



ORIGINAL RESEARCH PAPER

Pathology

A COMPARATIVE ANALYSIS OF FNAC AND BI-RADS IN EVALUATION OF PALPABLE BREAST LUMP

KEY WORDS: Fine Needle Aspiration Cytology, Breast Lesions, BIRADS.

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ABSTRACT Breast lump is one of the most common complaint among female patients in India. FNAC is one of the important preoperative diagnostic modality in case of breast lesion. Correlation between BIRADS category and cytological findings are useful to establish an accurate preoperative diagnosis and further treatment protocols. In the present study, FNAC smear were stained by Leishman & Giemsa stain. Reporting was done in correlation with BIRADS category. Our study consisted of 80 cases of palpable breast lesions, of which 54 were benign and 26 malignant. The study showed overall 81.25% concordance with BIRADS category.

INTRODUCTION

One of the most common complaints with which female patients present in hospital is breast lump. Breast lump can be evaluated efficiently with the rationale use of detailed history, clinical breast examination, imaging modalities and tissue diagnosis. Since most of the breast lump leads to breast cancer, so it is important for women with a breast lump to receive appropriate evaluation^[1]. Approximately 80% of breast lumps are diagnosed to be benign^[2]. Hence, routine excision of all breast lumps is rationale.

The highest level of preoperative diagnostic accuracy in a case of breast lesion is achieved using Triple assessment which encompasses clinical examination, fine needle aspiration cytology and imaging. This combination results in >99% of accuracy^[3,4].

American College of Radiology (ACR) has developed a standard method called Breast Imaging- Reporting and Data System (BI-RADS) for assessment and reporting of breast lesions. The BIRADS categories include summary of breast density, size and location of lump with a final grading.

A safe, simple, rapid and cost-effective procedure for diagnosing any breast lump is fine needle aspiration cytology (FNAC). This method may be used for detecting palpable breast lesions that are solid or cystic^[5].

Correlation between BI-RADS categories and cytological findings is helpful in establishing an accurate pre-operative diagnosis and also aids in planning therapeutic protocols^[6].

MATERIALS AND METHODS

The hospital based retrospective study was conducted at the Department of Pathology, RIMS Ranchi. The study included all female patients with complains of breast lump and underwent breast imaging (including BIRADS scoring according to latest guidelines) and pathological examination(FNAC).

The study duration was for a period of 2 years, from January 2019 to January 2021.

Fnac smears were fixed by 95% isopropyl alcohol and stained by Haematoxylin and eosin. The slides were retrieved and reviewed under light microscopy. The findings were noted and correlated with BIRADS score.

RESULTS

The study in our department of Pathology included 80 patient who had undergone FNAC procedure and radiological imaging of breast lesion. The youngest patient was 16 years old and the oldest patient was 85 years of age. Maximum number of cases were seen in 31- 40 year age group as shown in table-1 below.

In our study 54 (67.5%) lesions were reported to be benign and 26 (32.5%) were count to be malignant. Among benign breast condition, fibroadenoma (fig:1), 27 (37.75%) was the most common finding. On radiological imaging there was no patient in category 0 and 6. There were 6 (7.50%) patient in category - 1, 36 (45%) in category - 2, (11.25%). in category - 3, 23 (28.75%) in category - 4 , 6 (7.5%) in category - 5. Thus, in our study BIRADS category 2 had maximum number of patient (Table-2).

In this study (Table-3), concordant benign were observed in 45 (56.25%) cases where as concordant malignant were observed in 20(25%) cases. 6 (7.5%) cases belong to BIRADS Category 1, 2 and 3 were diagnosed as carcinoma in FNAC (fig 2). All these 6 cases were later confirmed on histopathological examination and reported as carcinoma. Hence, this constituted the discordant benign in this study.

Further 9 (11.25%) cases having BIRADS category - 4 and 5 were found to be benign on FNAC and later on confirmed on histopathological examination as benign. These cases thus constituted the discordant malignant. Maximum number of malignant cases 26 (32.5%) were observed above 30 years of age, whereas 28(35%) benign cases were observed below 30 years of age.

Table 1- Age distribution of

FNAC DIAGNOSIS	10-20yr	21-30yr	31-40yr	41-50yr	51-60yr	61-70yr	71-80yr	81-90yr
MALIGNANT								
Carcinoma	0	0	11	7	2	1	0	1
Carcinoma with mets	0	0	1	1	1	1	0	0
BENIGN								
Benign aspirate	0	1	2	3	0	0	0	0
Fibroadenoma	7	11	8	1	0	0	0	0
Fibroadenosis	0	1	2	1	0	0	0	0

ANDI	0	2	4	0	0	0	0
L. adenosis	0	1	0	0	0	0	0
Fibrocystic disease	1	1	2	0	1	0	0
INFLAMMATRY							
Acute inflammation	0	0	0	1	0	0	0
Abscess	1	1	1	0	0	0	0
Granuloma	0	1	0	0	0	0	0

Table 2- Comparative table of FNAC finding and radiological BIRADS scoring.

FNAC DIAGNOSIS	TOTAL %	BIRAD S 1	BIRADS 2	BIRADS 3	BIRADS 4	BIRADS 5
MALIGNANT						
Carcinoma	28.75%	0	3	3	13	4
Carcinoma with mets	3.75%	0	0	0	2	1
BENIGN						
Benign aspirate	7.5%	1	3	1	0	1
Fibroadenoma	33.75%	0	19	4	4	0
Fibroadenosis	5%	1	3	0	0	0
ANDI	7.5%	3	2	1	0	0
L. adenosis	1.25%	0	1	0	0	0
Fibrocystic disease	6.25%	0	2	0	3	0
INFLAMMATRY						
Acute inflammatory	1.25%	1	0	0	0	0
Abscess	3.75%	0	3	0	0	0
Granuloma	1.25%	0	0	0	1	0

Table 3 - correlation between ultrasound finding and FNAC results in BIRADS CATEGORY.

BIRADS	ULTRASOUND V/S FNAC	NO. OF CASES	PERCENT %
CONCORDANT BIRADS 1,2,3	Benign vs Benign	45	56.25
DISCORDANT BIRADS 1,2,3	Benign vs Malignant	6	7.5
CONCORDANT BIRADS 4	Suspicious vs Malignant	17	21.25
DISCORDANT BIRADS 4	Suspicious vs Benign	8	10
CONCORDANT BIRADS 5	Malignant vs Malignant	3	3.75
DISCORDANT BIRADS 5	Malignant vs Benign	1	1.25



Figure 1- fibroadenoma

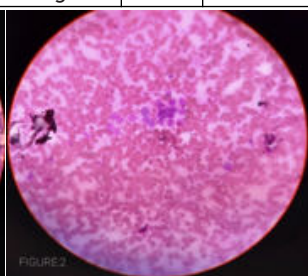


Figure 2 – Carcinoma breast

DISCUSSION

Breast cancer is the most common cancer affecting women worldwide and is the second most common cause of cancer death next to lung cancer^[7]. Breast lump is a symptom/sign for a wide range of breast conditions but most often it cause a lot of anxiety, mainly for malignancy. Hence, patients with lumps present early and more to tertiary care hospitals as compared

to nipple discharge or any other complaint. In order to reduce the inter observer variability and standardize the imaging reporting and risk assessment, BI-RADS lexicon was introduced by American college of Radiologists (ACR) in 1993.

According to latest BI-RADS assessment categories of mammography, Category 0 (needs further evaluation), category 1 (Normal), Category 2 (Benign), Category 3 (Probably Benign), category 4(suspicious), Category 5 (Malignant) and category 6 (Known malignancy)^(8,9). In 2003, 4th edition of BI-RADS lexicon was expanded and applied to ultrasonography and MRI found breast lesions also^[10].

In this study maximum numbers of patients with benign diagnosis were in 31-40 years age and majority of malignant cases were in the 41-50. This finding was consistent with the previous study done by Garg et al^[11].

In our present study, out of 80 cases, benign breast lesions (67.5%) were more common than malignant breast lesions (32.5%) which was comparable with other studies by Arpita Pandia et al^[12] which reported 55.43% & 38% cases reported as a benign & malignant respectively. In a study by Ramesh S. Waghmare et al^[3], 56.25% & 31.50% cases reported as a benign & malignant respectively. 57.5% & 42.5% cases reported as a benign & malignant respectively in another study by Anto J. Richie^[14].

In present study, there were 6 false negative (discordant benign) cases which were diagnosed as malignant lesion by FNAC and histopathology. The other studies by Rahman MZ et al.^[15] had 1 false negative cases and by Arpita Pandia et al.^[12] had 2 false negative cases. 9 false positive cases (discordant malignant) reported with BIRADS 4 and 5 were diagnosed as benign lesion on FNAC and later confirmed as benign on histopathology. The other studies by Arpita Pandia et al.^[12] and Rahman MZ et al.^[15] showed 10 and 4 false positive cases respectively.

CONCLUSION

Coming to the conclusion, the most common age group in our study was 31-40years. Most common benign breast lesion was fibroadenoma. The association between BIRADS and FNAC findings was 81.25%.

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