

A Study of Role of FNAC in Palpable Breast Lump in Breast Carcinoma, 3 year Prospective Study

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Abstract

Original Research Article

Aims And Objectives: Breast carcinoma is the most common malignant tumor worldwide in women while it is the second most common cancer in India. Triple assessment, including clinical assessment, radiological imaging and pathological diagnosis is the most widely accepted protocol followed for diagnosis of breast lump. Fine-needle aspiration cytology (FNAC) is the most important part of triple assessment. The purpose of our study was to establish the role of FNAC in the diagnosis of breast lump and to observe any correlation of fine needle cytology with postoperative histopathology, In detecting Breast Neoplasm. **Materials and methods:** The study group included 70 consecutive female patients presenting with palpable breast lump during a Three year period. FNAC of patients was performed with non-aspiration technique. Smears prepared and stained with Giemsa stain and examined for cytological diagnosis. Routine Histopathological examination was performed on available surgical biopsy specimens to correlate cytological and Histopathological diagnosis. **Results:** A total of 70 cases were included. Out of 70 adequate samples 24 were benign, 46 were malignant. Fibroadenoma accounted for maximum number of cases, and infiltrating duct carcinoma was most common malignant lesion in our study. Histopathological correlation was obtained. Among these 26 were benign and 44 were malignant. All 24 cases were confirmed as benign on Histopathological Examination. 44 cytologically diagnosed malignant cases were confirmed as malignant on subsequent Histopathological examinations, but 2 cases were diagnosed on FNAC as malignant, were Benign on Histopathological examination. **Conclusion:** The most common benign tumor in the present study was fibroadenoma and the most common malignant tumor was infiltrating duct carcinoma. Our study showed 4% false positivity and the false negative rate was 0% Our study showed a sensitivity of 100% and specificity of 100%.

Keywords: Breast carcinoma, tumor, cancer, Fine-needle aspiration cytology (FNAC), histopathology.

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INTRODUCTION

Breast carcinoma is the most common malignant tumor worldwide in women [1] while it is the second most common cancer in India [2]. There are approximately, 75,000 new cases of breast cancer detected in India yearly [3]. Breast neoplasm constitutes the most important lesions of breast and includes neoplasm arising from ductal, glandular structures and mesenchymal connective tissues [4].

With growing awareness in the general population, especially about breast related problems, a lady with a breast lump is one of the common complaints in patients attending OPD. To rule out malignancy, every woman presenting with a breast mass should be evaluated to exclude or establish a diagnosis of cancer [5]. For diagnosing breast lesions,

presently radiological imaging in combination with needle biopsy has many advantages such as, it offers preoperative diagnosis, relieves patient's anxiety, saves time, and definitive treatment can be planned in advance etc [6].

“Triple assessment”, including clinical assessment, radiological imaging and pathological diagnosis is the most widely accepted protocol followed for diagnosis of breast lump. One of the major goals of FNA from breast is to differentiate benign from malignant lesions [7].

The purpose of our study was to establish the role of FNAC in the diagnosis of breast lump. In our study an attempt has been made to study the various types and presentations of breast lumps, and to observe any correlation of Fine Needle Cytology with post-

operative Histopathology, various pathological types and their relative percentages.

MATERIALS AND METHODS

All patients admitted under Surgery Department OF Smt. Kashibai Navle Medical college and hospital with palpable breast lump coming under the eligibility criteria mentioned below are subjected for FNAC and trucut biopsy after obtaining informed consents. FNAC was performed by the pathologist and Histopathological specimen was collected by experienced surgeon.

Inclusion Criteria

1. All female patients above the age of 18 years with a clinically palpable breast lump.
2. Patients consented for inclusion in the study.

Exclusion Criteria

1. Patients below 18 years of age.
2. Recurrent breast lump of previously operated case for confirmed malignancy
3. Patients with acute and tender breast lump like breast abscess
4. Patients non-compliant for FNAC or Tru-cut biopsy.
5. Patient with breast lump undergoing palliative chemotherapy for diagnosed case of metastatic Ca. Breast

OBSERVATION

Table-1: Distribution of patients according to their age (n=70)

Age group	Total	
	Frequency	Percentage%
18-24	1	1
25-34	9	12.85
35-44	20	28.57
45-54	13	18.57
55-64	15	21.42
≥65	12	17.14
Total	70	100

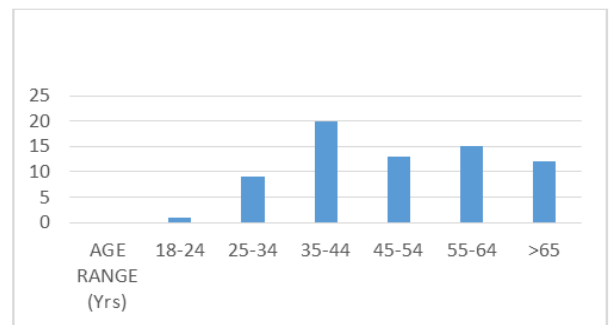


Table-1 shows that out of 70 women studied, age incidence was ranged from 18 to 70 years (mean age 46.7 years, SD=12.88years) and most common age group having breast lump was 35-44 years.

Table-2: Age wise distribution of patients having benign and malignant breast lump

Age group	Benign		Malignant	
	Frequency	Percentage %	Frequency	Percentage %
18-24	1	3.9	0	0
25-34	8	30.77	2	4.54
35-44	11	42.30	10	22.72
45-54	2	7.70	12	27.27
55-64	4	15.38	11	25
≥65	0	0	9	20.46
Total	26	100	44	100

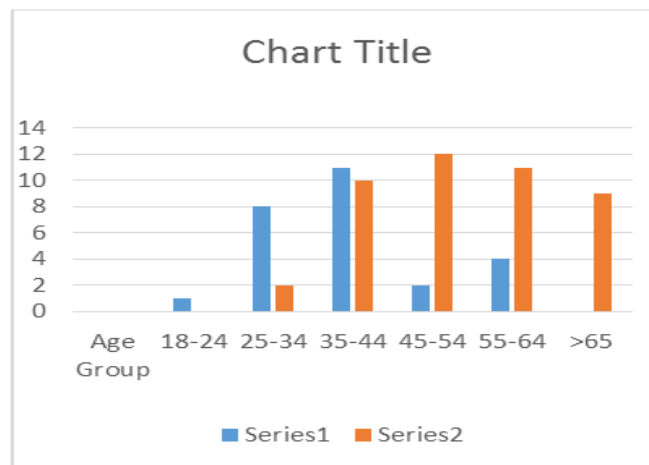
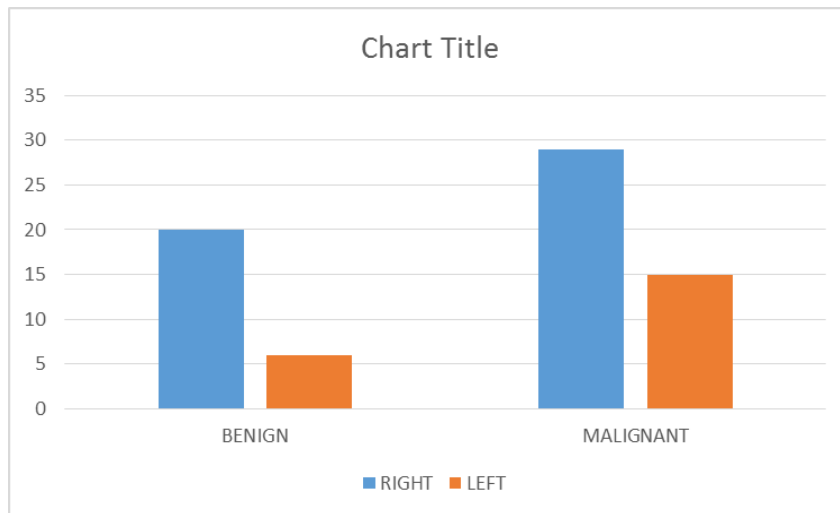


Table-2 shows that the age incidence for the benign lesions ranged from 18 years to 64 years (mean age 38.5 years, SD= 12.56 years). The incidence for the malignant lesions ranged from 25 to 70 years (mean age

51.06 years, SD= 10.62 years). The most common age group for benign lesions was between 35 to 44 years and for the malignant lesion was 45 to 54 years.

Table-3: Distribution of patients according to affected side of breast

Side of breast	Benign	Malignant	Total
Right	20	29	49
Left	6	15	21
Total	26	44	70

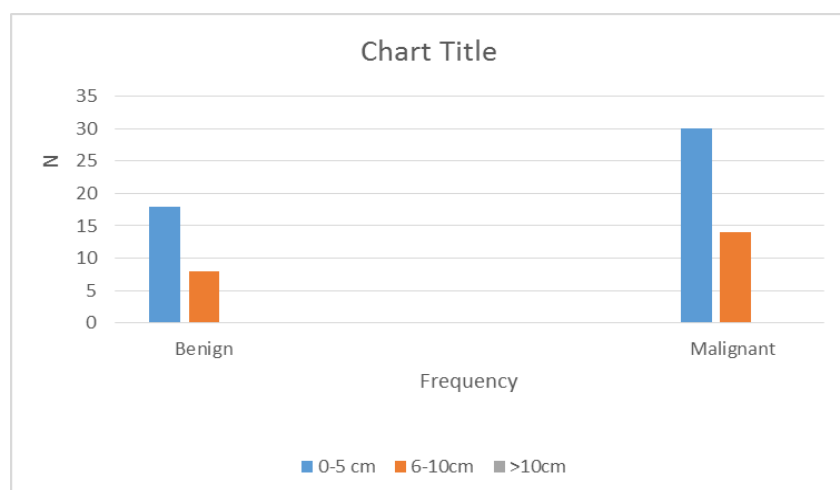


Out of total 70 patient, 49 patients had lump in right breast, 21 had lump in left breast. Malignant

lesions were found more common in the right breast as compared to left one in this study.

Table-4: Distribution of patients according to size

Size of lump (in cms)	Benign	Malignant	Total
0-5	18	30	
6-10	8	14	
>10	-	-	
Total	26	44	70



The size of the breast lump ranged from 2 to 10 cms. The benign lesions ranged between 2 to 6 cms. Table-4 shows that 68.57% of the benign lesions were

less than 6 cms. Malignant lesions were ranged between 5 to 10 cms and among them 31.42% measured 6 to 10 cms in its greatest diameter.

Table-5: Distribution of patients according to the quadrant of breast involvement

Quadrant of breast involvement	Benign	Malignant	Total
U.O.Q.	4	16	
U.I.Q.	4	6	
L.O.Q	7	16	
L.I.Q.	3	2	
CENTRAL	8	4	
Total	26	44	70

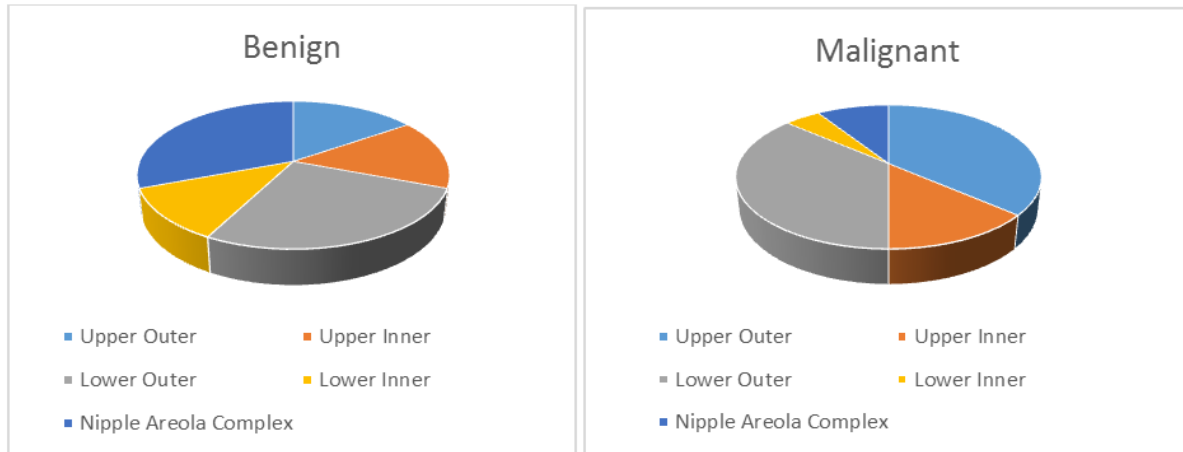


Table-5 represents distribution of patients according to the quadrant of breast involvement, shows that 8 cases out of 26 total benign cases had breast lump in Central quadrant of breast. Malignant lump were found out of total 44 cases 16 cases had breast lump in upper outer quadrant.

Table-6: The result of the fine needle aspiration cytology

Diagnosis	Benign	Malignant	Total
Frequency	24	46	70

Table-7: The result of the histopathology

Diagnosis	Benign	Malignant	Total
Frequency	26	44	70

Observations of my study

Out of 26 benign cases, FNAC reported 24 benign cases

Out of 46 malignant cases FNAC Reported 44 malignant cases 2 cases were false positive.

The Predictive Value for On FNAC

Test result (FNAC)	Disease (malignant)	Not diseased (benign)	Total
Positive	44 (a) (True positive)	2(b) (False positive)	46
Negative	0(c) (False negative)	24(d) (True negative)	24
Total	44	26	

$$Sensitivity = \frac{True\ Positive}{True\ Positive + False\ Negative} \times 100 = \frac{44}{44 + 0} \times 100 = 100\%$$

$$Specificity = \frac{True\ Negative}{True\ Negative + False\ Negative} \times 100 = \frac{24}{24 + 0} \times 100 = 100\%$$

$$Positive\ Predictive\ Value = \frac{True\ Positive}{True\ Positive + False\ Positive} \times 100 = \frac{44}{44 + 2} \times 100 = 95.65\%$$

$$Negative\ Predictive\ Value = \frac{True\ Negative}{True\ Positive + False\ Negative} \times 100 = \frac{24}{44 + 0} \times 100 = 54.54\%$$

DISCUSSION

In our study, maximum number of cases of breast lump were found in the ≤40 year age group, Benign lesions were found in all age group with

majority of them between 35 to 44 years. In contrast majority of malignant lesions were found between 45 to 54 years. This distribution is similar to several other studies done by other authors [3, 8-11].

Our study showed involvement of right breast slightly higher than left breast. Other studies 1,3 found almost equal involvement of right and left breast in different types of cytological lesions. According to WHO classification of breast tumors [12], invasive breast carcinoma has a slightly higher incidence in left breast with left to right ratio of 1.07 to 1. However this observation holds no surgical importance either in the form of patient selection or mode of treatment. The Lower outer quadrant was the most common site of involvement in our study which was in concordance with other studies [3, 9].

Several authors reported fibroadenoma as the most common diagnosis ranging from 46 to 72.8% in their studies [13-15]. The cytological spectrum of various benign breast lesions encountered in our study also revealed that fibroadenoma accounted for maximum cases.

Malignant breast lesions were found in all age groups with youngest being 20 and oldest 70 year old. Malignancy was most common in 45 to 54 year age group comprising of 13 cases and infiltrating duct carcinoma was most common malignant lesion in our study. This finding is in accordance with study of Rahman et al., [1] who also concluded that majority of malignant lesions were found in middle age group of 31 to 50 years. Similar results from other studies in India like Muddegowda et al., [11] and Khemka et al., [9] were reported. However reports from western world depict 5th and 6th decade as predominant age group for breast cancer [12].

All the cytologically diagnosed malignant cases were confirmed as malignant on subsequent histopathological examinations. Observations show that though FNAC may be very useful for broad categorisation of benign and malignant lesions, but in our study it didn't prove to be good enough for sub-categorisation of same.

In our present study the false negative rate was 0%. There is a risk of false negative results in low grade malignancies, small or complex proliferative lesions as well as in tumours with central necrosis or a small cell carcinoma.. In one large series by Feichter et al., [13] they observed 9% false negativity.

Several studies have shown a very low false positive rate. Muddegowda et al., [11] reported it to be 1.3%. Our study showed 0% false positivity. Patel et al., [14] concluded that false positive diagnosis are a reflection of limited experience and not a limitation of the cytological technique. A positive diagnosis should be made only when there was incontrovertible evidence of malignancy. In present study the false positive and false negative rates are within the preferred rates as per the recommendations by UK NHS BSP June 2001 [15].

Review of several studies by various authors have reported a high sensitivity rate ranging from 88.3 to 99% [3, 9-11]. Our study also showed result in accordance with these studies with a sensitivity of 81.39%. Similarly many authors reported a very high specificity between 94 to 100% [3, 9-12]. Result of our study also showed a very high specificity of 100%. In our study we calculated a positive and negative predictive value of 95.65% and 54.54% respectively.

CONCLUSION

Fine needle aspiration cytology is an easy, simple, patient friendly and inexpensive procedure for primary categorization of palpable breast lumps into benign and malignant categories, but as per our observations may not be good enough for sub-categorisation of same. Benign breast lumps far outnumber the malignant ones. Fibroadenoma and infiltrating duct carcinoma comprise majority of benign and malignant lesions respectively. Above all there is very high degree of correlation between FNAC and histopathological findings.

Thus without any hesitation we conclude FNAC to be a very important preliminary diagnostic tool in palpable breast lumps.

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