A Study of Age wise Spectrum of Breast Lump Biopsies with FNAC Correlation a 3-Year Experience from a Tertiary Health Care Centre

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Abstract

Introduction: Breast cancer is the commonest malignancy in women worldwide and leading cause of death from cancer in women. So the preoperative evaluation of breast lumps is an essential part of the management of breast lesions. Fine needle aspiration cytology (FNAC) is a well-accepted procedure and is a valuable tool in the diagnosis and patient management of breast lesions. It has high diagnostic accuracy. This helps the clinician in planning the correct surgical or medical treatment.

Aim: Correlation of breast lump FNAC with biopsies

Materials and Methods: 3 years retrospective study of 90 patients attending outpatient department of M.S.RAMAIAH Medical College from JAN 2015 to DEC 2017 presented with breast lump in women, who underwent FNAC in the Department of Pathology were correlated with histopathology in 90 cases.

Results: Out of 90 cases 67 benign and 23 were malignant. Maximum cases (24) seen in 21 -30 years, most of them were benign conditions. Fibro adenoma was the most common benign condition (32.8%). Malignant cases were seen more in the 5th decade. IDC was the most common type. Diagnostic accuracy of FNAC for malignant condition was 68.96%.

Conclusion: The results of our study showed FNA of breast lump to be a reliable method to diagnose breast lump with high accuracy. Triple assessment by clinical, radiological and FNAC can produce 99% accuracy for both benign and malignant lesions. Histopathological study acts as an internal quality measure for Cytological diagnosis .It is the gold standard for diagnosis of neoplastic lesions.

Keywords: Breast lumps • Fibro adenoma • Biopsy

Abbreviations: FNAC: Fine needle aspiration cytology • IDC: Invasive Ductal Carcinoma

Introduction

Breast cancer is the commonest malignancy in women worldwide and leading cause of death from cancer in women. So the preoperative evaluation of breast lumps is an essential part of the management of breast lesions [1]. 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. It has high diagnostic accuracy. This helps the clinician in planning the correct surgical or medical treatment [1].

Materials and Methods

3 years retrospective study of 90 patients attending outpatient department of M.S. Ramaiah Medical College from January 2015 to December 2017 presented with breast lump in women, who underwent FNAC in the Department of Pathology were correlated with histopathology in 90 cases. Written consent was taken from the individual patient before doing procedure.

FNAC

• Performed with 23G needle and 10ml syringe.

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• No local anesthesia was given.

• Cellular material aspirated into the syringe was expelled onto two or three slides.

• The cytology smears are fixed using Isopropyl alcohol.

• Stained with Papanicalou and Hematoxylin and Eosin stains.

BIOPSY

• The biopsy specimens were fixed in 10%formalin for 24hours.

• The gross findings were noted. Bits were taken for processing and paraffin embedding.

• From block, sections were cut with 3-4 microns thickness and stained with Heamatoxylin & Eosin stain.

Early screening and diagnosis of breast lesions and categorization into different groups of breast pathology can be helpful in accurate management of the breast lesions [1].The MD Anderson Cancer center Group proposes that 4-6 well visualized cell groups consisting of at least 6 cells in each cluster & more than 10 cells per flat sheet constitute an adequate specimen [2].

Results

The age range of 90 patients included in this study was 15 to 60 years.

The most affected age group was 21–30 years.

Out of these highest frequency of benign lesions was in the age group of 21–30 years.

Highest frequency of malignancy was in the age group of 51–60 years old.

Out of 90 cases 23 were malignant and 67 were benign.

In our study diagnostic accuracy of FNAC for malignant conditions is 68%.

(**Table 1, Graph 1**)

(**Tables 2 and 3, Graph 2**)

FNAC aspirate are showing mono layered sheets of cells with bare nuclei in the background Figure 1. (**Figure 1**)

Fibroadenoma showing predominantly intracanicular and pericanalicular pattern in Figure 2. (**Figure 2**)

The present study showed that majority of non-neoplastic cases were in the 3rd decade followed by 2nd decade. Malignant lesions were common after 5th decade. Among the benign lesions, Fibroadenoma (32.8%) was the commonest benign breast lesion, which is comparable with previous studies by Tiwari et al as 39.6% [2,3]. (**Figures 3 and 4**)

Statistical analysis

Accuracy of FNAC is described in terms of sensitivity, specificity; positive predictive value is described for malignant cases as following:

Table 1. Age Distribution.

| AGE(yrs)	CASES	%
15-20	15	16.66
21-30	24	26.66
31-40	12	13.33
41-50	16	17.77
51-60	23	25.55
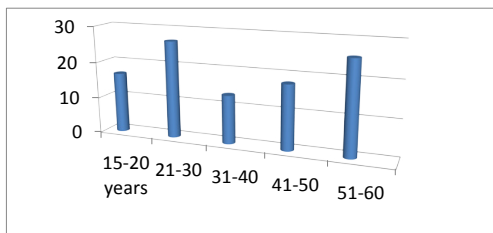
Graph 1: Age Distribution.

Table 2. Category wise Comparison of Cases in both FNAC and Histopathology Examination.

CATEGORY	FNAC	BIOPSY
C1-unsatisfactory	0	0
C2-benign nonspecific	4	3
C3-benign specific diagnosis	56	47
C4-benign proliferative	7	11
C5-suspicious for malignancy	3	-
C6-malignancy	20	29

Table 3. Individual Diagnosis Comparison of Cases in both FNAC and HPE.

DIAGNOSIS	FNAC	HP
Fibroadenoma	40	34
Fibrocystic Change	12	9
Fibroadenosis	4	4
Carcinoma	20	29
Phyllodes	5	6
Benign Proliferative Lesion	2	5
Galactocele	1	1
Suspicious For Malignancy	3	-
Inflammatory Process	3	2
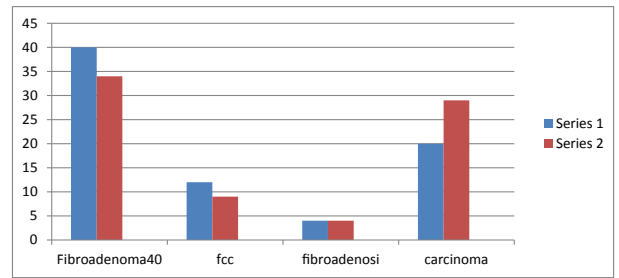
Graph 2: Comparison of Common Diagnosis.
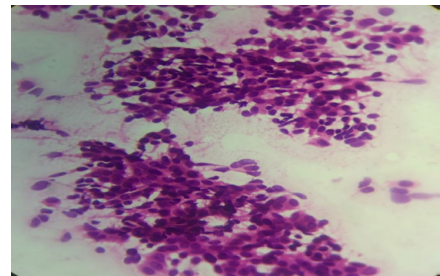**Series 1:** FNAC, **Series 2:** HPE

Figure 1: Microscopy-Fibroadenoma: FNAC (H&E Staining, 40x-High Power View).
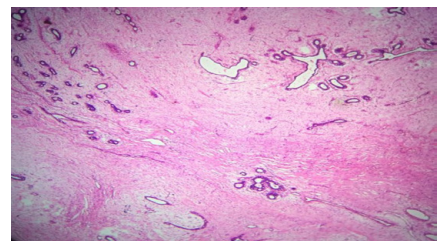

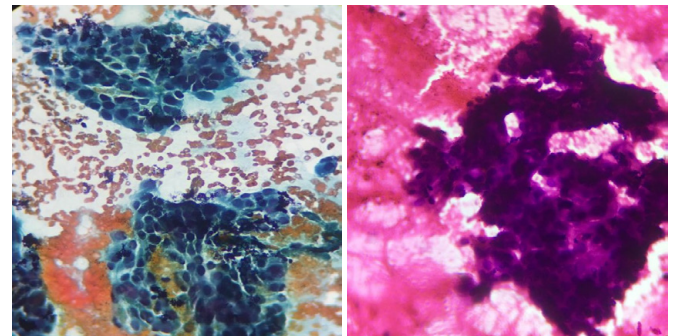**Figure 2:** Photomicrograph of Fibroadenoma (H&E Staining 10x- Low Power View).

Figure 3: FNAC Photomicrographs showing Invasive Ductal Carcinoma (40x-High Power View).
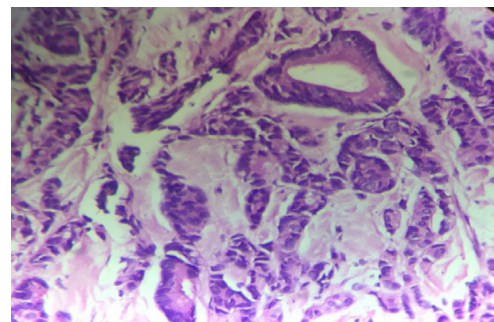**Invasive Ductal Carcinoma: (A)** Pap Staining; **(B)** H&E Staining

Figure 4: Hp Photomicrograph Showing Pleomorphic Cells with Hyperchromatic Nucleus-IDC (H&E Stain 40x-High Power).

Table 4. Statistical Analysis.

Sensitivity	75.55%	HP
Specificity	100%	34
Positive Predictive value	100%	9
Negative Predictive value	85.89%	4
Efficiency	90.17%	29

Table 5. Other Studies Statistical Data [2].

Authors	Sensitivity	Specificity
	(%)	(%)
Stavric GD	95.30	97.10
Kline TS	89.95	92.95
Frable WJ	89.0	97.0
Wollenberg	65.0	100.0
Palombini	95.70	89.60
Zuk JA	70.60	87.50
Sheryl LW	90.0	98.0

True positive cases (TP) = 34 [consistent: malignant + suspicious for malignancy]

False positive cases (FP) = 00,

True negative cases (TN) = 67 [consistent: benign + others],

False negative cases (FN) = 11 (Table 4)

Discussion

The results of our study showed FNA of breast lump to be a reliable method to diagnose breast lump with high accuracy. Triple assessment by clinical, radiological and FNAC can produce 99% accuracy for both benign and malignant lesions [4]. The percentage of malignancy on cytology was 25.55%. The findings were similar to Rocha PD.[1] Our percentage was less compared to Waghmare R S et al. (31.5%) and series Sheryl L W, Palombini L, Kher A V, Stavric G D and Feichter G E [1] Akcil et al.in his meta-analysis noted 72%-80% diagnostic accuracy on review of literature [4]. In the present study, sensitivity was high as compared to Hashemzadeh SH, Wollenberg, JA Zuk [1].Specificity and positive predictive value is similar to Wollenberg and was higher than other series [1]. (Table 5)

The sensitivity and specificity of the results have made management of breast lumps easier for the surgeon and more beneficial to the patients. From the literature, the sensitivity ranges from 80% to 98% and the specificity may be up to 100%. There are some difficulties and limitations that need to be mentioned about FNAC. Both false-negative and false-positive results can occur. The most significant difficulty in making a diagnosis is the overlapping features of different lesions. FNAC is a reliable, fast and accurate diagnostic method for the assessment of breast lumps. It has few manageable complications and can be done on outpatient basis [5,6].

Conclusion

- FNAC provides an early pre-operative diagnosis, thus allaying the patient's anxiety.

- FNAC procedure has no significant complications except bleeding or hematoma formation. It can be used for diagnosis in non-neoplastic and benign proliferative conditions.

- A Tru-cut biopsy is recommended whenever a malignancy is suspected clinically or in cases of inadequate material during FNAC.

- The present study highlights importance of histopathological correlation to find the true nature of the lesion.

- Histopathological study acts as an internal quality measure for Cytological diagnosis.

- It is the gold standard for diagnosis of neoplastic lesions.

References

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