



Original Research Article

Cytomorphological Spectrum of breast lesions and Diagnostic utility of Fine needle aspiration Cytology

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ABSTRACT

Introduction : Fine needle aspiration cytology (FNAC) was described and practiced by Martin and Ellis in 1930. It is a well-accepted procedure and is a valuable tool in the diagnosis and patient management of breast lesions. The sensitivity and specificity of FNAC as a diagnostic tool for palpable breast lumps are 65-99% and 96-100% respectively. Therefore, the study aimed to access the cytomorphological spectrum of breast lesions.

Materials and Methods : The present study included thirty-seven consecutive female patients of palpable breast lesions who underwent fine needle aspiration cytology (FNAC). After obtaining a detailed history followed by clinical examination, the FNAC procedure was performed. All the slides were stained with Hematoxylin and Eosin (H & E). The stained smears were viewed under microscope and cytological findings were interpreted accordingly.

Results : The most common affected age group was 40-49 years with preponderance on right side. Considering the Cytomorphological spectrum, the most common lesion was Fibroadenoma followed by Ductal carcinoma, fibrocystic disease, acute suppurative inflammatory lesion, benign breast lesion, granulomatous mastitis and atypical ductal hyperplasia. The ductal carcinomas were more commonly seen in the age group of 40-49 years and Fibroadenoma were more common in age group of 20-29 years.

Conclusion: Fine needle aspiration cytology of breast lesions is a valuable, cost effective, minimally invasive and a rapid investigation. Majority of the lesions in the younger age group are benign in nature and malignant in older age groups. Despite its high accuracy, some pitfalls may lead to confusion and misdiagnosis of breast lesions. Therefore, accuracy of diagnosis increases when aided with radiological investigations.

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1. Introduction

Fine needle aspiration cytology (FNAC) was described and practiced by Martin and Ellis in 1930.^{1,2} It is a well-accepted procedure and is a valuable tool in the diagnosis and patient management of breast lesions.^{1,3,4} Breast lesions are common complaints of women visiting to clinics of which 80 to 85% are benign and rest are malignant.^{5,6} Breast carcinomas are leading cause of morbidity and mortality in women.^{7,8}

In Indian, breast carcinoma is the second most common malignancy preceded by cervical carcinoma, comprising 22.2% of all new cancers diagnosis and 17.2% of all cancer deaths.⁸ Fine needle aspiration cytology has become widely accepted as simple, cost effective, diagnostic tool with high sensitivity and specificity.⁹ The sensitivity and specificity of FNAC as a diagnostic tool for palpable breast lumps are 65-99% and 96-100% respectively.^{8,10} Therefore, the study aimed to access the cytomorphological spectrum of breast lesions.

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2. Materials and Methods

The present study included thirty-seven consecutive female patients of palpable breast lesions who underwent fine needle aspiration cytology (FNAC). After obtaining a detailed history followed by clinical examination, the FNAC procedure was performed. Lesion was fixed with one hand, a 23 G needle was inserted into the lesion with 10 ml syringe attached to it. The piston of the syringe was withdrawn to apply negative pressure; needle was moved back and forth, in different directions within the lesion. Aspirated material was collected on glass slides and smears were prepared. At least three to four slides were prepared, fixed routinely with 95% alcohol. In few cases, slides were air dried for special stains if required.

All the slides were stained with Hematoxylin and Eosin (H & E). The stained smears were viewed under microscope and cytological findings were interpreted accordingly. The aim of the present study was to analyze the Cytomorphological spectrum of breast lesions on FNAC in female patients.

3. Results

A total of thirty-seven consecutive female breast lesions were analyzed. The youngest patient was 17 years old and the oldest was 80 years old. The most common affected age group was 40-49 years comprising 10(27.03%) cases followed by 30-39 years comprising 9(24.32%) cases. Table 1. There was a preponderance on right side, 20 (54.05%) compared to left side, 16(43.25%) and bilateralism was seen only in 1(2.70%) case. Table 2

Considering the Cytomorphological spectrum, the most common lesion was Fibroadenoma 16 (43.25%) followed by Ductal carcinoma 9(24.32%), fibrocystic disease 7(18.92%), Acute suppurative inflammatory lesion 2(5.42%) and 1(2.70) each of benign breast lesion, granulomatous mastitis and atypical ductal hyperplasia respectively. Table 3

The ductal carcinomas were more commonly seen in the age group of 40-49 years and Fibroadenoma were more common in age group of 20-29 years. Table 4

4. Discussion

FNAC of breast lesions is a simple, easy and cost effective procedure. The majority of the palpable breast lesions occurred in females in third to fourth decade of life which correlated with the study conducted by Chamdanwale et al¹¹ and Likhar et al.¹² In the present study, breast lesions had more preponderance to right side compared to left which is similar to study conducted by Binayke R et al¹³ whereas study by Ahmad F et al⁸ showed left preponderance.

In the present study, fibroadenoma was the most common benign lesion and maximum cases of fibroadenoma

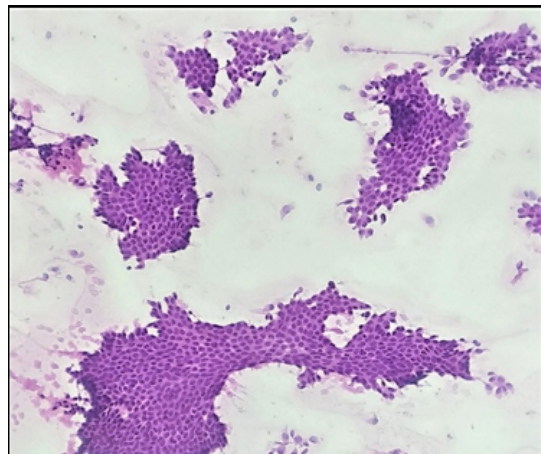


Fig. 1: Fibroadenoma. H&E, x4

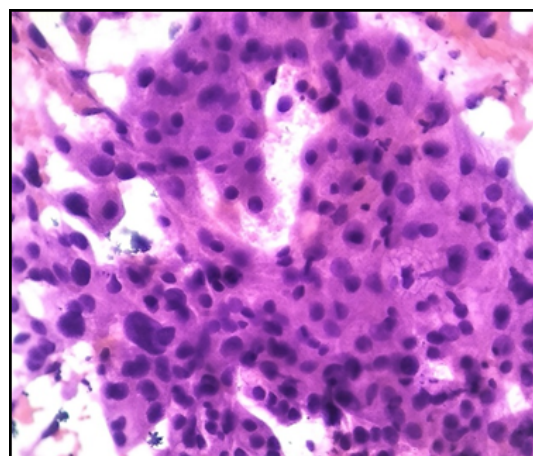


Fig. 2: Ductal carcinoma. H&E, x40

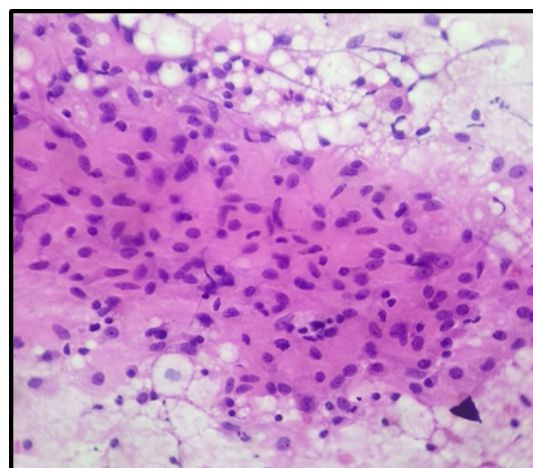


Fig. 3: Granuloma. H&E, x40

Table 1: Age distribution

Age groups	Bilateral	Left	Right	Total	Percentage
10-19		2	1	3	8.11%
20-29		2	6	8	21.62%
30-39		2	7	9	24.32%
40-49		5	5	10	27.03%
50-59	1	2	1	4	10.81%
60-69		2		2	5.41%
70-80		1		1	2.70%
Total	1	16	20	37	100%

Table 2: Comparison of various lesions with respect to laterality

Diagnosis	Bilateral	Left	Right	Total	Percentage
Acute suppurative inflammatory lesion		2		2	5.41%
Atypical ductal hyperplasia		1		1	2.70%
Benign breast lesion		1		1	2.70%
Ductal Carcinoma		5	4	9	24.32%
Fibroadenoma		5	11	16	43.25%
Fibrocystic disease	1	2	4	7	18.92%
Granulomatous Mastitis			1	1	2.70%
Total	1	16	20	37	100%

Table 3: Distribution of various lesions

Diagnosis	Number	Percentage
Acute suppurative inflammatory lesion	2	5.41%
Atypical ductal hyperplasia	1	2.70%
Benign breast lesion	1	2.70%
Ductal Carcinoma	9	24.32%
Fibroadenoma	16	43.25%
Fibrocystic disease	7	18.92%
Granulomatous Mastitis	1	2.70%
Total	37	100%

Table 4: Comparison of various lesions with respect to age groups

Diagnosis / Age groups	10-19	20-29	30-39	40-49	50-59	60-69	70-80	Total
Acute suppurative inflammatory lesion		1		1				2
Atypical ductal hyperplasia				1				1
Benign breast lesion						1		1
Ductal Carcinoma			2	4	1	1	1	9
Fibroadenoma	3	7	4	2				16
Fibrocystic disease			2	2	3			7
Granulomatous Mastitis			1					1
Total	3	8	9	10	4	2	1	37

7(18.92%) were observed in the age group of 20-29 years which was in accordance with results shown by Ahmad F et al,⁸ Kochhar et al,¹⁴ Khanzada et al,¹⁵ Iyer et al,¹⁶ Akhtor et al,¹⁷ and Irabor et al.¹⁸ The maximum cases of Ductal carcinomas 4(10.81%) were seen in the age group of 40-49 years, which is similar to the results by Khan et al.¹⁹

However, there are numerous factors that contribute to confusion at arriving a definitive diagnosis. These include 1) Technical difficulties where the smears are limited by cellularity or obscured by drying artifacts or blood 2)

Overlapping of cytological features of certain benign and malignant conditions 3) Intralesional variation leading to non-representative sampling.

5. Conclusion

Fine needle aspiration cytology of breast lesions is a valuable, cost effective, minimally invasive and a rapid investigation. Majority of the lesions in the younger age group are benign in nature and malignant in older

age groups. Despite its high accuracy, some pitfalls may lead to confusion and misdiagnosis of breast lesions. Therefore, accuracy of diagnosis increases when aided with radiological investigations. We conclude that FNAC should be used as a routine procedure in combination with radiological findings in arriving at early and accurate diagnosis.

6. Source of funding

None.

7. Conflict of Interest

None.

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