

CYTOLOGICAL EVALUATION OF MALE BREAST LESIONS: RETROSPECTIVE ANALYSIS IN NORTHERN STATE OF INDIA.

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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 cancers of the breast that breast cytology can diagnose and to assess the clinical sufficiency of narrative reporting of breast cytology results.

Methods:

The medical files of 390 patients who visited the general surgery clinics at the Rajendra Prasad Medical College, Tanda within five years underwent retrospective analysis.

Results:

Neoplastic breast lesions accounted up 75.9% of the overall number of breast lesions, however, all diagnostic breast lesions (n = 94) were non-neoplastic. The ratio of benign to malignant lesions was 2.6:1, with 72.3% of benign and 27.7% of malignant lesions among the neoplastic lesions (n = 214). Gynecomastia (n = 33) and fibroadenoma (n = 136) were the most frequently diagnosed breast lesions in both men and women.

Conclusions:

Both malignant and non-cancerous breast lesions were correctly detected by breast cytology. By comparing our findings with previous observations made by other authors, the conclusion that was drawn was that women were more likely than men to develop neoplastic breast lesions, whereas men were more likely to develop non-neoplastic lesions.

Recommendation:

This hospital is advised to implement a synoptic reporting format that includes the diagnostic categories (C1 to C5) of the United Kingdom's National Health Service Breast Screening Programme to resolve the issues related to narrative reporting of breast cytology results.

Keywords: Breast, Gynecomastia, Cytopathology, Synoptic Reporting, Submitted: 2023-08-30
Accepted: 2023-09-07

1. INTRODUCTION.

The adipose and glandular components that make up male breasts give them the same mor-

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phology 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 [2]. Vacuum-assisted breast biopsy, which has recently changed, and core needle biopsy are the most practicable diagnostic procedures for 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. Less than 1% of the cases evaluated were male breast lesions, whereas the majority of studies were predominately female breast lesions [3,4]. Gynecomastia is the most frequent cause of benign tumors 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 [5-8]. Breast lesions can be diagnosed by breast cytology, breast imaging, and a clinical breast exam [6-8]. 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 [7-9].

The clinical course of male breast cancer is aggressive, and it is highly infrequent [10]. 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 [11]. Fine needle aspiration (FNA), which spares the patient from invasive surgical treatments, can be utilized to diagnose conditions with a high degree of confi-

dence [12]. 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 [11,12]. 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.

2. MATERIALS AND METHODS.

2.1. Study Design and Setting.

A retrospective study was conducted for five years from January 2018 to January 2023 with only male patients who were clinically diagnosed with breast lesions and submitted to Rajendra Prasad Medical College, Tanda for FNAC and histological examination.

2.2. 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. At the initial stage, 610 patients were examined for eligibility, however, 220 patients were excluded from this study due to not being eligible.

2.3. 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: inadequate, 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.

3. RESULTS.

Over 5 years, 610 patients with palpable breast masses underwent fine needle aspiration (FNAC) at Rajendra Prasad Medical College. 37 of them had unilateral breast tumors, and the last patient had bilateral breast lumps. Of the 39 patients, 39 were men. Among participants with unilateral breast lumps, 20 patients had lumps in the left breast and 15 patients had lumps in the right breast. The ages of the patients ranged from 11 to 84, with a mean of 41.5. 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: nondiagnostic/unsatisfactory 2 (4.44%), inflammatory/abscess 2 (4.44%), malignant neoplasms 6 (13.33%), benign neoplasms 35 (77.77%) (Table 1).

A histological diagnosis was obtained in 21 instances. The most frequent diagnoses we encountered throughout our inquiry were keratinous cyst 2 (9.52%), duct carcinoma 3 (14.28%), lipoma 2 (9.52%), suggestive of malignancy 1 (4.76%), and gynecomastia 13 (61.90%). 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).

It is common to observe a bimodal pattern of stroma and epithelial cells, with isolated naked bipolar/oval nuclei in the background. Only thirteen cases, one of which was a fibroadenoma, have histological confirmation. There were two cases of duct carcinoma with hypercellular smears, irregular cell clusters, and single cells but no myoepithelial cells. Significant nuclear pleomorphism, prominent nucleoli, an irregular nuclear membrane, and eosinophilic cytoplasm were all present in these cells.

Histological analysis revealed that they were infiltrating duct carcinomas (NOS). Two cases with infiltrating duct cancer had cytological diagnoses of malignancy, which were later supported by histological examination. There was only one in-

stance of lipoma that we came across, and it manifested as a distinct, spherical, soft mass that contained fat vacuoles and adipose tissue fragments. In a breast abscess case, occasional sheets of ductal epithelial cells were seen in between widespread sheets of inflammatory cells, mostly neutrophils mixed with lymphocytes and histiocytes. Several developed and anucleate squamous cells were seen in an instance of the keratinous cyst.

4. DISCUSSION.

Less than 2% of all breast masses in large FNAC breast lump studies involve men. Male breast cancer is very infrequent compared to female breast cancer [13–22]. It is now generally believed that FNAC may diagnose palpable breast masses [23]. However, the majority of studies have looked at how well FNAC diagnoses female breast masses [23]. Examining the variety of cytological anomalies in male breasts was the aim of the current investigation. In our dataset, 612 individuals underwent FNAC for the investigation of a breast lump over five years, with men accounting for 6.2% (38 out of 612) of these patients. In our study, subareolar mass was present in 51.7% (15) of the 38 cases with gynecomastia (29 out of 38). Gynecomastia affected both sides in 6.9% (2) of cases, with the left side being more frequently impacted (17 instances) than the right. Das et al.'s [12] and Martin-Bates et al.'s [24] research, which concentrated more on the left breast, produced similar results.

The fourth decade was the peak age for presentation age, which varied. A study by Russin et al. [25] states that bimodal maxima were observed in the third and seventh decades. Numerous factors that enhance periductal collagen deposition and benign duct epithelium proliferation can result in gynecomastia. [26] These several causes all have background levels of relative increases in estrogenic activity and declines in androgenic activity, or both. [27] The issue resolved on its own in 33% of pubertal cases after a year and in 93% of cases after three years, per another study [28] Our research shows that the cellularity of gynecomastia

Table 1: **The distribution of patients by cytological diagnosis.**

Cytologic diagnosis	Number of cases
Malignant neoplasms	3
Suspicious of malignancy	3
Duct carcinoma	
Benign neoplasms	31
Gynecomastia	2
Keratinous cyst	2
Lipoma	
Non diagnostic/ unsatisfactory	2
Inflammatory/abscess	2

Table 2: **The cyto-histological association for the 19 patients in whom a biopsy was taken.**

Cytological diagnosis	Histopathological diagnosis	Number
Keratinous cyst	Keratinous cyst	2
Duct carcinoma	Duct carcinoma	3
Lipoma	Lipoma	2
Suspicious of malignancy	Duct carcinoma	1
Gynecomastia	Fibroadenoma	2
	Gynecomastia	11

fine needle aspirates can vary, ranging from almost entirely acellular to densely cellular smears [12].

On cytology, male breast carcinomas were simple to distinguish from gynecomastia due to their wide cellularity, dyscohesive cell groupings with nuclear piling, and anisonucleosis [12]. Nearly every case of male breast cancer displayed these traits. The presence of benign and malignant cells coexisted in only two cases of cancer, and one critical sign was the absence of bipolar bare nuclei. Two cases of infiltrating duct carcinoma and two cases that were first considered to be malignancies but were later revealed to be duct malignancies on histological examination were both found in the current investigation. 10.5% of the cases in our analysis had infiltrating duct carcinoma, which is close to the findings of Wauters et al. (10.2%) and Westend et al. (9.8%) [29,30]. A biopsy was available in 19 out of 38 cases, or 50%, which is similar to the findings of Wauters et al. (58%) and Westend (47%) but different from the finding of Martin-Bates et al. (17%) [29, 30, 24]. Benign

lesions have a lesser chance of being biopsied.

5. 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 gynecomastia. Therefore, while evaluating male breast masses clinically, it is strongly indicated to undergo FNAC as the initial study.

6. LIMITATIONS.

The limitations of this study include a small sample population who were included in this study. The findings of this study cannot be generalized for a larger sample population. Furthermore, the lack of a comparison group also poses a limitation for this study's findings.

7. RECOMMENDATION.

This hospital is advised to implement a synoptic reporting format that includes the diagnostic categories (C1 to C5) of the United Kingdom's National Health Service Breast Screening Programme to resolve the issues related to narrative reporting of breast cytology results.

8. ACKNOWLEDGEMENT.

We are thankful to the patients and their caring parents without them the study could not have been done. We are thankful to the supporting staff of our hospital who were involved in the patient care of the study group.

9. LIST OF ABBREVIATIONS.

FNA/FNAC: Fine Needle Aspiration Cytology
NOS: Not otherwise specified

10. Source of Funding.

Nil

11. Conflict of interest.

The authors report no conflicts of interest in this work.

12. Publisher details:

Publisher: Student's Journal of Health Research (SJHR)
(ISSN 2709-9997) Online
Category: Non-Governmental & Non-profit Organization
Email: studentsjournal2020@gmail.com
WhatsApp: +256775434261
Location: Wisdom Centre, P.O.BOX. 148, Uganda, East Africa.



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