

# Pattern Of Breast Lumps And Diagnostic Accuracy Of Fine Needle Aspiration Cytology; A Hospital Based Study From Pondicherry, India

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## Abstract

**Introduction** Breast cancer is the second most common cancer in women. FNAC is simple, rapid and safe method to diagnose breast lumps. FNAC has high sensitivity, specificity and accuracy. **Objectives** The aim of study was to correlate the FNAC diagnosis with histopathology and to find out the pattern of breast lump, sensitivity and specificity of FNAC in diagnosis of breast lumps in our institution.

**Method** The present study was done in department of Pathology of Sri Venkateshwara Medical college Hospital and research Centre, Pondicherry, India from June 2008 to May 2010. The FNAC was done in 102 cases and histopathology was available in 77 (75.49%) cases for correlation with cytology. **Results** The result shows 3.92% cases were male while 96.08% female. Age of the patient was range from 16- 52 years with mean age of 30 years. In our study fibroadenoma was most common benign lesion in the breast which account 45.09% of the total breast lesion, and 89.1% seen in the age group of 10-30 yrs. Study includes 9(8.82%) cases of malignancy with mean age of 46 years. The sensitivity and specificity for malignancy were found to be 84.6% and 100% respectively. **Conclusion** FNAC is highly sensitive and specific technique for diagnosis of most of the breast lumps. FNAC can be used preoperatively to avoid unnecessary surgery and discomfort during open biopsy.

## INTRODUCTION

In India Cancer of breast is a second most common cancer in the women<sup>1</sup>. Breast lump is most common presentation in the most of the breast diseases. Most of the cases in breast lesions are benign<sup>2</sup>. Breast mass in women causes anxiety to herself and her family member, which can be reduced by giving assurance that most of breast lumps are benign and early diagnosis by fine needle aspiration cytology. The FNA first introduced by the Martin and Ellis in 1930.<sup>3</sup> The FNAC is highly sensitive, easy to perform and cost effective that can be carried out at outpatient department.<sup>4,5</sup>

FNA has various benefits over the open tissue biopsy<sup>6</sup>.

1. Rapid, Reliable.
2. Help in planning of treatment in breast lump.
3. Ability to perform molecular ancillary technique i.e. PR & ER, proliferation antigen (Ki67) & DNA pattern analysis.

Accuracy in the diagnosis can be increased by multiple sampling of appropriate sites by Ultrasonography guidance and / or mammographic localisation.<sup>7,8</sup> That is why FNAC is regarded as preliminary diagnostic procedure, as a screening procedure with or without Ultrasonography or stereotactic guidance<sup>9</sup>, or as a follow-up procedure for post mastectomy or lumpectomy<sup>10</sup>. Fine Needle Aspiration Cytology can also use to diagnose lesions of male breasts such as gynaecomastia and carcinoma, accessory axillary breasts and their lesions, and status of the axillary lymph nodes<sup>11,12</sup>. Thus the FNAC have reduce the number of open breast biopsies.<sup>13</sup>

The aim of this study was to find out the common causes of breast lump and to find out sensitivity and specificity of FNAC of breast lump in our institute.

## METHOD

The present study was carried out in department of Pathology of Sri Venkateshwara Medical college Hospital and research Centre, Pondicherry, India from June 2008 to May 2010 after taking permission from ethical committee of institution. The patients with palpable breast lump referred

from general surgery department in the institution for FNAC were involved in the study. The case history of the patient was recorded, includes Detail history of pain, nipple discharge, ulceration of nipple and duration of lesion. The examination of breast lump was done with recording of size and site of lump, consistency, and fixation to skin and underline tissue, retraction of nipple along with regional lymph node involvement. Consent was taken after due explanation of the procedure and its benefit to the patients.

The skin over the breast was wiped with antiseptic solution and spirit, suspected lesion was held with one hand in a position favorable to fine needle aspiration. Procedure is done by using 20 gauge needle fitted on 10 ml disposable syringe in Franzen Syringe Holder. When needle had entered the lump area, the piston of the syringe was retracted thus creating a vacuum with the needle in a position to move back and fro, three or more times in a different direction of the lump. Throughout the procedure negative pressure was maintained in a syringe then before removing needle from the lump negative pressure is resolved. The needle withdrawn and air is filled in the syringe reconnected to the needle and material is smeared on glass slide with the help of cover glass gently. The wet smear fixed with Ether Alcohol mixture stained with Papanicolaou Stain.<sup>14</sup> The air dried smear fixed in Methyl Alcohol stained with May Grunewald Geimsa stain.<sup>15</sup>

**RESULTS**

A total of 102 cases of FNAC were analyzed which account about 11% of the total FNAC done in the pathology department in two years. The 4 (3.92%) cases were male while 98 (96.08%) were female. Age of the patient was range from 16- 52 years with mean age of 30 years. Out of 102 cases 77 (75.49%) histopathology correlations was done in the department. (Table No.1)

**Figure 1**

Table No. 1 Age of the Patient with FNAC

Age (Yrs)	Fibroadenoma	Subareolar Abscess	Invasive Ductal	Breast Abscess	Fibrocystic Disease	Duct ectasia	Galactocele	Others
10-20	09	Nil	Nil	Nil	Nil	Nil	Nil	Nil
21-30	32	01	Nil	Nil	04	Nil	02	03
31-40	05	04	01	02	07	03	02	03
41-50	Nil	01	04	02	01	02	03	Nil
51-60	Nil	Nil	04	04	Nil	02	Nil	Nil
Total	46	06	09	08	12	07	07	06
Percent	45.09	5.88	8.82	7.84	11.76	6.86	6.86	5.88

In our study we have recorded 46 cases of Fibroadenoma which was most common lesion in the breast and account 45.09% of the total breast lesion. The 89.1% of fibroadenoma cases were seen in the age group of 10-30 yrs. Histopathology available in all 46 cases of fibroadenoma which shows 100% sensitivity and specificity for FNAC. (Table No.2)

**Figure 2**

Table No. 2 FNAC diagnosis of Breast Lump

Diagnosis	No. of Cases	Percentage
Fibroadenoma	46	45.09
Subareolar Abscess	06	5.88
Invasive Ductal Carcinoma	09	8.82
Breast abscess	08	7.84
Fibrocystic Disease	12	11.76
Duct ectasia	07	6.86
Galactocele	07	6.86
Others	6	5.88

Study includes 9(8.82%) cases of malignancy and all are compared with histopathology are proved malignant on histopathology with 100% sensitivity. The 2 cases were diagnosed as inflammatory lesions on FNAC were turned out into malignant on histopathological diagnosis. (Table

No.3)

**Figure 3**

Table No. 3 FNAC & Histopathology Correlation

FNAC	Histopathology						
	Fibroadenoma	Invasive Ductal Carcinoma	Duct ectasia	Gynaecomastia	Inflammatory Abscess	Fibrolipoma	
Fibroadenoma	38	-	-	-	-	-	
Invasive Ductal	-	09	-	-	-	-	
Duct ectasia	-	-	07	-	-	-	
Gynaecomastia	-	-	-	03	-	-	
Inflammatory	-	02	-	-	08	-	
Fibrolipoma	-	-	-	01	-	-	

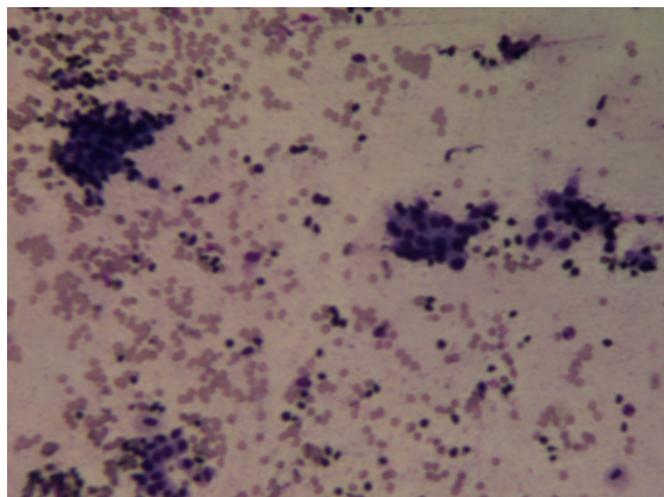
In our department we received 4 cases in which FNAC was not done in the department. The 3 out of 4 cases came from outside institute for second opinion, and all were malignant while 1 case was from institute. The patient underwent to surgery without prior FNAC for malignancy. The histological studies shows well defined granuloma with typical langerhan's type of giant cell. The sections were positive for Acid Fast Bacilli on Zeil Neelsen's Stain. The tubercular mastitis diagnosis was given.

**DISCUSSION**

The FNAC of breast lump is worldwide accepted and established method of choice to determine the nature of breast lump. Fibroadenoma is the most common benign lesion in breast. Ferguson reported most of the fibroadenoma cases before the age of 25 years which is very close to our result 89.1% fibroadenoma reported in the age group of 10-30 years.<sup>16</sup>

**Figure 4**

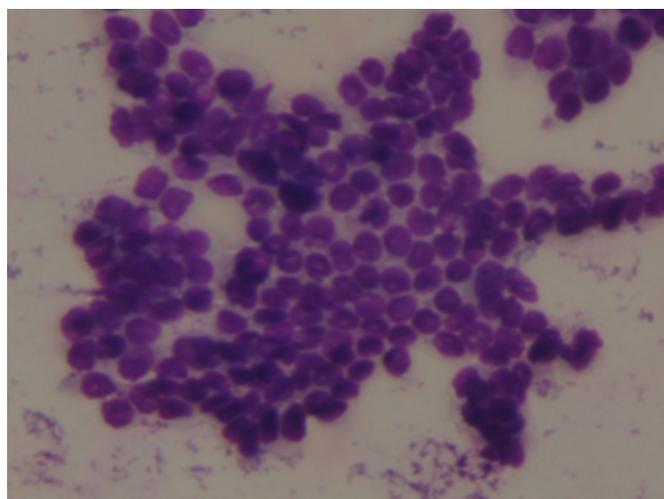
Figure 1 [Fibroadenoma in FNAC (H&E Stain at 100x)]



The present study shows 9 cases (8.82%) of breast malignancy with mainly (88.8%) in the age group of 41-60 year of age. The most common malignancy is invasive ductal carcinoma. The our observation is similar to other workers.<sup>17</sup>

**Figure 5**

Figure 2 [Ductal cell carcinoma in FNAC (H&E Stain at 400x)]



The FNAC have very high accuracy in diagnosis of breast lump.<sup>18,19,20,21</sup> As in study shows most of the breast lesions are benign and needs only reassurance and early diagnosis to prevent patients discomfort and anxiety. The FNAC gives result very fast and is accurate therefore FNAC is useful in those cases, to avoid fear of surgery<sup>22,23</sup>.

Aspiration should be repeated after aspiration of breast cysts, especially if there is a residual mass, as malignancy may be

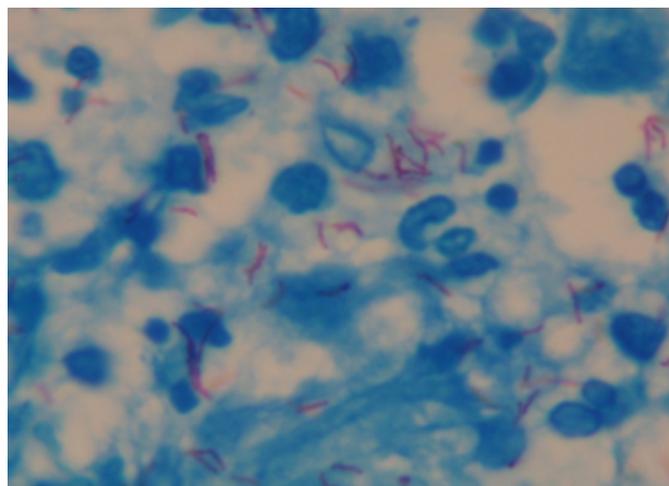
masked by the presence of cystic degeneration or necrosis.<sup>24</sup> Malignancy may also be masked by the presence of infection and inflammation.<sup>25</sup> In this study we fail to diagnose as malignancy in two cases.

In our study one case diagnosed as fibrolipoma on FNAC turn out as gynaecomastia on histopathology because fragments of fibrous stroma and adipose tissue are also frequently present in gynaecomastia aspirate.<sup>26</sup>

It was interesting that mastectomy specimen with clinical diagnosis of carcinoma, turn out into tubercular mastatitis. The surgery can be avoided in that patient if patient has gone for FNAC pre operatively.<sup>27</sup>

**Figure 6**

Figure 3 [Acid fast bacilli in Histopathology (Z&N Stain at 1000x)]



The advantage of the fine needle aspiration are its speed, safety, convenience, ease of repetition and cheapness.<sup>4,5</sup>

In comparative analysis of FNAC and histopathology diagnosis, our observation had reported 02 cases of false negative and no false positive cases were reported. Hence our sensitivity is 84.6% and specificity 100%. The test efficacy was 92.3%. Our observation is very close to other worker. (Table 4)

**Figure 7**

Table No. 4 Sensitivity and specificity of FNAC by different workers studies

Studies	Sensitivity %	Specificity %
Tiwari M <sup>17</sup>	83.3	100
Bojia F et al <sup>6</sup>	94.3	78.6
Watson DP <sup>28</sup>	74	99.6
Sreenivas M <sup>29</sup>	91	91
Horgan PG et al <sup>30</sup>	84	99
Present study	84.6	100

**CONCLUSION**

The FNAC of breast is cheap, safe and highly accurate method for diagnosis of breast lump preoperatively to avoid undue surgery and inconvenience during biopsy. FNAC of breast lump should be used as preliminary investigation in outdoor patient department. The same aspirated can also be used for ancillary molecular testing.

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