



ORIGINAL RESEARCH PAPER

Pathology

STUDY OF SPECTRUM OF CYTOLOGICAL FINDINGS IN ASPIRATED BREAST LESIONS IN FEMALES OF DIFFERENT AGE GROUPS

KEY WORDS: FNAC, Breast lesions, Benign and malignant

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ABSTRACT	Background: Fine needle aspiration cytology (FNAC) is a sensitive, specific and highly accurate initial investigation to diagnose breast lesions in a population having low resources and no screening programme.[1] Correct cytodiagnosis of breast lesion prevents the patient from having radical surgery, specially in non-neoplastic breast lesions.
	Methods: Conventional May-Grunwald Giemsa(MGG) staining was done in all the 156 cases. Histopathology was available in 57 cases. The cytological findings were correlated with histology in these cases.
	Results: A total of 156 cases were studied. Benign cases (73.1%) were more than the malignant ones (21.2%). Fibroadenoma (32.7%) was the most commonly diagnosed breast lesion, followed by malignancy (21.1%). Comparison of the disease at different ages showed that percentage of malignancy increases with the increasing age. We found 100% cytohistological correlation, proving that FNAC is highly effective in diagnosing breast lesions. There were no false positive or false negative cases in the present study.
	Conclusion: FNAC is very effective in differentiating between benign and malignant lesions preoperatively, thus reducing patients anxiety and helping the surgeon to plan the surgical management.

INTRODUCTION:

FNAC serves as a rapid, economical, and reliable tool for diagnosis of palpable breast lesions before operation or treatment.[2] FNAC should be used as a routine diagnostic procedure due to its cost effectiveness and high histopathological correlation, thus maximizing the availability of effective health care to patients with breast lesions.[3] Triple diagnosis, the combination of clinical examination, mammography and pathologic examination and the multidisciplinary approach increase the quality of fine needle aspiration and core biopsy and decrease their diagnostic limitations. Use of all the three modalities in parallel has led to improvement in preoperative diagnosis.[4]

AIMS:

1) To stratify the female breast lesions into various cytomorphological categories. 2) To estimate the frequency of female breast lesions in different age groups in the aspirates so obtained. 3) To identify the problems encountered in cytological interpretation of aspirates of breast lesions and to compare the results with histology wherever available.

MATERIALS AND METHODS:

A total of 156 cases, referred to the FNAC clinic with breast lesions were studied. The criteria for selection of patients were-1) Aspirates from lesions of breast, suspicious clinically or radiologically were included in the study. 2) Patients were co-operative. 3) Patients had no bleeding tendency or coagulopathy. Aspiration was done using 22 gauge needle attached to a 20 ml syringe. The slides prepared from aspirated material, were air dried, fixed in methanol and then stained with MGG stain. The cytological findings, clinical findings and mammographic findings were noted and cytodiagnosis was rendered in all the cases. Histology was available in 57 cases. The cytological findings were correlated with histology in all these cases.

RESULTS:

Our study group comprised of cases between 18 to 71 years of age. The maximum number of cases were in the age range of 21 to 30 years. Of these 156 cases, 78 were in the right side of the breast, 69 were left sided and 9 cases were bilateral. There was a slight predominance of cases on the right side of the breast. The quadrant most commonly involved was superolateral quadrant of the breast (96 cases), followed by inferolateral (30 cases), superomedial (15 cases), inferomedial (12 cases) and central (3

cases). Adequacy rate in our study was 96.2%. The aspirates were considered adequate, if the cellular elements were sufficient for rendering diagnosis.

Out of the 156 cases, 114 cases (73.1%) were benign, 33 cases (21.2%) were malignant, 3 cases (1.9%) were suspicious of malignancy and 6 cases were inadequate. Of the 33 malignant cases, 12 cases i.e. 36.4% were less than 2 cm and 21 cases i.e. 63.6% were more than 2 cm. Of the 156 cases, fibroadenoma was the most common lesion, comprising of 51 cases (32.7%), followed by ductal carcinoma and benign breast disease with non-specific descriptive diagnosis, comprising of 27 cases (17.3%) each. We observed 9 cases (5.7%) of benign phyllodes tumor, 6 cases (3.8%) each of breast abscess, subacute mastitis and galactocele. Three cases(1.9%) each of granulomatous mastitis, fibrocystic change, papillary lesion, suspicious of malignancy, lobular carcinoma and medullary carcinoma were found.[Fig. 1 and 2][Table.1].

Of the 156 cases, inflammatory and cystic lesions were more common in 21-30 years of age, with 3 cases (1.9%) each of breast abscess, granulomatous mastitis, subacute mastitis and 6 cases (3.8%) of galactocele were found in this age group. There were 3 cases (1.9%) each of breast abscess and fibrocystic change in 31-40 years of age group and 3 cases (1.9%) of subacute mastitis in 11-20 years of age group [Table 2].

Among the benign lesions of the breast, fibroadenoma was the commonest one and found mainly in the age group of 21-30 years (21 cases i.e. 13.4%), followed by benign breast disease with non-specific descriptive diagnosis, which was also mainly found in the age group of 21-30 years (9 cases i.e. 5.7%). There were total 9 cases (5.7%) of benign phyllodes tumor, 3 cases (1.9%) each in the age group of 21-30 years, 31-40 years and 41-50 years. There were 3 cases (1.9%) of papillary lesion in 41-50 years of age group. There were 3 cases (1.9%) suspicious of malignancy in the age group of 21-30 years [Table 2].

Ductal carcinoma was the most common malignant lesion. Maximum number of ductal carcinoma cases (12 cases i.e. 7.6%) were found in 41-50 years of age. There were 3 cases (1.9%) of lobular carcinoma in 41-50 years of age and 3 cases (1.9%) of medullary carcinoma in 51-60 years of age group [Table 2].

Problems encountered- Smears from lobular carcinoma cases showed low cellularity with small cells arranged in loose clusters and single file pattern and intracytoplasmic neolumina in some cells. Since some ductal carcinomas may also exhibit low cellularity, small cells and intracytoplasmic vacuolation, the possibility of lobular carcinoma can not be entirely excluded in such cases. Smears from medullary carcinoma cases showed high cellularity with clusters of poorly cohesive cells, having large nuclei with prominent nucleoli and many lymphocytes. Similar cytological features can also be encountered in high grade ductal carcinoma. Histology was available in 57 cases out of 156 cases. Among them, 33 cases were of fibroadenoma, 6 cases of benign phyllodes tumor, 15 cases of ductal carcinoma and 3 cases of medullary carcinoma. The cytological diagnosis matched with the histology in all the 57 cases. Cytohistological correlation was found to be 100% [Table 3].

DISCUSSION:

The patients with breast lesion in our study were between 18 to 71 years of age, with maximum incidence in the age group of 21 to 30 years (54 cases i.e. 34.6%). Rahman MZ et al and Likhar KS et al also reported maximum number of patients in 21 to 30 years.[2,5] While Bukhari MH et al reported maximum number of cases in 31 to 40 years of age.[6] In our study, right sided breast lesions were more common than left side. Rahman MZ et al and Kumar R et al also observed a little predominance of right sided breast lesions.[2,7] While Khemka A et al observed left sided breast involvement more than the right side.[8] The most common site of involvement in the breast was superolateral quadrant in the present study (96 cases i.e. 61.5%), which was in concordant with the study by Khemka A et al and Hussain MT et al who also observed upper and outer quadrant as the commonest site.[8,9] In our study, inadequacy rate was 3.84%. Tiwari M et al and Jarwani PB et al reported similar inadequacy rates of 3.29% and 4.5% respectively.[10,11] However, the frequency of inadequate cases were variable in different studies, ranging from 1.36% (Modi P et al) to 13.94% (Rahman MZ et al).[12,2] This might be due to the lack of technical experience or the nature of lesions themselves.

In the present study, 73.1% cases were benign, 21.2% were malignant, 1.9% were suspicious of malignancy and 3.8% were inadequate. Our findings were concordant with those of Bukhari MH et al, who reported 60% cases as benign, 31% as malignant, 8.4% as suspicious and 0.5% cases as inadequate.[6] In our study, out of 33 malignant cases, 36.4% were less than 2cm and 63.6% were more than 2cm. However Rahman MZ et al reported 60.7% of the malignant lumps with size less than 2cm and 39.3% with size more than 2cm.[2]

Fibroadenoma was the most common lesion (32.7%) in our study, followed by ductal carcinoma (17.3%) and benign breast disease with non-specific descriptive (17.3%). There were 5.7% cases of benign phyllodes tumor, 3.8% each of breast abscess, subacute mastitis, galactocele and 1.9% each of granulomatous mastitis, fibrocystic change, papillary lesion, suspicious of malignancy, lobular carcinoma and medullary carcinoma. Similar findings, with fibroadenoma being the commonest breast lesion, followed by ductal carcinoma were also reported by Rahman MZ et al and Chaudhary S et al.[2,13]

The age of patients having benign lesions in our study ranged from 18 to 62 years, with majority of them in 21-30 years (42.1%), followed by 31-40 years of age (21.1%). Similar results were reported by Bukhari MH et al and Chaudhary S et al, who had maximum number of benign breast cases in their study, in 3rd decade of life,[6,13] while Khemka A et al and Jarwani PB et al reported maximum number of cases in 4th decade of life.[8,11]

Among the 114 benign cases in our study, inflammatory and cystic lesions were more common in 21-30 years of age. Among benign proliferative lesions, fibroadenoma was most common in 21-30 years of age, followed by benign breast disease with non-specific descriptive diagnosis, which was also most common in 21-30 years of age. Three cases under the category of atypia, reported as

suspicious of carcinoma in 21-30 years of age. Our findings were comparable to those of Rahman MZ et al and Thakkar B et al, who also reported fibroadenoma as the most common benign lesion in 21-30 years of age.[2,14]

Among the 33 malignant cases in our study, age ranged between 30 to 71 years, with majority of the cases being in 41-50 years (45.5%), followed by 51-60 years of age group (18.2%). There were 9.1% cases each in 21-30 years, 31-40 years, 61-70 years and 71-80 years of age group respectively. Our findings were similar to those of Jarwani PB et al, Modi P et al and Shrestha A et al, who reported maximum number of malignant cases in 5th and 6th decade.[11-13] None of the studies showed it below 4th decade.

Problem areas: Some cases of low grade ductal carcinomas with low cellularity and small cells were confused with lobular carcinoma. Similar problem was stated in the study by Greeley CF et al.[15] Similarly, some high grade ductal carcinomas have cytological features which were difficult to differentiate from medullary carcinoma. Racz MM et al have stated in their study that cells of both comedocarcinoma and medullary carcinoma have abundant cytoplasm and large, pleomorphic, obviously malignant nuclei.[16]

In our study, out of 156 cases, histology was available in 57 cases. We found 100% cytohistological correlation in the cases where histology was available. There were no false positive or false negative cases. Tiwari M et al studied 91 cases of FNAC, biopsy was done in 21 cases. Sensitivity and specificity of breast FNAC in diagnosis of malignancy in their study was 83.3% and 100% respectively.[10]

CONCLUSION:

Fine needle aspiration cytology of breast is safe, reliable, rapid, economical and highly accurate method for diagnosis of breast lump. Thus it is an important diagnostic modality in preoperative patients, specially in areas of low resources.

Table.1: Distribution of different cytological diagnosis of breast lesions:

S.No.	DISEASES	No. OF CASES	PERCENTAGE
1	Breast abscess	6	3.8%
2	Granulomatous mastitis	3	1.9%
3	Subacute mastitis	6	3.8%
4	Fibrocystic change	3	1.9%
5	Galactocele	6	3.8%
6	Papillary lesion	3	1.9%
7	Benign breast disease with non-specific descriptive diagnosis	27	17.3%
8	Fibroadenoma	51	32.7%
9	Benign phyllodes	9	5.7%
10	Suspicious of malignancy	3	1.9%
11	Ductal carcinoma	27	17.3%
12	Lobular carcinoma	3	1.9%
13	Medullary carcinoma	3	1.9%
14	Inadequate	6	3.8%
TOTAL		156	100%

Table.2: Distribution of different categories of lesions according to age groups:

S.No.	Category	Diagnosis	11-20	21-30	31-40	41-50	51-60	61-70	71-80
1	Inflammatory lesions	Breast abscess	-	3	3	-	-	-	-

		Granulomatous Inflammation	3	-	-	-	-	-
		Subacute mastitis	3	3	-	-	-	-
2	Cystic lesion	Fibrocystic change	-	-	3	-	-	-
		Galactocele	-	6	-	-	-	-
3	Benign proliferative	Papillary lesion	-	-	-	3	-	-
		Benign breast disease with non-specific descriptive diagnosis	3	9	6	3	3	3
		Fibroadenoma	15	21	9	6	-	-
		Benign phyllodes	-	3	3	3	-	-
4	Atypia	Suspicious of malignancy	-	3	-	-	-	-
5	Malignant neoplasms	Ductal carcinoma	-	3	3	12	3	3
		Lobular carcinoma	-	-	-	3	-	-
		Medullary carcinoma	-	-	-	-	3	-
6	Others	Inadequate	-	-	-	3	3	-
Total		156 cases	21	54	27	33	12	6

Table.3: Cytohistological Correlation:

S.No.	Cytological diagnosis	Number of cases	Number of cases with available histology	Discrepancy with cytodagnosis
1	Breast abscess	6	-	-
2	Granulomatous mastitis	3	-	-
3	Subacute mastitis	6	-	-
4	Fibrocystic change	3	-	-
5	Galactocele	6	-	-
6	Papillary lesion	3	-	-
7	Benign breast disease with non-specific descriptive diagnosis	27	-	-
8	Fibroadenoma	51	33	-
9	Benign phyllodes	9	6	-
10	Suspicious of malignancy	3	-	-
11	Ductal carcinoma	27	15	-
12	Lobular carcinoma	3	3	-
13	Medullary carcinoma	3	-	-
14	Inadequate	6	-	-
TOTAL	156	57	-	-

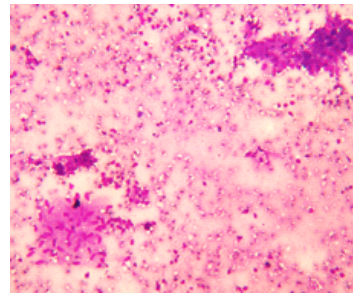


Fig.1a: Granulomatous mastitis showing granuloma adjacent to a benign breast epithelium(MGG,X100)

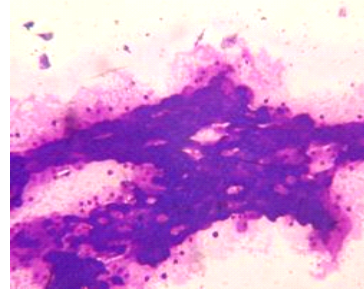


Fig.1b: Fibrocystic change showing apocrine cells in cystic fluids (MGG,X100)

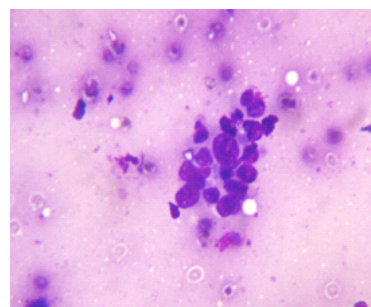
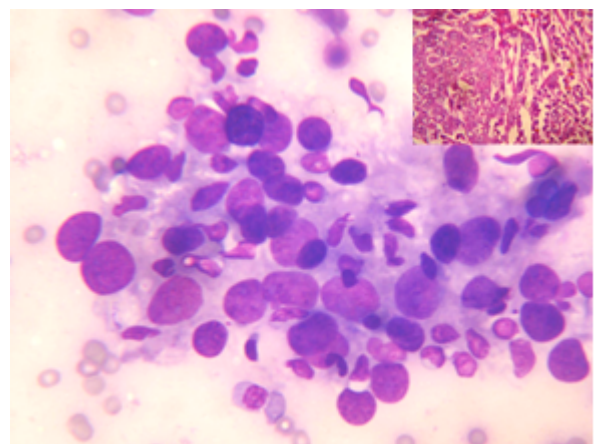
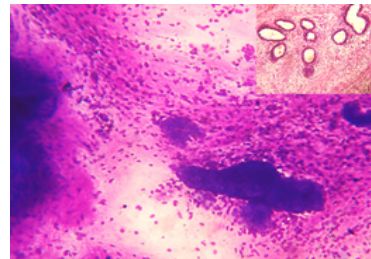


Fig.2a: Anisokaryosis in a case suspicious of malignancy (MGG,X400)

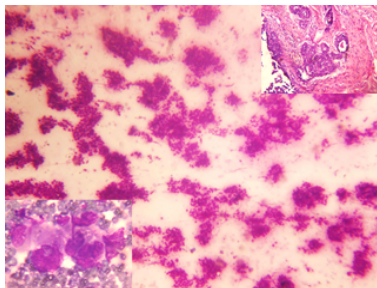


Fig.2b: Ductal carcinoma showing high cellularity (MGG,X100) [(Left lower inset-MGG,X400),Right upper inset- Histopathology of ductal carcinoma-H & E,X100].

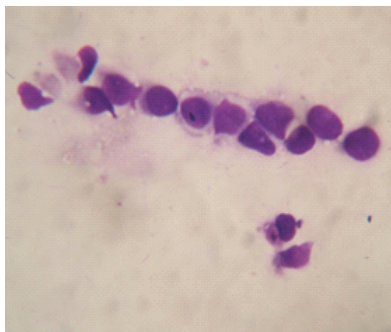


Fig.2c: Lobular carcinoma showing single file pattern and intracytoplasmic neolumina (MGG,X400)

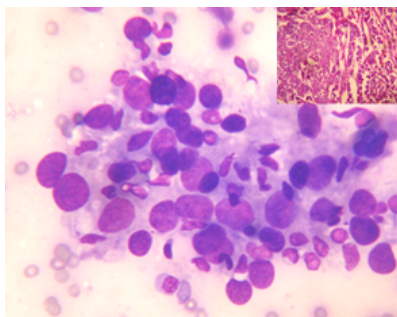


Fig.2d: Medullary carcinoma showing malignant cells with large pleomorphic nuclei and many scattered lymphocytes (MGG,X400) [inset-Histopathology of medullary carcinoma (H and E, X400).

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