliest age presenting with breast lesion was 9 years and oldest patient was 83 years. Benign lesions were found more common in young and middle-aged patients. Carcinoma was found in patients of age ranged from 28 to 83 years. Incidence of carcinoma progressively increases during the menopausal age. Now a days, incidence of cancer is increasing at an early age due to lifestyle changes, processed foods, pollution, genetic predisposition as well as increased awareness and diagnostic advancements. In elderly age groups, malignant lesions were more common. This is found in concordance with the studies of Chaudhary et al (6).

In our study, 127 females were unmarried and their age ranged from 9 years to 28 years. Most breast lesions in young unmarried females are benign, IAC Yokohama Category II (97.64%).

In our study, the commonest breast lesion was fibro adenoma (44.03%) followed by duct carcinoma (19.40%). This percentage of cases is found in concordance with the studies of Chaudhary et al that had 53.61% cases of fibroadenoma and 11.44% cases of duct carcinoma (6).

In our study Category I includes(3.23%) 13cases, Category II includes 72.14% (290) cases, Category III had 2.24% (9)cases, Category IV includes 2.74% (11) cases and Category V includes 19.65%(79) cases respectively. This distribution is comparable with the studies of Kamatar et al (7) who had 5% C1, 71% C2, 1% C3, 2% C4, and 21% C5 lesions, respectively. Another study of Modi et al (8) shows 1.36% of C1, 72%

of C2, 3.4% of C3, 6.5 % of C4 and 16.7% of C5 lesions which is again found similar to the present study results.

In the present study, among C2 lesions, 44.03% (177) cases were fibroadenoma followed by 10.20% (41) cases of abscess, benign cystic lesion4.98% (20) cases, benign proliferative breast disease in 2.24% (09) cases, granulomatous mastitis 1.99% (08) cases, galactocele 1.74% (07) cases, fat necrosis and lipoma (0.99%) 4 cases each.

C3 lesion in our study included borderline phyllodes tumor 08 cases (1.99%), ADH 02 cases (0.50%). C4 lesions included 11 (2.74%) cases of suspicious of malignancy. C5 lesions being the second most common entity in the present study were ductal carcinoma78 (19.40%) cases and also there included 1 (0.25%) case of lymphoma.

Conclusion

FNAC is still considered as an essential test in the evaluation of breast lesions. The utilisation of the IAC Yokohama reporting system for breast cytology aids in better diagnosis and management of lesions.

The IAC Yokohama system is an excellent system for the accurate diagnosis of breast FNACs and also increases the reproducibility of reports and better communication between cytopathologists and clinicians.

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