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Original Research Article

Cytomorphological pattern of breast lesions diagnosed on fine-needle aspiration cytology in a district hospital in Kashmir valley

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ABSTRACT

Background: Breast lump is the most common presentation of the breast disease. Fine needle aspiration cytology (FNAC) is a simple, rapid and safe, method to diagnose the breast lesions. The objective of this study was to determine the cytomorphological patterns of various breast lesions diagnosed on FNAC.
Methods: This study was conducted on 280 patients presenting with breast lump over a period of 3 years.
Results: The age range of these patients was from 11-80 years. Female patients were more than male patients. Left breast involvement was more common than the right breast. The cytological diagnosis included benign breast disease (C2-88%), atypical/probably benign (C3-1%), suspicious for malignancy (C4-3%), malignant (C5-8%). Fibroadenoma and invasive ductal carcinoma were most common among benign and malignant lesions respectively.
Conclusions: The primary goal of aspiration cytology is to separate malignant lesions from benign ones and it also makes an important tool in guiding further management of a case. So, it is concluded that FNAC should be used as a routine diagnostic procedure due to its cost effectiveness and quick results, thus maximizing the availability of effective health care to patients with breast lesions.

Keywords: Breast, FNAC, Cytological examination

INTRODUCTION

Breast cancer is one of the most common cancers worldwide in females and is an important cause of mortality and morbidity.[1,2] The most common presentation in most of the breast diseases is breast lump. Breast lump causes anxiety to the patient and it can be reduced by giving assurance that most of the breast lumps are benign and can be early diagnosed by FNAC. It has been used to evaluate palpable breast masses and cysts as well as nonpalpable mammographic abnormalities. It is highly accurate for palpable lesions.[3] The procedure has advantages in that it provides rapid and accurate diagnosis and serves a cost-effective tool for the treatment of breast masses.[4] It differentiates cysts from a solid tumor and can be used as therapeutic procedure when cyst is encountered. Whenever a malignancy is diagnosed, it permits participation of the patient in the decision-making process. It also provides a psychological relief to the patients once diagnosed with benign breast lesions. Globally, triple assessment is done for the investigation of breast mass which includes clinical examination, imaging studies, that is, ultrasound and mammography and above all FNAC. Muddegowda et al in their study assessed the diagnostic accuracy of FNAC on patients presented with palpable breast and showed a very high accuracy (97%), specificity (98%) and sensitivity (94.5%). FNAC is cost-effective, reliable and can prevent unwanted surgery as well.[5]

Aim and objective

The aim and objectives of this study were to determine the cytomorphological patterns of various breast lesions on FNAC.

METHODS

The present study was carried out in the department of pathology, cytology section, JLNMH district hospital Srinagar over a period of 3 years from April 2019 to April 2022. It was a retrospective study. The data was collected from cytology registration forms. Data on the cytological features, age and sex were retrieved. A total of 280 patients with breast mass were included in the study. Patients with nipple discharge, having history of previous trauma to the breast, and with recurrent malignancy, or on chemotherapy/radiotherapy were excluded from the study. After informed consent and before performing FNAC, a detailed history, general physical, and clinical examination were carried out. FNAC was performed by injecting the needle into the palpable lesion on breast mass using 20 ml disposable syringe for each patient collecting the lesion from the palpable mass. Cellular component was aspirated into a syringe and spread onto the glass slides for smear preparation. For each patient, 2-4 smears were prepared. The prepared smears were air dried and stained with the Geimsa staining technique. The stained slides were observed under the microscope. USG guided FNAC was also done. Cytologically, the lesions were categorized into five-tier reporting format for breast lesions laid down by the international academy of cytology (IAC) in 2016, that is, C1: inadequate/insufficient material, C2: benign, C3: atypical/ probably benign, C4: suspicious of malignancy, and C5: malignant.[6] The data were collected and analyzed for statistical significance using SPSS software.

RESULTS

A total of 280 patients were included in this study which was carried out for a period of 3 years from April 2019 to April 2022. The age of the patients ranged from 11 to 80 years. It included 226 females and 54 males with female to male ratio of 4:1. Left breast was involved in 148 cases while right was involved in 128. Three cases showed bilateral breast involvement. Among 280 patients presenting with breast mass, the spectrum of breast lesions on cytomorphological interpretation was 88% benign (C2), 1% atypia/ suspicious probably benign (C3), 3% suspicious probably malignant (C4), and 8% malignant (C5). Among the benign (C2) cases, 20% were inflammatory and 54% were benign neoplastic. In inflammatory lesions, majority of the cases were of acute pyogenic mastitis (19%) followed by tuberculous mastitis (1%). Fibrocystic disease was seen in 7% cases. In benign neoplastic lesions, the maximum cases were of fibroadenoma (30.7%). Gynaecomastia constituted 19% of cases. Ductal carcinoma constituted 7% as given in Table 1. Cytological picture of representative Geimsa stained smears of FNAC aspirates is shown in Figure 1.

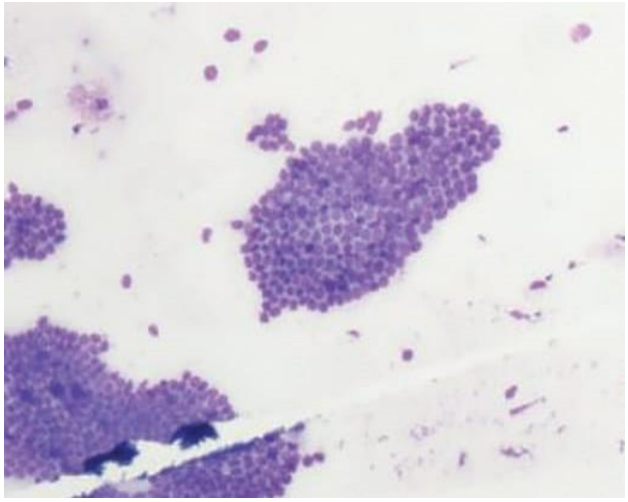

Figure 1: Geimsa stained smears of FNAC aspirates.

Table 1: Cytological spectrum of breast lesion on FNAC.

FNAC	Categories	Diagnosis	N	Percentage (%)	Overall (%)
C1	Inadequate or insufficient	-	0	0	0
C2	Non-neoplastic breast lesions	Acute mastitis	54	19	88
		Granulomatous mastitis	3	1	
		Fat necrosis	2	0.7	
		Duct ectasia	1	0.3	
		Fibrocystic disease	20	7.14	
		Lactational change	3	1	
		Benign ductal cells	10	3.5	
	Neoplastic breast lesions	Fibroadenoma	86	30.7	
		Phyllodes tumor	2	0.7	
		Lactational adenoma	1	0.3	
		Gynaecomastia	54	19.28	
		Intraductal papilloma	1	0.3	
		Lipoma	10	3.5	
C3	Atypical probably benign	-	03	1	1
C4	Suspicious for malignancy	-	10	3.5	3.5
C5	Malignant breast lesion	Ductal carcinoma	20	7.14	7.14
	Total		280		100

Table 2: Age distribution.

Age group (years)	No. of cases	Percentage (%)
10-20	45	16.5
21-30	79	28
31-40	46	16
41-50	45	16.5
51-60	25	9
61-70	30	10
>70	10	4
Total	280	100

DISCUSSION

FNAC is highly recognized as a reliable procedure for the initial examination of palpable breast masses. It is minimally invasive, cost-effective, safe, simple, rapid and sensitive as compared to biopsy.[7,8] The main objective of FNAC is to distinguish malignant lesions from benign lesions in order to plan for the treatment protocol and follow-up.[9]

Our study included 280 patients. The age of these patients ranged from 11-80 years. The most affected age group was 21-30 years. Devi et al and Singh et al also found the maximum cases in the same age range.[10,11] Among all cases, 54 were males (19%) and 226 (80.7%) were females' patients. Similar findings were seen in study done by Devi et al, Panjavni et al and Gupta et al.[10,12,13] Out of 280 cases, 149 cases were located in the left breast and 128 cases on the right breast. Three cases showed bilateral breast involvement similar to study done by Muddegowda et al and Singh et al.[5,14] The cytological diagnosis included benign breast disease (88%), atypical/ probably benign (1%), suspicious for malignancy (3%), and malignant (8%). Benign conditions were found to be more common than malignant lesions. Similar pattern of benign predominance was seen in study done by Gupta et al, Devi et al, Yusuf et al.[3,10,15] However Bdour et al reported a much higher incidence of carcinomas (41%).[16] Among the benign conditions including the fibroepithelial lesions, maximum no. of cases was that of fibroadenoma (86 cases). Similar findings were seen in the study done by Singh et al and Farkhanda et al.[17,18] This was followed by gynecomastia seen in 54 patients, mastitis in 54 cases as shown in Table 1. Similar pattern was seen in study done by Gupta et al and Chandanwale et al.[13,19] Among 20 cases of malignant lesions, all were of ductal carcinoma. Similar predominance of ductal carcinoma among malignant lesions was found in study done by Singh et al and Singh et al.[11,14]

CONCLUSION

The primary goal of aspiration cytology is to separate malignant lesions from benign ones and it also makes an important tool in guiding further management of a case. So, it is concluded that FNAC should be used as a routine diagnostic procedure due to its cost effectiveness and quick results, thus maximizing the availability of effective health care to patients with breast lesions.

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