

Retrospective Analysis of Fine Needle Aspiration Cytology Procedure at Tertiary Care Rural Hospital

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ABSTRACT

Breast lump is one of the commonest presentations of breast diseases. The diagnosis of breast diseases can be achieved like in other clinical conditions using patient history, physical examination and cytological investigation among others. A palpable breast lump is a common diagnostic problem to both general practitioners and surgeons. Fine needle aspiration cytology (FNAC) is a valuable tool and can be used to evaluate all palpable and nonpalpable mammographically evident breast lesions. It has become popular as a valuable tool in preoperative assessment of breast masses, and it shows high accuracy, sensitivity, and specificity. It has gained popularity due to its fast and easy approach, being inexpensive, and can be performed with little complications. Early definitive diagnosis is required for initiation of the treatment. FNAC procedure and cytological data of 46 female patients (14-70 years age group) with palpable breast lump were utilized in this study which had taken place over a period of one year between October 2018 to October 2019 in a tertiary care rural hospital. The final procedure was determined so as to maintain maximum accuracy and patient's interest. Fibroadenoma and intraductal carcinoma were the most common diagnosed benign and malignant breast lesions. Malignant tumours were absent below age of 30 years. Benign proliferative breast disease was distributed among almost all age groups.

Keywords: breast lump; FNAC; fibroadenoma; intraductal carcinoma; cytological investigation

INTRODUCTION

Breast lump is one of the commonest presentations of breast diseases. The diagnosis of breast diseases can be achieved like in other clinical conditions using patient history, physical examination and cytological investigation among others. Fine needle aspiration (FNA) biopsy of breast was first used in the 1930s by Martin & Ellis and by Stewart at Memorial Hospital, [1-3] followed by Adair & Godwin [4,5] in the late 1940s and early 1950s. A palpable breast lump is a common diagnostic problem to both general practitioners and surgeons. [6] Fine needle aspiration cytology (FNAC) is a valuable tool and can be used to evaluate all palpable and nonpalpable mammographically evident breast lesions. [7] It has become popular as a valuable tool in preoperative assessment of breast masses, and it shows high accuracy, sensitivity, and specificity. It has gained popularity due to its fast and easy approach, being inexpensive, and can be performed with little complications. Differentiating benign from malignant lesions is one of the major goals of FNAC. Diseases of the breast are common in all age groups. It can be benign or malignant and can affect both males and females. The most common presenting symptoms are palpable mass nipple discharge and pain. Benign lesions range from fibrocystic disease and fibroepithelial lesions to inflammatory lesions. The incidence of breast cancer is increasing in

both developing and developed countries. Breast cancer is the second most common cancer affecting females in the developing countries. It is the most common cause of morbidity and mortality in females. [8] Breast carcinoma generally affects females in younger age group. Early diagnosis can reduce the mortality and morbidity in breast cancer patients. However, FNAC has got many pitfalls as results depend on the representative aspirate, the quantity of the aspirate obtained and also on the experience of the reporting pathologist. Delay in the diagnosis might reduce the survival of the patients. Early definitive diagnosis is required for initiation of the treatment. In this study we have retrospectively analyzed the procedure and the pathological findings for FNAC procedure on breast lumps for a period of about one year in a tertiary care rural hospital.

METHODOLOGY

Procedure and data for FNAC procedures were used from time period of October 2018 to October 2019. For this study only female patients were included. Male patients were excluded from this study. A total of 46 patients were included after obtaining consent. Step by step procedure for FNAC was noted for every patient as it was being performed by two expert pathologists. Pathological findings for every sample were noted under 11 categories:

1. Acute mastitis
2. Benign proliferative breast disease
3. Breast abscess
4. Traumatic fat necrosis
5. Fibroadenoma
6. Fibrocystic change
7. Galactocele
8. Inflammatory lesion with reactive atypia
9. Lactating adenoma
10. Intraductal carcinoma
11. Mucinous breast carcinoma

Categories 1 to 9 were benign breast lump categories while categories 10 and 11 were malignant breast lump categories. After obtaining the final results for every

patient in the study group, age-wise distribution of breast lumps was formed. The results were also categorised in to diagnosis-wise distribution irrespective of age. At the end, both diagnosis and age-wise distribution was studied. A final procedure for FNAC was also studied.

RESULTS

FNAC procedure and cytological data of 46 female patients (14-70 years age group) with palpable breast lump were utilized in this study which had taken place over a period of one year between October 2018 to October 2019. The final procedure which was determined so as to maintain maximum accuracy and patient's interest is described as follows:

The patient was informed about the procedure and informed consent obtained from the patient before subjecting to fine needle aspiration cytology of the breast lump. The standard procedure was followed, making use of a 10ml syringe bearing a 22-gauge needle. The mass was located clinically and fixed in position with free hand. The skin over the puncture site was sterilized with spirit or betadine. The needle was placed over the skin and its direction determined before it was introduced in the mass in one swift motion. This minimized the discomfort to the patient. Once the tumour was engaged full vacuum was applied, while the needle was moved back and forth in the mass with short strokes. The syringe was observed for appearance of any specimen. When it appeared, the syringe piston was slowly released and allowed to return to the neutral position. The needle was then withdrawn from the mass. The needle was temporarily removed from the apparatus, and the syringe was filled with air by pulling back the plunger. The needle was reattached, and the specimen was expressed on to a glass slide. The wet smear was fixed with ether-alcohol mixture stained with hematoxylin and eosin (H&E) and Papanicolaou stain. The air-dried smear was stained with May-Grunwald Giemsa stain. Prepared slides were reviewed and reported.

Age-wise distribution of females with breast lumps is presented in table 1 below:

Table 1: Age-wise distribution of females with breast lumps who underwent FNAC procedure. Class interval is set at 10. Remainder age in months was not considered for age distribution.

Age in Years	Number of patients (total=46)	% of patients
11-20	7	15.22
21-30	15	32.61
31-40	15	32.61
41-50	5	10.87
51-60	3	6.52
61-70	1	2.17
Grand Total	46	100.00

Diagnosis-wise distribution of cases is presented in table 2 below:

Table 2: Diagnosis-wise case distribution after FNAC procedure and cytological examination

	FNAC Diagnosis	Number of cases	% of cases
Benign	Acute mastitis	1	2.17
	Benign proliferative breast disease	7	15.22
	Breast abscess	2	4.35
	Fat necrosis(traumatic)	1	2.17
	Fibroadenoma	17	36.96
	Fibrocystic change	7	15.22
	Galactocele	1	2.17
	Inflammatory lesion with reactive atypia	1	2.17
	Lactating adenoma	1	2.17
Malignant	Intraductal carcinoma	7	15.22
	Mucinous carcinoma of breast	1	2.17
	Grand Total	46	100.00

Combined diagnosis-wise and age-wise distribution of cases is shown in table 3 below:

Table 3: Combined diagnosis-wise and age-wise distribution of all 46 cases. Class interval for age is 10. Remainder age in months was considered for age distribution.

FNAC Diagnosis	Count of Age						
	11-20	21-30	31-40	41-50	51-60	61-70	Grand Total
Acute mastitis	0	1	0	0	0	0	1
Benign proliferative breast disease	1	2	2	1	1	0	7
Breast abscess	0	2	0	0	0	0	2
Fat necrosis(traumatic)	0	0	1	0	0	0	1
Fibroadenoma	5	6	5	1	0	0	17
Fibrocystic change	1	2	3	1	0	0	7
Galactocele	0	1	0	0	0	0	1
Inflammatory lesion with reactive atypia	0	0	1	0	0	0	1
Intraductal carcinoma	0	0	3	1	2	1	7
Lactating adenoma	0	1	0	0	0	0	1
Mucinous carcinoma of breast	0	0	0	1	0	0	1
Grand Total	7	15	15	5	3	1	46

DISCUSSION

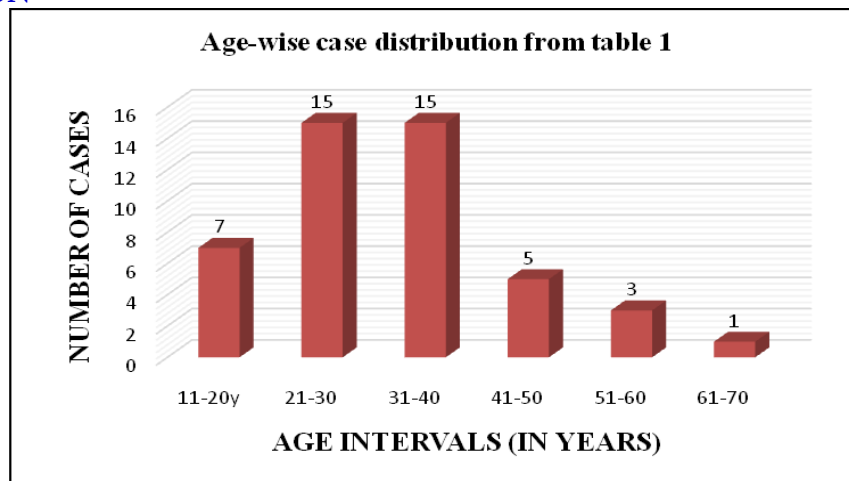


Figure 1: Age-wise case distribution bar graph drawn in MS-Excel 2016.

Figure 1 indicates that most of the patients who underwent FNAC procedure were within the age of 40 years. Maximum numbers of cases were between the age groups of 21-40 years. There were also moderate numbers of cases in the age group of 11-20 years (15.22%).

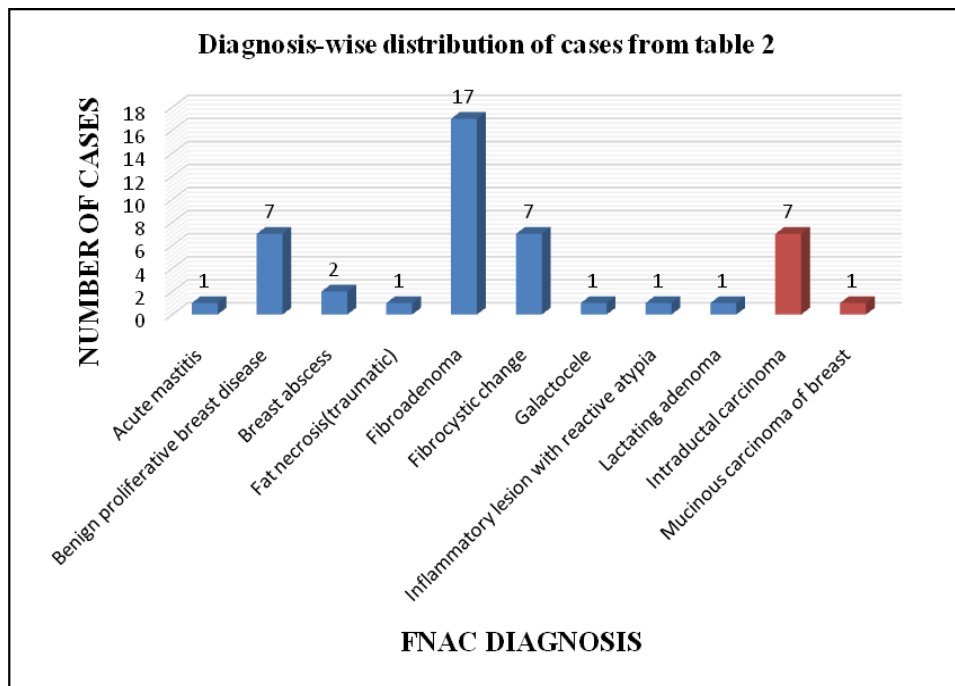


Figure 2: Diagnosis-wise distribution bar graph drawn in MS-Excel 2016. Benign categories are in blue bars while malignant categories are in orange bars

Figure 2 indicates that most of the cases were benign in nature maximum among them being diagnosed with fibroadenoma. Intraductal carcinoma was the most common malignant diagnosis. Overall fibroadenoma was the most common diagnosis obtained for breast lumps (36.96%).

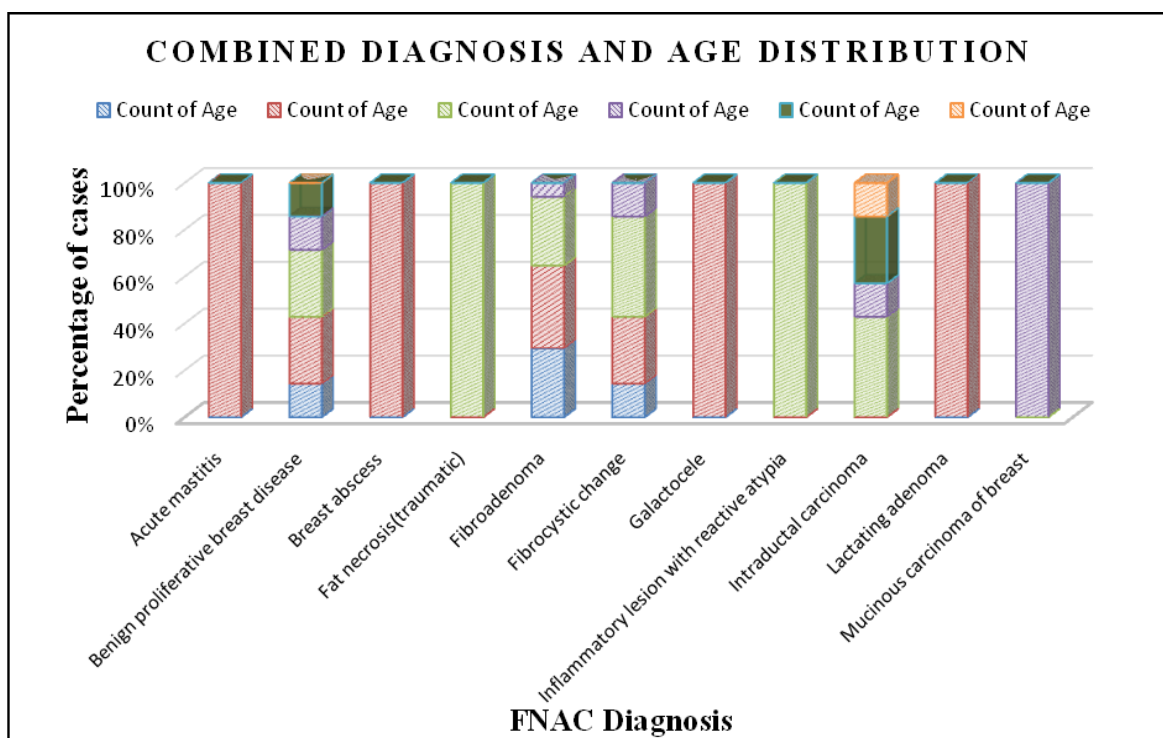


Figure 3: Combined age and diagnosis-wise case distribution stacked bar graph drawn in MS-Excel 2016.

Figure 3 indicates that all cases of acute mastitis, breast abscess, galactocele and lactating adenoma were in the age group of 21-30 years. Malignant tumours were absent in the age group below 30 years. Post-menopausal age groups (>50 years) were mostly diagnosed with malignant intraductal carcinoma. Benign proliferative breast disease was diagnosed in almost all age groups except above age of 60 years old.

Although sensitive in detecting ductal carcinomas, it cannot distinguish between an in situ and an invasive ductal carcinoma. It cannot identify the presence of lymphatic or vascular invasion. It is less sensitive in tumours with low-grade cancer histology (e.g., tubular and lobular), papillary proliferations, and mucinous lesions. [9-11]

CONCLUSION

From our study we have highlighted the appropriate procedure for FNAC of palpable breast lump. We found out that age groups below 40 years have high incidences of breast lumps. Fibroadenoma and intraductal carcinoma were the most common diagnosed benign and malignant breast lesions. Malignant tumours were absent below age of 30 years. Benign proliferative breast disease was distributed among almost all age groups.

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Conflict of Interest: None.

Ethical Approval: Not required.

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