

Fine Needle Aspiration Cytology Study of Male Breast Lesions: A Six Year Study

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Abstract

Background: Male breast lesions are comparatively less common. Gynaecomastia is the most common clinical and pathological abnormality of the male breast. Carcinoma of the male breast is much rarer than its equivalent female tumour. Fine needle aspiration cytology (FNAC) is widely used method in the management of breast lesions in women. However, FNAC is used much less often in male, mainly because male breast masses are less frequent. But it is one of the most reliable tools for diagnosis of male breast lesions.

Aims and objectives: To describe cytomorphological pattern and to determine the efficacy of FNAC in the diagnosis of male breast lesions.

Materials and methods: A six year retrospective cross sectional study of male breast lesions was conducted by FNAC.

Results and observations: A total of 111 cases of male breast lesions were subjected to FNAC. Among these, 107 cases (96.40%) had benign diagnosis. Only 1 case (0.9%) had malignant diagnosis. In 3 cases (2.7%), smears were inconclusive. Among benign cases, gynaecomastia (90 cases, 81.08%) was the most common lesion, followed by fibroadenoma (8 cases, 7.21%), acute suppurative lesion (4 cases, 3.6%) and others (5 cases, 4.5%). Age of the patient ranged from 7 years to 85 years with mean age of 42.39 years. Most of patients had unilateral lesion (102 cases, 91.89%).

Conclusion: Gynaecomastia is the most prevalent male breast disorder. FNAC of male breast lesions is very accurate tool. Therefore, it should be used as initial diagnostic procedure of male breast lesions.

Keywords: Fine needle aspiration cytology (FNAC); Gynaecomastia; Fibroadenoma

Introduction

Lesions of male breast are not as common as lesions of female breast. Majority of lesions that come to surgical practice are gynaecomastia and carcinomas. Other lesions are extremely rare and include fibroepithelial tumors, Duct ectasia, papilloma and fibrocystic change [1]. Fine needle aspiration cytology (FNAC) is widely accepted as a reliable technique in the initial evaluation of palpable and non-palpable breast lumps. The procedure is simple, safe, cost effective, minimally invasive and rapid. FNAC has high sensitivity, specificity and diagnostic accuracy [2-6]. FNAC is widely used method in the management of breast lesions in women. However, FNAC is used much less often in male, mainly because breast masses in males are less frequent. But it is one of the most reliable tools for diagnosis of the male breast lesions. Gynaecomastia is the most common cause of benign masses in the male breast. Carcinoma of the male breast is a rare disease representing 1% of all breast cancers and less than 1% of all cancer in men [7-17].

FNAC can be performed as an OPD procedure, is less traumatic to the patient than surgical biopsy, is cost effective and can provide rapid

results on the same day [1]. Therefore it can be used as initial diagnostic procedure for male breast lesions.

The aim of this study was to describe the cytomorphological patterns of male breast lesions and also to determine the efficacy of FNAC in the diagnosis of male breast lesions.

Materials and Methods

A six year (May'2012 to April'2018) retrospective cross sectional study was done in Cytology section of Pathology department of Mamata Medical College, Khammam. FN Aspirates were performed in outpatient department from all male patients with breast lesions using 23 gauge needle and 5 ml syringe. Air dried smears routinely stained with May-Grunwald-Giemsa stain and wet-fixed smears stained with Hematoxylin and Eosin stain and examined under microscope. Then smears were categorised into four major categories such as benign, malignant, suspicious of malignancy and inconclusive aspiration. Histopathologic diagnosis was obtained wherever available and the cytologic diagnosis was retrospectively correlated with histological findings. Finally statistical analysis was done by XLStat software and calculated the sensitivity, specificity and diagnostic accuracy of the aspirates.

Results

A total of 111 cases of male breast lesions were subjected to FNAC. Out of these, 107 cases (96.40%) had benign diagnosis. Only 1 case (0.9%) had malignant diagnosis. In 3 cases (2.7%), smears were inconclusive and in these cases, biopsy was advised. Among benign cases, gynaecomastia (90 cases, 81.08%) was the most common lesion, followed by fibroadenoma (8 cases, 7.21%), acute suppurative lesion (4 cases, 3.6%) and others (5 cases, 4.51%) which included chronic mastitis, fibrocystic disease, usual ductal hyperplasia, mammary dysplasia and intraductal papilloma (1 each). 1 case (0.9%) of malignancy (invasive ductal carcinoma) was encountered during the study period (Figure 1 and Table 1).

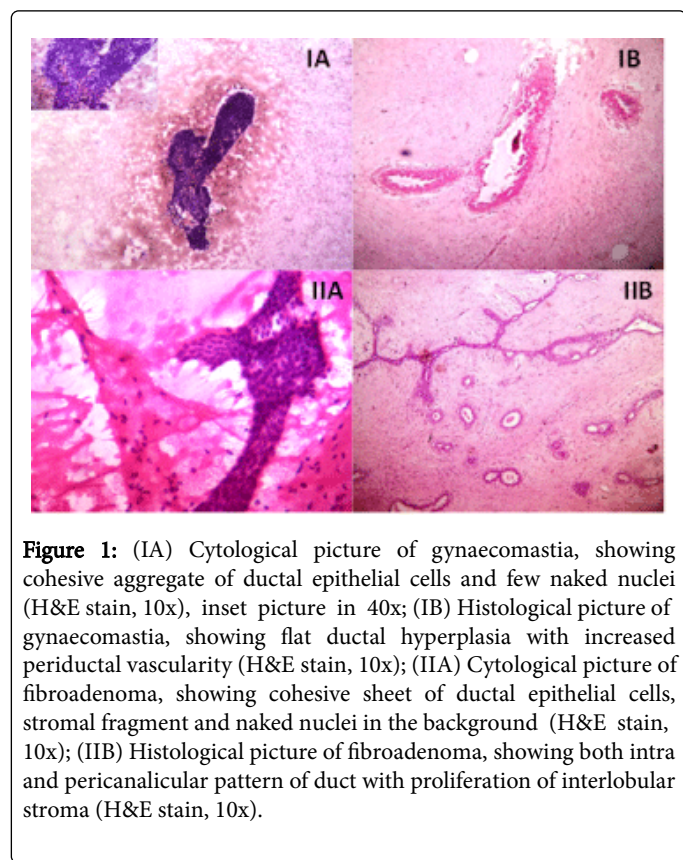


Figure 1: (IA) Cytological picture of gynaecomastia, showing cohesive aggregate of ductal epithelial cells and few naked nuclei (H&E stain, 10x), inset picture in 40x; (IB) Histological picture of gynaecomastia, showing flat ductal hyperplasia with increased periductal vascularity (H&E stain, 10x); (IIA) Cytological picture of fibroadenoma, showing cohesive sheet of ductal epithelial cells, stromal fragment and naked nuclei in the background (H&E stain, 10x); (IIB) Histological picture of fibroadenoma, showing both intra and pericanalicular pattern of duct with proliferation of interlobular stroma (H&E stain, 10x).

Age of the patient ranged from 7 years to 85 years with mean age of 42.39 years. Most of patients had unilateral lesions (102 cases, 91.89%), only few were bilateral lesions (9 cases, 8.11%) (Figure 2).

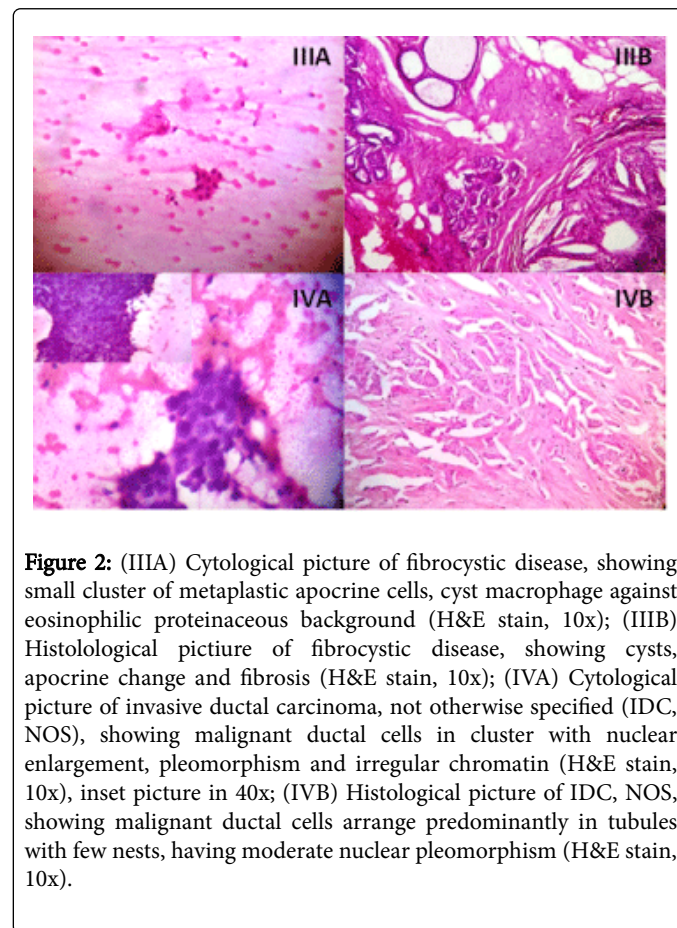


Figure 2: (IIIA) Cytological picture of fibrocystic disease, showing small cluster of metaplastic apocrine cells, cyst macrophage against eosinophilic proteinaceous background (H&E stain, 10x); (IIIB) Histological picture of fibrocystic disease, showing cysts, apocrine change and fibrosis (H&E stain, 10x); (IV A) Cytological picture of invasive ductal carcinoma, not otherwise specified (IDC, NOS), showing malignant ductal cells in cluster with nuclear enlargement, pleomorphism and irregular chromatin (H&E stain, 10x), inset picture in 40x; (IV B) Histological picture of IDC, NOS, showing malignant ductal cells arrange predominantly in tubules with few nests, having moderate nuclear pleomorphism (H&E stain, 10x).

Among benign cytologically diagnosed cases (107 cases), only 28 cases were histologically confirmed. 1 case of malignancy (invasive ductal carcinoma) was also histologically confirmed. Out of 3 cases in the inconclusive category that were advised biopsy, 1 case (33.33%) proved malignant on histopathological examination while 2 cases (66.67%) had a benign diagnosis (Table 2).

Sl. No.	Cytological finding	No.
1.	Benign	107 (96.40%)
	Gynaecomastia	90 (81.08%)
	Fibroadenoma	8 (7.21%)
	Acute suppurative lesion	4 (3.60%)
	Others	5 (4.51%)
2.	Malignant (Invasive ductal carcinoma)	1 (0.9%)
3.	Inconclusive	3 (2.7%)

Table 1: Overall cytological finding of male breast lesions.

Out of 108 cases (excluding inconclusive cases), 1 case (100%) was true positive and none of the cases was false positive. The number of true negative cases was 107(100%) and none of the cases were false

negatives. Sensitivity and specificity of test was 100%. Positive and negative predictive value was 100%. Accuracy of the test was 100%.

Cytology	Histology	
	Positive(malignant)	Negative(benign)
Benign (28)	0=False negative (0%)	28=True negative (100%)
Malignant (1)	1=True positive (100%)	0=False positive (0%)
Inconclusive (3)	1 (33.33%)	2 (66.67%)
Total (32)	2 (6.25%)	30 (93.75%)

Table 2: Cytologic and Histopathologic categories of 32 FNACs and statistical analysis.

Inconclusive smears were observed in 3 (2.7%) of all cases. All of these cases were unsatisfactory due to scanty cellularity. Out of these, one case was diagnosed as malignant (invasive ductal carcinoma) and

2 cases were diagnosed as gynaecomastia on histopathological examination. Rate of inconclusive smears was more in malignant than benign lesions (Table 3).

Histopathological diagnosis	Total no. of cases	No. of inconclusive smears
Benign	30	2 (6.67%)
Malignant	2	1 (50%)
Total	32	3 (9.38%)

Table 3: Histopathologic categories of inconclusive smears.

Discussion

FNAC is one of the most reliable tools for diagnosis of the male breast lesions. It is cost effective, involves minimal discomfort to the patient and can be performed on outpatient basis.

In this study, Gynaecomastia was found as the most common male breast lesion (88.29%). In a study done by Singh et al. [18], gynaecomastia (84.3%) was most common male breast lesion.

In present study, mean age of the patients of gynaecomastia was 42.39 years and most patients presented in 2nd decade of life (21 cases). In a study by Gill et al. [19], mean age of gynaecomastia patients was 38.75 years and most patients presented in 3rd decade of life.

Most of cases of Gynaecomastia were unilateral (93.88%) in present study. While a study done by Westenend et al. [20] showed 97.24% cases of gynaecomastia were unilateral.

Only 1 case (0.9%) of male breast malignancy was noted in this study. While in a study conducted by Das et al. [21], prevalence of male breast malignancy were 3.77%.

In this study, a statistical analysis of FNAC in male breast lesions and cytohistologic correlation was performed. Sensitivity, specificity, accuracy, positive and negative predictive value for diagnosis of malignancy was 100%. Similar result was found in a study done by Kulwant Singh et al. [1]. In other studies, sensitivity ranges from 87% to 100% [11,13,21]. Specificity is also reported very high, ranging from 78% to 100% [11,13,21]. Positive predictive value, in studies done, ranges from 89% to 100% [11,20,21].

Inconclusive smears constituted 2.7% of all FNAC smears. In other literatures, inconclusive smears represented 8-22% of all smears [11,13,21]. Inconclusive smears in our study showed very poor cellularity, which preventing to give definite opinion about the smear.

FNAC is a blind procedure. Therefore, always we do not able to sample properly. Another reason is intrinsic nature of the lesion. Lesions with abundant fibro connective tissue sometimes do not provide enough epithelial cells for interpretation in case of FNAC breast (especially seen in cases of gynaecomastia). Malignancies with desmoplasia also yield poor cellularity.

Cytohistological correlation in our study was 100% in both benign and malignant cases. However, only 28 benign cases were histologically correlated.

Conclusion

From the present study, we concluded that gynaecomastia is the most prevalent male breast disorder. Malignancy in male breast is rare. FNAC of male breast lesions is very accurate tool which shows excellent specificity, sensitivity and cytohistological correlation. Therefore, it should be used as initial diagnostic procedure of male breast lesions.

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