



MALIGNANT LESIONS OF THE BREAST - AN FNAC STUDY.

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ABSTRACT Breast carcinoma is the most common malignant tumour and the leading cause of carcinoma death in women, with more than 1,000,000 cases occurring worldwide annually⁽¹⁾. Fine needle aspiration cytology has been used as an initial investigative procedure for breast lesions, it is a rapid and non-invasive procedure that has been increasingly used as an alternate to excision biopsy of palpable breast lesions⁽²⁻⁴⁾

Aims and Objectives

1. To diagnose the pathology of malignant breast lesions.
2. To grade the lesions cytologically.
3. To compare the cytologic diagnosis with the histopathological diagnosis.

In the present study was carried out 91 cases of suspected malignant breast lesions were studied by FNAC. Clinical and histological features were correlated. Results: The most common cytological diagnosis was Duct carcinoma (73 cases).

Conclusion: FNAC is a rapid, reliable, less traumatic and safe diagnostic tool to differentiate non-neoplastic from neoplastic breast lesions.^(5,6)

KEYWORDS : Malignant breast lesions, FNAC, Duct Carcinoma

Introduction

Breast carcinoma is the most common malignant tumour and the leading cause of carcinoma death in women, with more than 1,000,000 cases occurring worldwide annually.⁽¹⁾ The incidence of malignant neoplasia of the breast is on the rise. The statistical significance coupled with decreased morbidity and mortality associated with early detection of malignant tumours has prompted expensive screening programmes in the field of health care⁽⁷⁾. Fine needle aspiration cytology has been used as an initial investigative procedure for breast lesions, it is a rapid and non-invasive procedure that has been increasingly used as an alternate to excision biopsy of palpable breast lesions⁽²⁻⁴⁾. Fine needle aspiration cytology is generally considered as a rapid, reliable, less traumatic and safe diagnostic tool to differentiate non-neoplastic from neoplastic breast lesions. This procedure is technically easy to apply in small breast lesions^(5,6). FNAC is most accurate when experienced cytologists are available and when immediate assessment by professionals is performed for the evaluation of material adequacy, so that additional aspirations can be performed when needed⁽⁸⁾.

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Materials and Methods

Material

The present study was carried out in a tertiary care institution over a period of 3 years. The study comprised of 91 cases of suspected malignant breast diseases. The female patients of malignant breast diseases attending the surgical OPD were included in this study. The patients with benign breast lumps clinically suspected or diagnosed by ultrasonography or mammography were excluded from the study. Their Clinical History, Symptomatology, General, Systemic and Local examination findings were noted down in a pre-validated proforma.

Method

FNAC procedure was explained to the patients in their local language and written consent was taken. FNAC of these breast lesions were done by the standard technique. Needle contents were smeared over the glass slides. The smears of the aspirated material were made. In case of cystic swellings, the cyst contents were aspirated centrifuged and the slides were made from the sediment for the cytological analysis. The

slides were carefully labeled, few slides were air dried. Slides for H & E and PAP smear were immediately put into fixative. The air dried smears were stained with MCG stain directly. The slides were mounted in DPX medium and examined under the microscope. Cytomorphologic features of the smears were studied in detail. The surgical specimens were sectioned. Paraffin blocks of the sections were made. Slides of the paraffin blocks were made and stained with haematoxylin and eosin stain. FNAC results were compared with histopathological diagnosis.

The findings were studied under the following parameters

1. Age wise distribution
2. Quadrant wise distribution
3. Side wise distribution
4. Cytomorphologic features
5. Cytologic and Histologic Correlation

Observations

1.Age wise distribution

Age in years	No of cases	Percentage (%)
10 to 20	0	0
21 to 30	03	3.29
31 to 40	22	24.17
41 to 50	40	43.95
51 to 60	12	13.18
61 to 70	09	9.89
71 to 80	04	4.39
81 and above	01	1.09
Total	91	

Table 1: Shows the age wise distribution of the malignant breast lesions. Majority of patients were in the age group 41 to 50 years.

2.Quadrant wise distribution

Quadrant	No. of cases	Percentage (%)
UOQ	49	53.84
UIQ	15	16.48
LOQ	10	10.98
LIQ	3	3.29
Central	8	8.79
All quadrants	6	6.59
Total	91	

Table 2 shows quadrant wise distribution of breast lesions. Upper quadrant was the commonest site.

3.Side wise distribution - Lesions in the left breast were 46.15% (42 cases) and in the right breast were 41.75% (38 cases). Bilateral lesions were found in 12.08 % (11 cases).

4.Cytomorphologic features

Sr. No	Cytodiagnosis	No. of cases
1	Recurrence	06
2	Duct carcinoma	73
	- Grade I	10
	- Grade II	50
	- Grade III	13
3	Medullary	01
4	Papillary	01
5	Lobular	03
6	Mucinous	02
	Total	86

Table 3: shows cytomorphologic diagnosis of the 86 adequate smears of which maximum cases were of duct carcinoma

5.Cytologic and Histologic Correlation

Sr. No	Category	No. of Cytologic diagnosis	No of Histologic Biopsy	No. of Histologic Diagnosis correlation	False positive	False negative
1	Inadequate	05	-	-	-	-
2	Phyllodes	01	-	-	-	-
3	Medullary carcinoma	01	01	01	-	-
4	Papillary carcinoma	01	01	01	-	-
5	Lobular carcinoma	03	03	03	-	-
6	Mucinous carcinoma	02	02	02	-	-
7	Duct carcinoma	73	65	65		
8	Recurrence	06	-	-	-	-
	Total	86				

Table4:shows Cytologic and Histologic correlation of the malignant breast lesions and False positive and False negative cases

Discussion

In the present study 91 patients with malignant breast lesions were subjected to fine needle aspiration.

The minimum age of the patient was 21 years and the maximum was 84 years. Breast tumours were found to be very rare in the first decade of life and out of all the cases in young age only 0.3% are below 10 years of age (9). In our study there was no case of malignant breast lesions in the first decade of life. This correlates with the study conducted by other authors (10, 11). Of the 91 cases, 40(43.95%) cases were observed in the fourth decade of life

The most common site of breast lesions was upper outer quadrant with 49 (53.84%) cases followed by upper inner quadrant with 15 (16.48%) cases. In the study of Zuk et al (10), the percentage of breast lesions in upper outer quadrant and upper inner quadrant were 42.2% and 6.4% respectively.

In the present study the lesions in the left breast were 46.15% (42 cases) and in the right breast were 41.75% (38 cases). Bilateral lesions were found in 12.08 % (11 cases).

In this study, the fine needle aspirate remained inadequate in 5 cases (5.49%) out of 91 cases of the malignant breast lesions. The adequacy of the aspirate depends on the experience of the aspirator and the size of the tumour. Tumours less than 2cm. in maximum dimension are

associated with inadequate aspiration (11, 10). The inadequate smears were excluded from further analysis. Thus the total cases studied were then 86. The percentage of inadequate cases in our study was below the recommended target of less than 25%.

Of the 86 malignant cases the most common malignant tumour was duct carcinoma (Figure 1). Lobular carcinoma (Figure 2) were 3 cases, mucinous carcinoma (Figure 3) 2 cases, medullary carcinoma 1 case, papillary carcinoma (Figure 4) 1 case and recurrence 6 cases. Histologic diagnosis was available in 72 cases.

In this study we could diagnose papillary carcinoma on cytology that is an unusual malignant tumour. It is found in component in three to four percent of all carcinomas and is a pure tumour in only about 0.3% cases.(12). Now the diagnostic features on cytology were pointed, ovoid or finger like three dimensional projections with linear margination. The papillae were either isolated or constituted areas of large mass of cells. Additional important features include tall columnar cells, haemorrhagic diathesis with haemosiderin laden macrophages and naked nuclei. One case of papillary carcinoma was diagnosed as suspicious of malignancy on cytology. Histologic examination revealed invasive papillary carcinoma. The smears of this case show papillae with cytological features of malignancy and naked nuclei. The cytologic morphology of papillary carcinoma may resemble as fibroadenoma. Both papillary carcinoma and fibroadenoma are similar as both show papillary projection and naked nuclei. The naked nuclei from the papillary carcinoma are often irregularly rounded and large, in contrast to those of the benign which are more numerous, smooth, bipolar and smaller (6 to 7 µ). Fibroadenoma generally lacks tall columnar cells and haemosiderin laden macrophages. Cytologic distinction between papillary carcinoma and papilloma may pose diagnostic dilemma. Since anisonucleosis and nuclear membrane irregularities are not prominent in either neoplasm. In papilloma some cells generally form small uniform balls, while elongated cells are sparse or absent (13,14)

Total 5 cases of lobular carcinoma were encountered on histological examination. Out of the 5 cases, 3 were diagnosed on FNAC while suspicious of malignancy were 2 cases and benign was one case. 37% infiltrating lobular carcinoma may be diagnosed as negative because of small irregular cells trapped in fibrotic elements (13). Logasundaram et al (15), in a study of 25 cases of infiltrating lobular carcinoma reported 2 cases as benign lesions on cytology. We encountered one case of DCIS cribriform pattern which on cytology was diagnosed as suspicious of malignancy. High cellularity, discohesive, small cells and lack of anisonucleosis, occasional acinar arrangement of cells and necrotic debris are features of DCIS cribriform pattern (16). We attempted to grade 73 cases of duct carcinoma cytologically. Most common grade was grade II. Wet fixed Papanecolau stained breast aspirates were examined. The value of histologic typing and grading is well established (17,18). The cytologic grade of invasive breast carcinoma NOS corresponds well with histologic grade. However we had not attempted the histologic grade of these tumours.

Phyllodes are characterized by a combination of hyper cellular stroma and cleft-like spaces lined by epitheliumhese tumour(19). We reported one case of malignant phyllodes in our study (Figure 5).

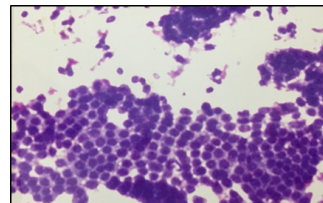


Figure 1 a - Infiltrating duct carcinoma, NOS - Grade I, mostly cellular smear comprising of monomorphic cells with smooth nuclear margins and indistinct nucleoli. H & E, 200 X

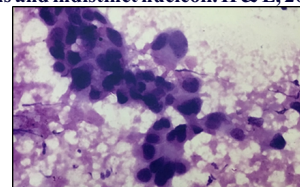


Figure 1b - Infiltrating duct carcinoma, NOS - Grade II showing discohesive clusters of malignant cells with mild pleomorphism, folded nuclear margins with granular chromatin and with nucleoli. H & E, 400 X

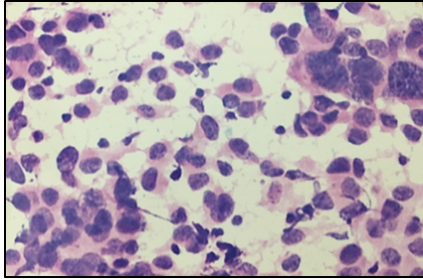


Figure 1c Infiltrating duct carcinoma, NOS - Grade III showing highly pleomorphic cells arranged singly with nucleolar buds and clefts with clumped chromatin with prominent nucleoli and tumour giant cells H & E, 400 X

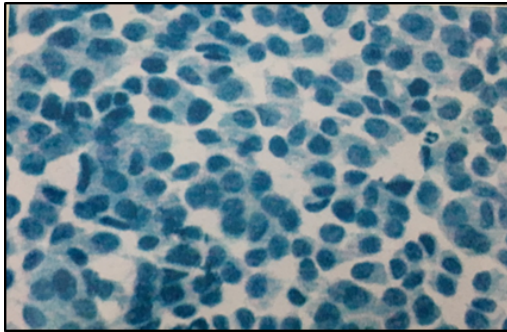


Figure 2 Lobular carcinoma showing poorly cohesive malignant cells with relatively uniform nuclei. Nuclei are angular. PAP 400 X

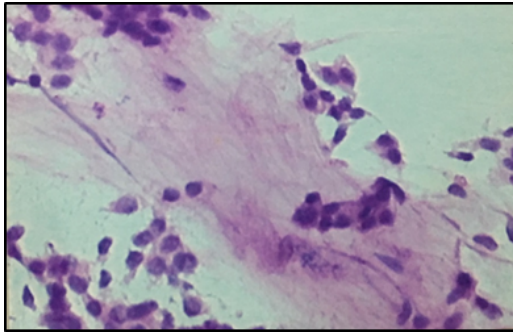


Figure3: FNAC of mucinous carcinoma showing malignant cells and mucinous background

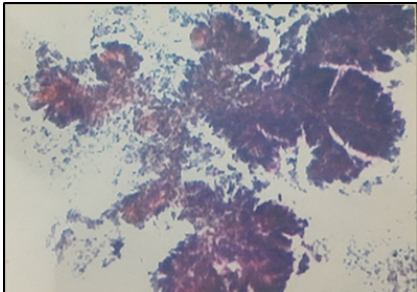


Figure4:P apillary carcinoma, cellular smear with three dimensional papillary structures with a fibrovascular core. PAP 200 X

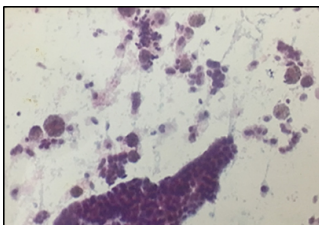


Figure 4a Papillary carcinoma showing papillary frond and background of macrophages. PAP 400 X

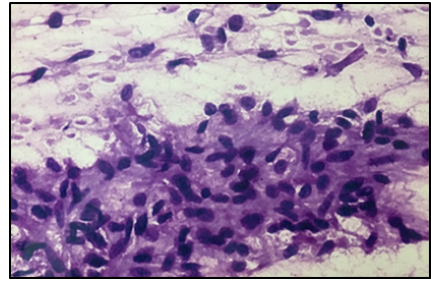


Figure 5:Phyllodes tumour with nuclear atypia and stromal cells. H & E, 400 X

Summary

In the present study the most common malignant tumour was duct carcinoma followed by Lobular, Mucinous, Medullary and Papillary carcinomas in that order. FNAC is a rapid, reliable, less traumatic and safe diagnostic tool to differentiate non-neoplastic from neoplastic breast lesions.

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