

Spectrum of male breast lesions: an institutional perspective

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Abstract

Background: Fine needle aspiration is a quick and effective method in the diagnosis of breast lumps and is being widely used in the preoperative assessment of breast lesions. Studies related to male breast lesions are rare. The aim of our study is to study the spectrum of male breast lesions and to analyze the cytological spectrums of these lesions. **Materials and Methods:** The study was conducted over a period of 5 years. FNAC was done on all male patients clinically presenting with breast lesions. Cytological findings were retrospectively correlated with histopathological diagnosis. FNAC diagnosis was categorized as benign, malignant, suspicious of malignancy and unsatisfactory. **Results:** Male breast lesions formed 6.2% (38 cases) of the 612 breast lesions which were sent for FNA over a period of 5 years. Of these histopathological examination was done only in 19 cases. 86.8% (33 cases) were benign or reactive and 10.6% (4 cases) were malignant. Gynecomastia was the commonest benign lesion (29 cases). **Conclusion:** This study showed that FNAC is a reliable, sensitive and specific diagnostic tool for diagnosing male breast lesions. Hence, it should be used as a first line of investigation in the evaluation of male breast lesions.

Keywords: FNAC, Gynecomastia, Infiltrating duct carcinoma, Male breast lesions

Introduction

Fine needle aspiration cytology is a quick, accurate and cost effective method in the diagnosis and management of various lesions. Fine-needle aspiration of the breast is being used increasingly in the preoperative assessment of breast lesions. Most studies, however, were dominated by the large number of female breast lesions, with the male breast lesions representing less than 1% of the studied cases [1-2]. Gynecomastia is the most common cause of benign masses in the male breast. Male breast cancer is extraordinarily rare, and as it is associated with an aggressive clinical course [3]. Although histologic examination is a sure means of distinguishing gynecomastia from carcinoma, it is both impractical and unnecessary to perform a biopsy on all patients with gynecomastia [4]. Studies show that use of fine needle aspiration (FNA) can allow diagnosis to be made with a sufficient degree of confidence which can spare the patient an invasive surgical procedure [5].

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Aims and objectives

The aims and objectives of this study are to study the spectrum of male breast lesions and to analyze the cytological spectrum of these lesions.

Material and Methods

Study design: This research included all male patients clinically presenting with breast lesions referred to the Department of Pathology, Silchar Medical College and Hospital for FNAC and histopathological evaluation and a retrospective study was conducted from June 2010 to July 2015.

Data collection and analysis: All aspirates were performed using 23-25 gauge needle and five ml syringe. Air dried smears were prepared and stained by the May-Grunwald-Giemsa method. In addition, smears were wet-fixed in 95% ethyl alcohol and subsequently stained with Papanicolaou stain. The smears were classified into five major diagnostic categories:

- i) Unsatisfactory
- ii) Benign
- iii) Atypical suggestive of benign

- iv) Suspicious of malignancy
- v) Malignant

Histopathological diagnosis was obtained and the cytological diagnosis was retrospectively correlated with histological findings.

Results

Over a 5 year period, 612 patients with palpable breast lumps underwent Fine needle aspiration (FNAC) at our hospital. Of these, 38 were males and out of which 36 had unilateral breast lumps, and 2 patients had bilateral breast lumps. Out of the patients having unilateral breast lumps, 22 patients had left breast lump and 14 had right breast lump. The age of the patients ranged from 12 years to 85 years with a mean age of 40.1 years. A repeat aspirate was performed in 4 cases with an initial unsatisfactory aspirate; and in 3 cases the repeat aspirate yielded adequate material. Overall, unsatisfactory aspirates were obtained in 2.6% of cases (1 Case). The aspirates were each categorized into the following groups: benign/reactive 33 (86.8%), malignant 2 (5.3%), atypical/suspicious for malignancy 2 (5.3%) and nondiagnostic/unsatisfactory 1 (2.6%). Histopathological diagnosis was available in 19 cases. The most common diagnostic entity encountered in our study was gynecomastia (30 cases). Smears showed variable cellularity, ranging from scanty to markedly cellular smears. Smears showed large, tightly cohesive epithelial fragments often appearing as flat monolayered sheets. Often there is a bimodal pattern of stroma and epithelial cells in addition to single bare bipolar/oval nuclei in the background. Only thirteen cases were confirmed histologically and one case was found to be fibroadenoma. We had two cases of duct carcinoma characterized by hypercellular smears, irregular cell clusters as well as single cells and absence of myoepithelial cells. These cells had moderate to severe nuclear pleomorphism, irregular nuclear membrane and chromatin, prominent nucleoli and abundant eosinophilic cytoplasm. Histologically they were diagnosed as infiltrating duct carcinoma (NOS). Two cases of infiltrating duct carcinoma were diagnosed cytologically as suspicious of malignancy, later confirmed on histopathological examination. We had one case of lipoma, presenting as well defined rounded soft mass and characterized by presence of fat vacuoles and fragments of adipose tissue. Diffuse sheets of inflammatory cells, predominantly composed of neutrophils admixed with lymphocytes and histiocytes were seen amidst occasional sheets of ductal epithelial cells in a case of breast abscess. Plenty of anucleate squamous and mature squamous cells were seen in a case of keratinous cyst.

Table 1: Distribution of cases according to cytological diagnosis

Cytologic diagnosis	Number of cases
Benign neoplasms	
Gynecomastia	30
Lipoma	1
Keratinous cyst	1
Malignant neoplasms	
Duct carcinoma	2
Suspicious of malignancy	2
Inflammatory/abscess	1
Non diagnostic/ unsatisfactory	1

Table 2: Cyto-histological correlation of the 19 cases where biopsy was performed:

Cytological diagnosis	Histopathological diagnosis	Number
Gynecomastia	Gynecomastia	12
	Fibroadenoma	1
Duct carcinoma	Duct carcinoma	2
Suspicious of malignancy	Duct carcinoma	2
Lipoma	Lipoma	1
Keratinous cyst	Keratinous cyst	1

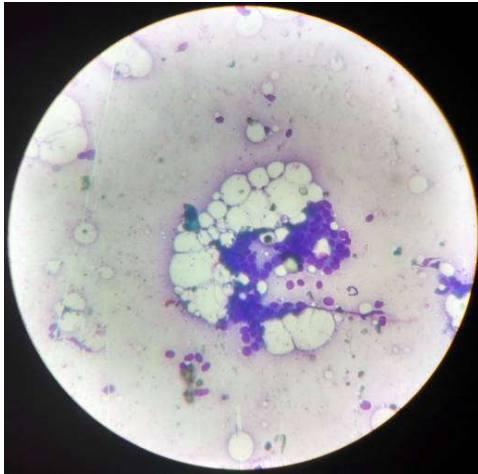


Fig 1: Smear shows cohesive fragments of uniform ductal epithelial cells, suggestive of gynecomastia (MGG, 100X)



Fig 2: H & E section of gynecomastia (100X)

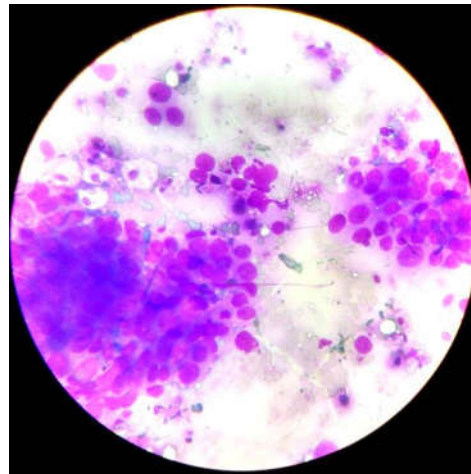
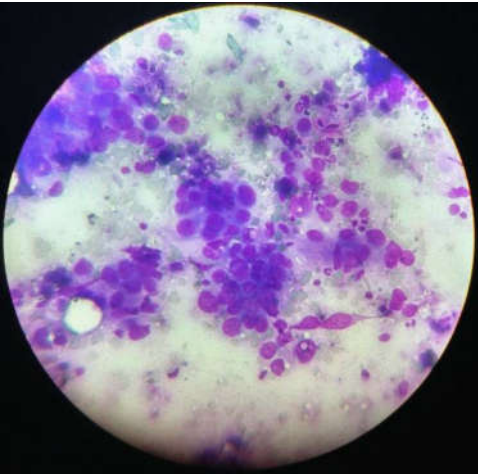


Fig 3a & b: Smear showing clusters as well as dispersed pleomorphic cells with abundant cytoplasm and absence of myoepithelial cells, features suggestive of duct carcinoma (Giemsa, 100X)

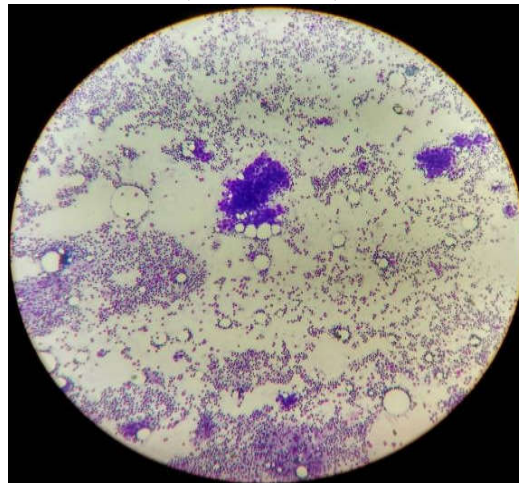
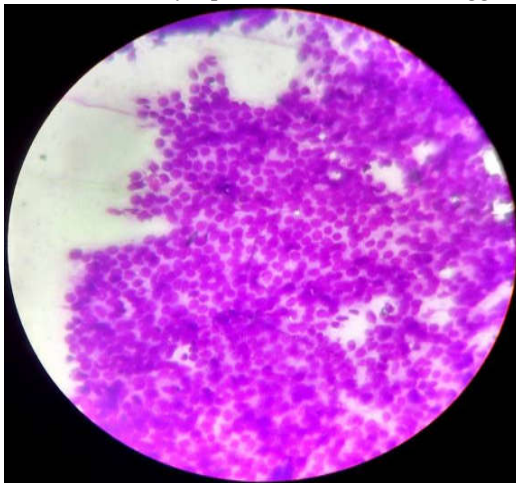


Fig 4a & b: Smear show features suspicious of malignancy (Giemsa, 100X)

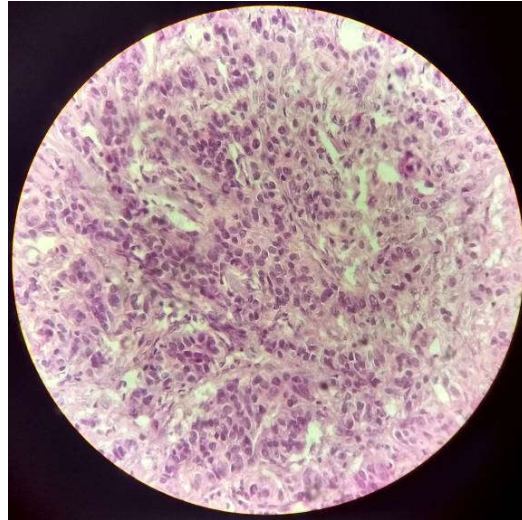
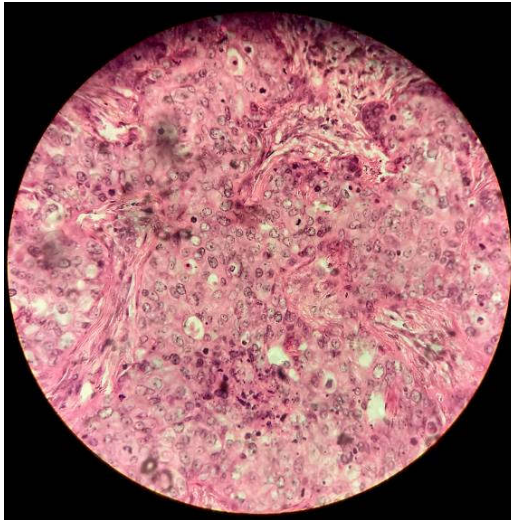


Fig 5a & b: Section showing features of Infiltrating duct carcinoma (H&E, 100X)

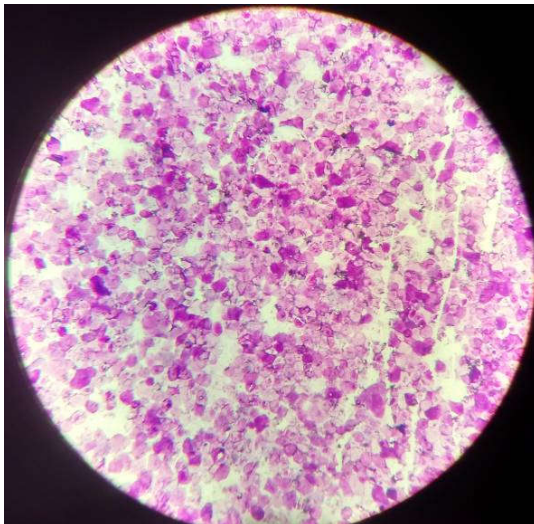


Fig 6: Smear of keratinous cyst showing plenty of anucleate squams and mature squamous cells (Giemsa,100X)



Fig 7: Section showing features of keratinous cyst (H&E, 100x)

Discussion

Breast masses in males constitute less than 2% of the total cases in large FNAC studies of breast lumps. Carcinoma in male breast is very rare as compared to the female breast [8-17]. Diagnosis of palpable breast masses by FNAC has gained world-wide acceptance [18]. Most of the studies have however evaluated the usefulness of FNAC in the diagnosis of breast masses in females [18]. The present study was undertaken to analyze the cytological spectrum of male breast lesions. In our series, the total number of patients who underwent FNAC for the assessment of a breast lump was 612 over a 5 year period with males constituting 6.2% (38 out of 612). In our study 29 out of 38 cases (76.3%) were gynecomastia and 51.7% (15) of them presented as subareolar mass. Gynecomastia was bilateral in 6.9% (2) cases and more frequent in the left than right side (17 cases were left sided). This was similar to the studies conducted by Das et al [5] and Martin-Bates et al [19] who observed it more in the left breast.

The age at presentation was variable with a peak age in the fourth decade. Russin et al [20] observed bimodal peak in the third and seventh decades. Gynecomastia results from different factors that induce a benign proliferation of the duct epithelium and increased periductal deposition of collagen. [21] These different causes share a background of relative increase in estrogenic activity and decrease in androgenic activity or both. [22] A study by Ersek et al showed that in 33% of pubertal cases, the condition subsided on its own within 1 year, and in 93% of cases, the condition subsided in 3 years. [23] As our findings show, fine needle aspirates of gynecomastia can have variable cellularity ranging from virtually acellular to richly cellular smears [5].

The male breast carcinomas were easily distinguished on cytology from gynecomastia on the basis of high cellularity, dyscohesive cell groups with nuclear piling and anisonucleosis [5]. These features were observed in almost all cases of carcinoma of male breast. Absence of bipolar bare nuclei was an important clue and only two cases of carcinoma showed benign cells accompanying malignant cells. In the present study, we found that there were two cases of infiltrating duct carcinoma and two cases suspicious of malignancy, which finally turned out to be duct carcinoma on histopathological examination. In our study 10.5% cases were infiltrating duct carcinoma which is similar to Wauters et al. (10.2%) [26] and Westend et al. (9.8%)[25]. Biopsy was available in 50% cases (19 out of 38) which is similar to that of Wauters et al. (58%) [26] and Westend et al. (47%) [25] but in contrast to that of MacIntosh et al. (17%)[24]. Biopsy rate is less in case of benign lesions.

Table 3: Results of the present study in comparison with other studies

Result	Westend et al.	MacIntosh et al.	Wauters et al.	Present study
Year	2002	2008	2009	2015
No. of male FNAC	153 (1.5%)	138(3.2%)	147 (1.7%)	
No. of biopsy	72 (47%)	23 (17%)	85 (58%)	19 (50%)
No.of malignant cases	15 (9.8%)	11 (7.9%)	15 (10.2%)	4 (10.5%)
No.of unsatisfactory cases	18 (11.7%)	46 (33.3%)	45 (30.6%)	1 (2.6%)
Sensitivity	100%	95.5%	100%	100%
Specificity	89%	100%	90.2%	100%

Conclusion

FNAC is a reliable, sensitive and specific diagnostic tool for the assessment of breast masses in male patients. The routine use of FNAC would greatly reduce the number of unnecessary biopsies and frozen sections for histopathologic evaluation, especially in case of Gynecomastia. Hence, the use of FNAC as the first-line investigation in the clinical evaluation of male breast lumps is strongly recommended.

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