Study of Cyto-Histpathological Correlation of Breast Lesions

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Abstract

Breast lesions are one of the most commonly encountered lesions in women. All physicians accept the necessity of obtaining prompt pathological confirmation of nature of mass in the breast suspected as benign or malignant. In recent years, mammary cytology has been considered as an effective means of early diagnosis of breast masses. 476 aspirates from breast lesions were studied and categorized as inflammatory (9 case), benign (418 cases) and malignant (49 cases). Youngest case was of 14 years old with juvenile fibroadenoma and oldest was 80 years with malignant lesion. Among the 476 cases, 38 were male patient. Benign lesions were most common in the age group of 21 ýÿ 30 years, while malignant lesions were most common in the fifth and sixth decades of life. Fibroadenoma was the commonest benign lesion followed by fibrocystic disease. Among the malignant lesions, invasive carcinoma was found to be more common. Of these, cyto-histopathological correlation was done in 111 cases. Cytology had the diagnostic accuracy with sensitivity of 94%, specificity of 99% and accuracy rate of 97%.

Keywords: Breast; Benign; Malignant; Cytology; Histopathology.

Introduction

The breast is a complex glandular structure subjected to endocrine influences and is predisposed to a number of pathological conditions [1]. Breast lesions are one of the most commonly encountered lesions in women.

All physicians accept the necessity of obtaining prompt pathological confirmation of nature of mass in the breast suspected as benign or malignant. Since the most important prognostic factor at the time of presentation is the extent of disease, it is imperative that a reliable pre-operative diagnosis is established as early as possible with a view to institute proper treatment and reduce mortality rate [2]. In recent years, mammary cytology has been considered as an effective means of early diagnosis of breast masses [3].

However, the aspiration cytology is not a substitute for conventional surgical histopathology, as a definitive diagnosis is not always possible by cytology, but categorization of disease and differential diagnosis can be provided in the majority cases. With this in mind, an attempt was made to subjectively evaluate the breast lesions in FNAC material and to compare it with histopathological details.

Material and Methods

This prospective study was conducted in the department of pathology, Dr SCGMC Nanded, from June 2007 to June 2010. This study was approved by institutional ethical committee. The cases were studied including the detailed clinical history and examination.

FNAC of the breast lesions were performed and cytological diagnosis were made. Follow up were done in possible cases for histopathological study. Thus, cyto-histopathological correlation was done.

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Results

The aspirates from 476 cases were studied. The age group ranging from 14 years to 80 years. 438 female and 38 male patients were included in the study. The lesions were classified as Inflammatory, Benign and Malignant.

Breast lesions were categorized according to the age group as shown in Table 1. Benign lesions constitute the majority (88%) of cases among the study population. Benign lesions were most commonly presented in the age group of 21–30 years, while malignant lesions were most common in the fifth and sixth decades of life. Among the study population, only 8% cases belong to male of which maximum cases lies in the benign category. The sex wise distribution of cases shown in Table 2. Diagnosis of the breast lesions are shown in Table 3. Fibroadenoma was the commonest benign lesion followed by fibrocystic disease while Gynaecomastia was predominant benign lesion found in male. Among the malignant lesions, invasive carcinoma was found to be more common. Microscopic photograph of the lesions are shown in Figure 1 – 20.

Clinically the malignant breast lesion was most commonly presented as painless lump in the breast followed by nipple retraction and palpable axillary group of lymph node. Clinical presentation of malignant breast lesions shown in Graph 1. Malignant lesions most commonly involves the upper outer quadrant of the breast as shown in Graph 2.

**Table 1:** Classification of Beast Lesions according to Age group

Breast Lesions	Age Group in Years								
	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	Total
Inflammatory	0	01	04	02	02	0	0	0	09
Benign	0	52	244	97	25	0	0	0	418
Malignant	0	0	01	10	19	15	03	01	49
Total	0	53	249	109	46	15	03	01	476

Table 2: Sex wise distribution of Breast lesions

Sex	No. of Cases (n = 476)					
	Inflammatory	%	Benign	%	Malignant	%
Female	09	1.8 %	381	80 %	48	10 %
Male	--	--	37	8 %	01	0.2 %
Total	09	1.8 %	418	88 %	49	10.2 %
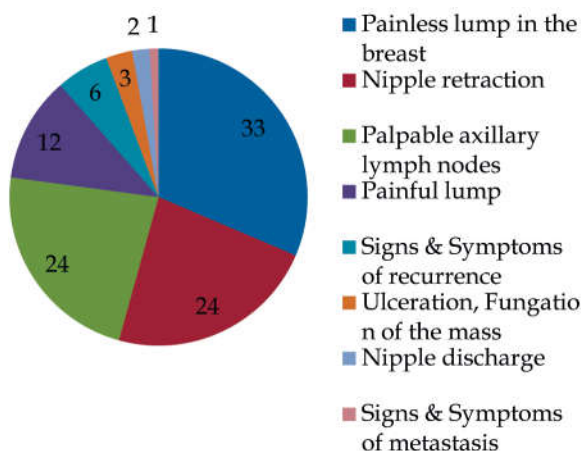
Graph 1: Presenting symptoms of
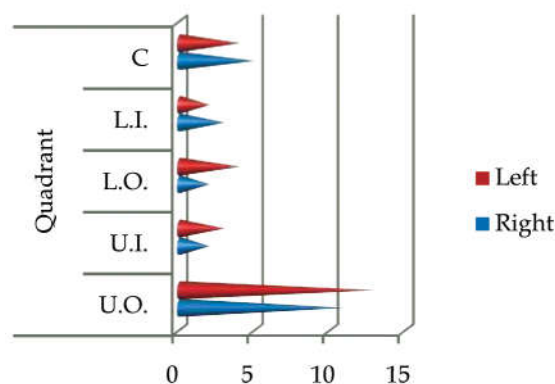
Graph 2: Site wise distribution of malignant lesions malignant lesions

Out of the 476 cases, cyto-histological correlation was possible in 111 cases. Rests of the cases were lost to follow up.

Abbreviations: NOS: Not otherwise specified.

Ca: Carcinoma.

SCC: Squamous cell carcinoma

*: Cytological diagnosis was Benign Phylloides but on histopathology it was diagnosed as

Malignant Phylloides.

1@: Cytological diagnosis was Fibrocystic disease but on histopathology it was diagnosed as

Invasive carcinoma - NOS.

Table 3: Diagnosis of Breast Lesions (n=476)

Diagnosis		Number of cases	Percentage (%)
Inflammatory (n= 09)	Acute Mastitis	5	1
	Chronic Mastitis	3	0.6
	Tuberculous Mastitis	1	0.2
Benign (n= 418)	Fibroadenoma	326	69
	Lactating Adenoma	5	1
	Phylloides - Benign	6	1.2
	Gynaecomastia	37	8
	Galactocele	13	2.7
	Fibrocystic Disease	21	4
	Duct Ectasia	10	2.1
Malignant (n= 49)	IDC – NOS	44	9.2
	Medullary Ca	1	0.2
	Mucinous Ca	2	0.4
	Phylloides – Malignant	1	0.2
	Metaplastic SCC	1	0.2

Table 4: Cyto-Histological Correlation

Cytological Diagnosis		No. of Cases	No. of Cases with available histology	Discrepancy with Cytodiagnosis
Inflammatory lesions	Acute Mastitis	5	--	--
	Chronic Mastitis	3	--	--
	Tuberculous Mastitis	1	--	--
Benign	Fibroadenoma	326	54	--
	Lactating Adenoma	5	2	--
	Phylloides - Benign	6	4	1*
	Gynaecomastia	37	10	--
	Galactocele	13	2	--
	Fibrocystic Disease	21	6	1@
	Duct Ectasia	10	--	--
Malignant	IDC – NOS	44	29	--
	Medullary Ca	1	--	--
	Mucinous Ca	2	2	--
	Phylloides – Malignant	1	1	1#
	Metaplastic SCC	1	1	--

#: Cytological diagnosis was Malignant Phylloides but on histopathology it was diagnosed as Benign Phylloides.

FNAC Result Histopathological Diagnosis Total

Table 5: Diagnostic accuracy of FNAC

FNAC Result	Histopathological Diagnosis		Total
	Positive	**Negative**	
Positive	32 (TP)	01 (FP)	33
Negative	02 (FN)	76 (TN)	78
Total	34	77	111
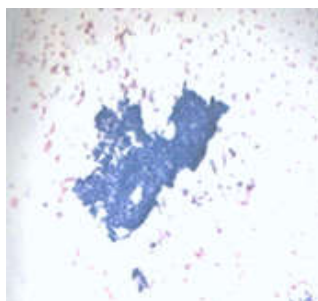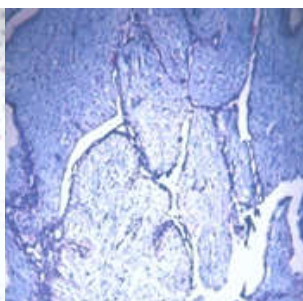
Fig. 1: [Cyto 100x]   **Fig. 2:** [HP 100x]: Fibroadenoma **Fig. 3:** [Cyto 100x]   **Fig. 4:** [HP100x]: Gynaecomastia.
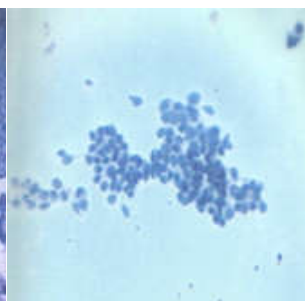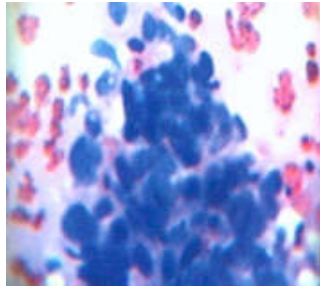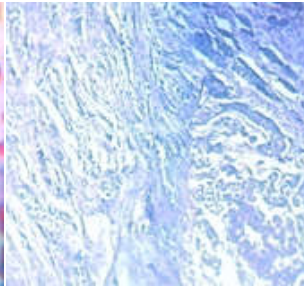
Fig. 5: [Cyto 400x]

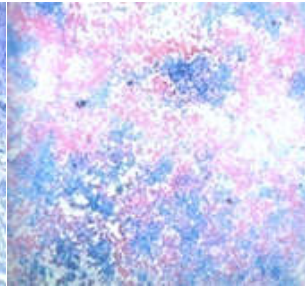

Fig. 6: [HP 100x]: IDC – NOS.
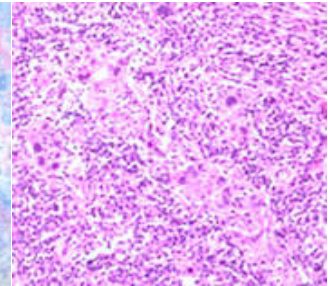

Fig. 7: [Cyto 100x]

Fig. 8: [HP 100x]: Medullary Carcinoma.
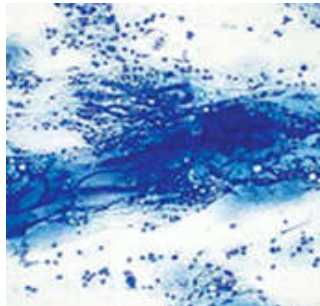

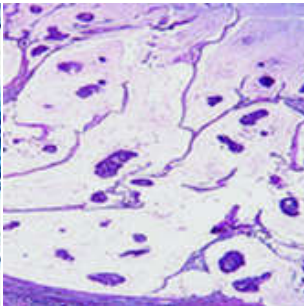**Fig. 9:** [Cyto 100x]

Fig. 10: [HP 100x]: Mucinous Carcinoma.
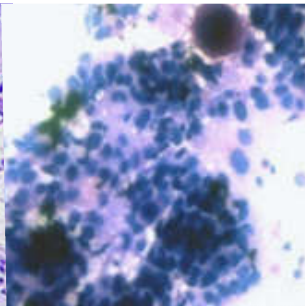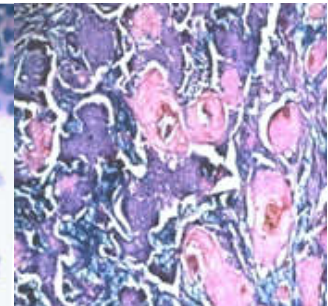

Fig. 11: [Cyto 100x]

Fig. 12: [HP 100x]: Metaplastic Squamous Cell Carcinoma of Breast

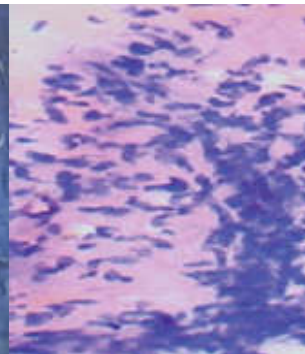**Fig. 13:** [Cyto 100x]

Fig. 14: [HP 100x]: Benign Phylloides
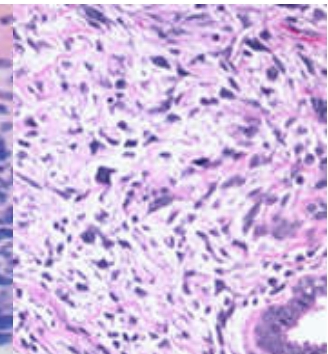

Fig. 15: [Cyto]

Fig. 16: [HP] 100x: Malignant Phylloides
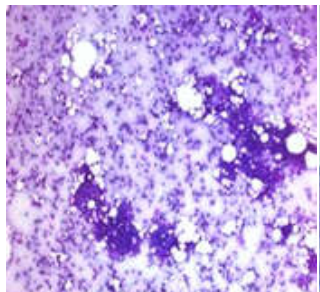

Fig. 17: [Cyto 100x]

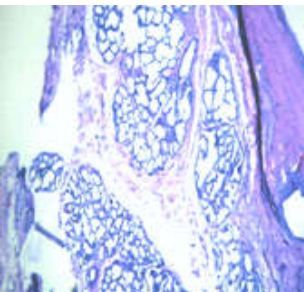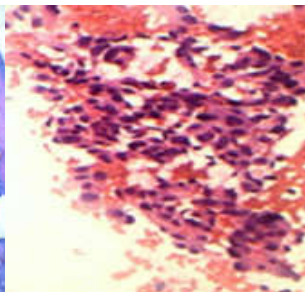**Fig. 18:** [HP 100x]: Lactating Adenoma.
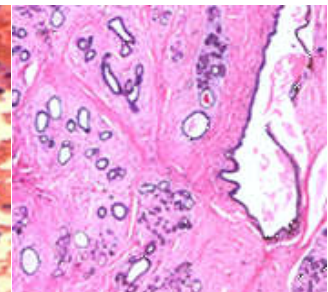

Fig. 19: [Cyto 100x]

Fig. 20: [HP 100x]: Fibrocystic Disease

Discussion

Many countries have breast cancer screening programme aimed at detecting early disease in asymptomatic women. The diagnostic process involves the "Triple Test" consisting of clinical examination, mammography and FNAC. Thus, FNAC occupied major role in "Triple Test" [4].

The age of the patients ranged from 14 to 80 years. The youngest case (14 years) was diagnosed as juvenile Fibroadenoma while the oldest case (80 years) was diagnosed as invasive ductal carcinoma. Similar findings were seen in the study by Yalavarthi S. et al. [5]

Yalavarthi S. et al. Found that maximum benign lesions were reported in the third decade while maximum malignant lesions were reported in the fifth decade. [5] In a series of 125 aspirations by Ishita, maximum benign lesions were reported in the third decade and maximum malignant lesions were reported in the fifth decade [6]. The similar findings were noted in the present study.

In the present study of 476 cases, 88% cases were benign, 10.2% were malignant and inflammatory lesions contribute for 1.8%. Yeoh et al. [7] studied 1533 breast masses on FNAC and found that 70.4% cases benign and 4.4% were malignant. Similarly, Ganiat et al. [8] studied 757 cases on FNAC and found that maximum number of cases were benign (50.2%), followed by malignant cases (31.4%) and inflammatory lesions (7.4%).

In a study of 122 cases by Rathi et al. Benign lesions contribute for 82.79% while malignant lesions were 17.21%. Thus, findings of the present study are similar to that of Yeoh et al. and Rathi et al.

In a study of 122 aspirates by Rathi et al. Fibroadenoma was the most common benign lesion and invasive carcinoma was the most common malignant lesion [2].

According to Pinto, Fibroadenoma was the most common benign lesion. Next common benign lesion was fibrocystic disease. In males, gynaecomastia was the most common lesion [9]. Unlike our study, Ishita and Swapan [10] reported that fibrocystic disease was the most common benign lesion followed by Fibroadenoma.

In our study, among the malignant lesions, infiltrating ductal carcinoma was the most common lesion, which was coincided with the studies by Swapan [10], Ishita [6], Pinto [9] and Dash. [11].

Rathi et al. found that 49.18% cases presented with left breast lesion while right breast contribute for 44.26% cases [2]. Hussain et al. [12] also reported the left breast involvement in 54% cases while right breast involvement in 46% cases. Swapan observed that left breast involvement is more common in malignant lesions [10]. In our study, left breast involvement was seen predominantly as compared to right breast.

In the present study, the upper outer quadrant involvement was more common and this finding coincides with the observations of Rathi (63.1%), Yalavarthi (59.04%), Ishita (47.20%), and Swapan (46.66%) [2, 5, 6, 10]. Similarly, Hussain et al. [12] and Khemka et al. [13] also observed the upper outer quadrant as the commonest site of involvement. Thus, our findings were fairly correlated with above mentioned authors.

In the present study, painless lump in the breast was most common complaint which is contradictory to the observation of Rathi et al [2], where breast lump with pain was predominant complaint.

Statistical analysis and overall diagnostic accuracy

Table 6: Comparison of overall diagnostic accuracy of fine needle aspiration in breast tumors

Statistical parameter	Feichter [14] n = 1472	Ishita [6] n = 60	Yalavarthi [5] n = 56	Ariga [15] n = 231	Present Study n = 111
Sensitivity	89.90 %	93.10 %	100 %	99 %	94 %
Specificity	99.30 %	97.06 %	88.50 %	99 %	99 %
Positive Predictive Value	--	96.43 %	84 %	99 %	97 %

of FNAC in breast tumors is shown in Table 7.

Conclusion

Simplicity, rapidity, lack of morbidity, lack of requirement of anaesthesia, rapid analysis, high sensitivity and high specificity with cost effectiveness of FNAC makes it an ideal initial diagnostic modality in breast lesions.

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