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Original Research Article

Cytological Evaluation of Pathological Male Breast Lesion at SKMCH, Muzaffarpur, Bihar

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Conflict of interest: Nil

Abstract:

Background: Symptoms of breast sickness commonly include breast discomfort, nipple discharge, and palpable breast lumps. Breast cytology, which involves fine-needle aspiration, nipple discharge smear, and touch preparation, may accurately assess breast specimens. This study's goals are to categorize the different lump of the breast that breast cytology can diagnose and to assess the clinical sufficiency of narrative reporting of breast cytology results.

Objective: This study aimed to determine the cytological spectrum of various male breast lesions, in which cytomorphology of some uncommon pathological lesions encountered, and to discuss the reasons of their misdiagnoses.

Methods: In this 6 months study, a total of 50 patients underwent fine needle aspiration cytology (FNAC). In some representative case, nipple was also examined. Confirmatory histopathology was obtained in 12 cases only. Case study has been done from March 2021 to August 2021.

Results: Gynaecomastia was the most common (63.5%) male breast pathology. Invasive breast carcinoma of no special type was the most common variant of male breast malignancy. Half of the suspicious cytological lesions were confirmed as cancer, but the rest were diagnosed as fibrocystic disease and intraductal papilloma. All cases with malignant cytology matched their corresponding histopathology.

Conclusion: Cytological evaluation of male breast lesions provides highly sensitive and specific results with excellent histologic reproducibility. Thus, it should be the ideal pretherapeutic diagnostic procedure for male breasts. However, some benign pathological conditions, which are particularly associated with epithelial hyperplasia, perplex the cytomorphologic scenario into the "gray zone."

Keywords: Breast Carcinoma, Fine Needle Aspiration Cytology, Gray Zone, Gynecomastia, Male Breast.

Introduction

The adipose and glandular components that make up male breasts give them the same morphology as their female counterparts. However, ducts, which are often bound beneath the nipple-areolar complex, make up the sole component of glandular units in males [1]. Pathological lesions in the male breast are rare. Gynecomastia is the most common skin ailment in men.

In a similar vein, male breast carcinomas are rare. It accounts for 1% of all breast cancer cases in both sexes, and it affects men in roughly 1% of all cancer cases. In terms of clinical presentation, it resembles gynecomastia and any other benign pathological lesions linked to the development of the male breast. Thus, it is crucial to distinguish between these two separate pathogenic entities. Vacuum-assisted breast biopsy, which has recently changed, and core needle biopsy are the most practicable diagnostic procedures for this use. The most common male breast pathology, gynecomastia is best cured conservatively; it is therefore unreasonable to consider biopsy as the primary diagnostic intervention. On the contrary, fine needle aspiration cytology (FNAC) provides prompt and precise diagnoses economically and conveniently. This study aimed to cytologically evaluate various pathological lesions that affect the male breasts and to validate the diagnostic accuracy of FNAC against the histopathology wherever practicable diagnostic procedure or this use.

Fine needle aspiration cytology is a quick, accurate, and affordable method for locating and managing various lesions. Fine-needle aspiration of the breast is being used more frequently for the preoperative

assessment of breast lesions. Gynecomastia is the most frequent cause of benign tumor in the male breast.

Breast pain, nappy discharge, and palpable breast lumps are common symptoms of benign, premalignant, and cancerous lesions in the human mammary gland and related tissues. Breast lesions can be diagnosed by breast cytology, breast imaging, and a clinical breast exam. The most accurate component of this triple- test assessment of breast lesions is fine-needle aspiration cytology because of its high sensitivity, specificity, negative predictive value, and positive predictive value.

The clinical course of male breast cancer is aggressive, and it is highly infrequent. It is both impractical and unnecessary to perform a biopsy on every patient who has the disease, even if gynecomastia and cancer can be discriminated with confidence by histologic inspection.

Because gynecomastia, the most common male breast disease, responds best to conservative treatment, it is unreasonable to think that a biopsy will serve as the primary method of diagnosis. On the other hand, fine needle aspiration cytology (FNAC) provides affordable, timely, and accurate diagnoses.

This study's goals are to categorize the different cancers of the breast that breast cytology can diagnose and to assess the clinical sufficiency of narrative reporting of breast cytology results.

Materials and Methods

In this 6 months study, a total of 50 patients underwent fine needle aspiration cytology (FNAC). In some representative case, nipple was also examined. Confirmatory histopathology was obtained in 12 cases only. Case study has been done from March 2021 to August 2021.

Inclusion criteria and exclusion criteria

Male patients who were diagnosed with breast lesions were included in this study; however female patients were excluded from this study.

Data Collecting and Analyzing

For each aspiration, a 5ml syringe with a 23– 25-gauge needle was utilized. The air-dried smears were prepared and stained using the May-Grunwald-Giemsa method. Before employing the Papanicolaou stain, smears were also wet-fixed in 95% ethyl alcohol. Five main diagnostic categories were used to categorize the smears: in- adequate, innocuous, unusually suggestive of benign suspected of carcinoma, and malignant.

Histopathology was used to establish the cytological diagnosis, and the cytological diagnosis was then confirmed by the histological findings.

Results

Over 6 months, 50 patients with palpable breast masses underwent fine needle aspiration (FNAC) at Sri Krishna Medical College, Muzaffarpur, Bihar. 37 of them had unilateral breast tumours, and the last patient had bilateral breast lumps. Among participants with unilateral breast lumps, 21 patients had lumps in the left breast and 16 patients had lumps in the right breast. The ages of the patients ranged from 22 to 74, with a mean of 40.5. Repeat aspirations were performed in 5 cases when the initial aspiration failed; in 4 of those cases, the second aspiration yielded enough material. In 45 cases, insufficient aspirates were acquired. The aspirates were broken down into the following categories:

Non-diagnostic/unsatisfactory 2 (4%), inflammatory/ abscess 2 (4%), malignant neoplasms 6 (12%), benign neoplasms 35 (70%) (Table1).

A histological diagnosis was obtained in 21 instances. The most frequent diagnoses ween countered throughout our inquiry were keratinous cyst 2 (4%), duct carcinoma 2 (4%), lipoma 2(4%), suggestive of malignancy 1 (2%), and gynecomastia 13 (26%). Smears varied from sparse to obviously cellular in their degree of cellularity. Smears revealed large, tightly linked epithelium fragments, which frequently appeared as monolayer sheets (Table 2).

Table 1: The distribution of patients by cytological diagnosis

Cytological diagnosis	Number of cases (n=50)
Malignant neoplasms	3
Suspicious of malignancy	3
Duct carcinoma	1
Benign tumour	31
Gynecomastia	4
Keratinous cyst	2
Lipoma	2
Non diagnostic/ unsatisfactory	2
Inflammatory/abscess	2

Table 2: The cyto-histological association for the 21 patients in whom a biopsy was taken

Cytological diagnosis	Histopathological diagnosis	Number of cases (n=21)
Keratinous cyst	Keratinous cyst	2
Duct carcinoma	Duct carcinoma	1
Lipoma	Lipoma	2
Suspicious of malignancy	Duct carcinoma	1
Gynecomastia	Fibroadenoma	2
Benign tumour	Gynecomastia	13

Smears varied from sparse to obviously cellular in their degree of cellularity.

Smears revealed large, tightly linked epithelium fragments, which frequently appeared as monolayer sheets. Aspirates from the gynecomastia demonstrated moderate-to-high cellularity, with numerous tightly cohesive sheets of bimodal epithelial-myoepithelial cells and bipolar nuclei stripped at the background. (Figure 1)

Aspirates from the gynecomastia demonstrated moderate-to-high cellularity, with numerous tightly cohesive sheets of bimodal epithelial-myoepithelial cells and bipolar nuclei stripped at the back. (Figure2)

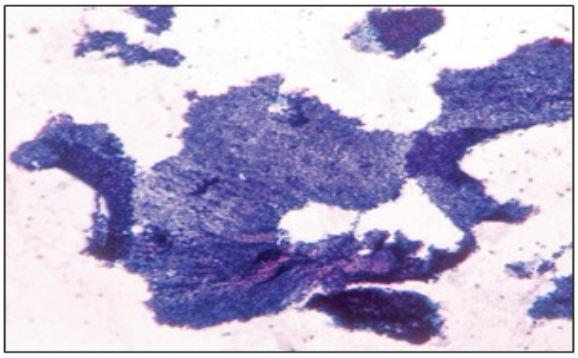

Figure 1

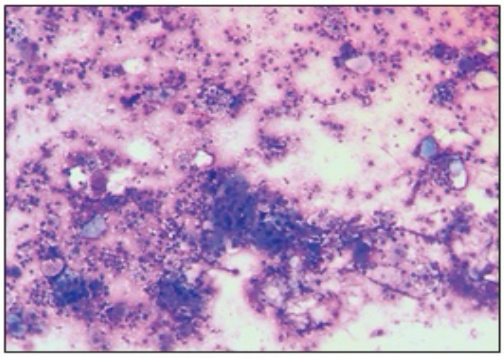

Figure 2

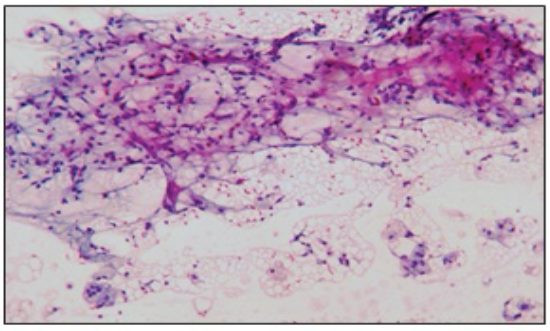

Figure 3

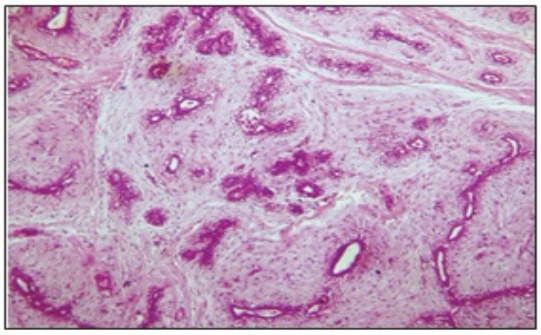

Figure 4

Figure 3: Cytologically, degenerating Adipocytic fragments, Foamy histiocytes, Giant cells & fatty vacuoles in background

Figure 4: Histologically, compact folded sheets of benign epithelial cells and stripped bipolar nuclei in gynecomastia (Papanicolaou staining,×40)

Aspirates from the subareolar abscess were characterized by anucleated squames, foreign body-type multinucleated giant cells, neutrophils, and macrophages. Granulomatous syncytial aggregates of epithelioid histiocytes, isolated lymphohistiocytic cells, background caseous necrosis, and presence of acid-fast bacilli on the ZN-stained smears were diagnostic features for tuberculosis. Two of four patient simultaneously suffered from ipsilateral axillary tuberculous lymphadenitis. Fat necrosis yielded fragments of mature and poly-vacuolated degenerated adipose tissue, foamy macrophages, multinucleated giant cells, and lymphocytes, with a muddy background of granular debris and lipid droplets. No epithelial component was present. Both lesions of chronic nonspecific mastitis yielded scanty lymphocytes and macrophages. One of the lesions was biopsied on recurrence. It featured atrophied ductules mantled immediately by lymphocytic aggregates and further surrounded by dense fibrosis. Therefore, the diagnosis was lymphocytic mastopathy). The patient with FCC complained about bilateral mastalgia. FNAC findings from both

breasts appeared fluidy with moderate cellularity. The epithelial aggregates showed mild nuclear enlargement and ample well-defined granular cytoplasm. The benign papilloma presented as a minute subareolar nodule. On cytological smears, the epithelial cells formed into tightly cohesive complex micropapillary clusters over a background of cyst fluid and stripped nuclei. On histopathology, it was diagnosed as anintracystic papilloma. Ductal carcinoma was the most common malignancy, detected cytologically in 4 cases (8%). The hypercellular smears consisted of discohesive clusters of anaplastic epithelial cells without any bare bipolar nuclei. Four of the patients manifested ipsilateral axillary lymphadenopathy, and another patient presented with multiple subcutaneous metastases over the chest wall.

The mucinous carcinoma yielded abundant stingy mucoid material. Atypical polyhedral epithelial cells appeared to be floating in singles or strips within the pool of extracellular mucin. On cytology, male breast carcinomas were simple to distinguish from gynecomastia due to their wide cellularity, dyscohesive cell groupings with nuclear piling, and anisonucleosis. Nearly every case of male breast cancer displayed the setraits. The presence of benign and malignant cells coexisted in only two cases of cancer, and one critical sign was absence of bipolar cells. Adequate diagnostic material could not be obtained in 2 cases (4%) even on repeated attempts. Three of them were treated successfully based on symptomatology. A patient underwent surgical excision, which revealed a gynecomastia. Considering all cases (i.e., benign, atypical, and malignant), no false-positive case was recorded in this study; hence, the sensitivity, specificity, negative predictive value, and positive predictive value were 100%, 91.7%, 100%, and 87.5% respectively.

Discussion

Gynecomastia is the most common male breast pathology. Its prevalence, among men with breast-related ailments, varied from 51.2% to 100% across the continents [6,7]. Asymptomatic gynecomastia is present in 60%-90% of neonates, 50%-60% of adolescents, and up to 70% of men aged 50-69 years [8]. FNAC generally features mild-to-moderate cellular yields. Cytomorphologically, the sheets of bland epithelial cells, bipolar bare nuclei, and stromal fragments resemble the fibroadenoma in women. However, unlike fibroadenoma, majority of gynecomastia cases are cured by tamoxifen or raloxifene therapy. Therefore, a pretherapeutic cytological diagnosis of gynecomastia is important to differentiate it from other pathologies that actually need surgery and hence to avert unnecessary operative intervention. Male breasts are rarely affected by inflammatory lesions. Only 4% of their pathological conditions result from inflammation [1]. Its predisposing factors include decreased immunity, older age, smoking, iatrogenic procedure, trauma, diabetes mellitus (DM), coexistent human immunodeficiency virus infection, overlying skin infection.

India has the highest burden of tuberculosis worldwide, as 27% of global patients are living here, making prevalence for pulmonary tuberculosis as 295.9 cases per 1 lakh population. Among Indian men, the prevalence is much higher at 418.4 cases per 1 lakh population. Still, tuberculous mastitisisa rare disease among Indian men. Given its non-specific clinical presentation, tuberculous mastitisis often confused with gynecomastia or breast carcinoma at the initial stage.

Clinicoradiologically, the lumps resembled gynaecomastia. Nospecific cytological features of lymphocytic mastopathy were found. FNAC is indicated for recurrent cases or for monitoring purposes after definitive therapy. Aspirates are generally paucicellular, comprising of clustered benign epithelial cells, lymphocytes, and fibroblastic stromal fragments. This case also clinically masqueraded as gynaecomastia. FNAC yielded only scant lymphohistiocytic cells without any epithelial cells, which led to the interpretation of chronic nonspecific mastitis. Finally, on histopathology, a definite diagnosis was made.

Fibrocystic disease is a nonspecific cytodiagnosis. Pathogenically, it originates from lobular units, so the ductules-only male breasts are rarely affected. Its pathogenesis is also poorly understood in men, which can be due to hormonal imbalance, paraneoplastic syndrome, or an idiopathic phenomenon. Most FCC cases were associated with gynaecomastia, as bilateral tender and knotty swellings. Representative cytological samples display cohesive sheets of benign epithelial cells often featuring apocrine changes, few foamy macrophages, and thin proteinaceous fluid in the background. Well-defined cytological features of benign breast papilloma-like fibrovascular stalks covered by columnar cells, large epithelial sheets with ruffled borders, and metaplastic apocrine cells were found. In contrast, other papillary-like proliferations consist of complex bulbous epithelial projections and lack the true fibrovascular cores.

Conclusion

FNAC is a reliable, astute, and targeted diagnostic method for the examination of breast masses in male patients. The regular use of FNAC would greatly reduce the number of unnecessary biopsies and frozen sections for histopathologic testing, particularly in cases with gynaecomastia. Therefore, while evaluating male breast masses clinically, it is strongly indicated to undergo FNAC as the initial

study. Its major drawback presents when any benign condition is associated with epithelial hyperplasia and thus expresses hypocellularity and nuclear crowding-overlapping and atypia, with scarce bipolar bare nuclei. Cytodiagnostically, such lesions are included to the quasi-specific "gray zone" category. Biopsy is mandatory for their proper classification.

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