

# CYTOLOGY OF BREAST LESIONS: A RETROSPECTIVE STUDY IN A NORTHERN INDIAN STATE OF HIMALAYAS.

Aruna Gupta<sup>a</sup>, Kavita Kumari<sup>a</sup>, Vikas Gupta<sup>b,\*</sup>, Garima Thapa<sup>a</sup>

<sup>a</sup> Department of Pathology, Dr. Rajendra Prasad Medical College, Tanda, Himachal Pradesh, India.

<sup>b</sup> Department of General Surgery, Dr. Rajendra Prasad Medical College, Tanda, Himachal Pradesh, India.

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## Abstract

### Background:

Palpable breast lump, breast pain, and nipple discharge are common symptoms of breast disease. Breast cytology (fine-needle aspiration, nipple discharge smear, and touch preparation) accurately identifies benign, atypical, and malignant pathological changes in breast specimens. This study aims to determine the types of breast lesions diagnosed by breast cytology and assess the clinical adequacy of narrative reporting of breast cytology results.

### Methods:

Medical records of 390 patients presenting to breast or general surgery clinics in Dr. Rajendra Prasad Medical College, Tanda between four years were evaluated retrospectively.

### Results:

Of the 390 diagnosed breast lesions, 89.7 % (n = 350) occurred in females, while 10.3 % (n = 40) occurred in males, giving rise to a female-to-male ratio of 8.8:1. Neoplastic breast lesions (n = 296) comprised 75.9 %, while non-neoplastic breast lesions (n = 94) comprised 24.1 % of all diagnosed breast lesions. The neoplastic lesions were classified as 72.3 % (n = 214) benign and 27.7 % (n = 82) malignant, resulting in a benign-to-malignant ratio of 2.6:1. Fibroadenoma (n = 136) and gynecomastia (n = 33) were the most frequently diagnosed breast lesions for women and men, respectively.

### Conclusions:

Breast cytology effectively diagnosed neoplastic and non-neoplastic breast lesions. Neoplastic breast lesions occurred more frequently in women whereas non-neoplastic lesions occurred more frequently in men. To address the limitations associated with narrative reporting of breast cytology results, a synoptic reporting format incorporating the United Kingdom's National Health Service Breast Screening Programme's diagnostic categories (C1 to C5) is recommended for adoption by this hospital.

**Keywords:** Breast, Cytopathology, Gynecomastia, Synoptic reporting, Submitted: 2023-06-22 Accepted: 2023-06-25

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## 1. Introduction:

Breast carcinoma is one of the most prevalent malignancies among females, contributing

to an increase in global morbidity and mortality [1]. The common clinical symptoms of female breast lesions include palpable breast lump, breast pain and nipple discharge. Triple assessment of breast lesions that includes clinical, radiological and pathological evaluation (FNAC/Core needle biopsy) is a time honoured valuable ap-

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\* Corresponding author.

Email address: drvikasg1512@yahoo.in (Vikas Gupta)

proach for the management of breast lesions that can obviate the need for invasive procedures like excisional biopsy in most cases [1]. FNAC is a rapid, minimally invasive, and cost-effective procedure with a high sensitivity rate of 92-95 percent and a high PPV approaching 100 percent for the diagnosis of breast cancer [2]. The need for intraoperative procedures like frozen section for detecting breast malignancy has been reduced to around 80% with the help of the more reliable FNAC [2].

Global burden of breast cancer has posed a major public health concern with a steadily increasing occurrence worldwide [3,4]. Malignant breast disorders are grave diseases and remain to be the leading cause of mortality and morbidity among women population [5, 6]. Females in Sub-Saharan Africa have a high prevalence of neoplastic and non-neoplastic breast lesions [7]. In Eritrea, a ten-year retrospective study done by Faisal M. et al. at Eritrean National Health Laboratory (ENHL) documented that the most common tumor diagnosed in female patients was breast cancer with age standardized incidence rate of 2.7 cases in every 100,000 living females [8].

Palpable breast lump, breast pain, and nipple discharge are common manifestations of benign, premalignant, or malignant lesions in the human mammary gland and surrounding tissues [9-12]. Techniques used to diagnose breast lesions include clinical breast examination, breast imaging, and breast cytology [10, 12]. Fine-needle aspiration cytology is the most reliable component of this triple test assessment of breast lesions due to its high sensitivity, specificity, negative predictive value, and positive predictive value [11, 13]. This study aimed to determine the types of breast lesions diagnosed by breast cytology and assess the clinical adequacy of narrative reporting of breast cytology results.

## 2. Methods:

Medical records in the form of breast cytology reports from 443 consecutive patients presenting to breast or general surgical clinics at Dr. Rajendra Prasad Medical College, Tanda with pal-

pable breast lump, nipple discharge, breast pain, nipple retraction, skin changes, or axillary lymphadenopathy were accessed from the records department of pathology, cytology laboratory and examined for eligibility. This study was conducted over the period of four years from August 2018 to September 2022. Reports having patient age and sex, clinical summary, breast cytology sampling technique, microscopic findings, and conclusive breast cytology diagnosis were included in the study. Reports having major typographical errors, clinical history of breast cancer, cytological diagnosis of secondary breast diseases, and inconclusive breast cytology results were excluded from the study. A total of 390 breast cytology reports satisfied eligibility criteria. All data were analyzed using Microsoft Excel 2022 and results described using summary statistics.

## 3. Results:

The mean age of the evaluated patients was  $36.0 \pm 16.7$  (range, 10-90) years and the sex-specific mean age was  $34.6 \pm 16.2$  (range, 10-90) years for women and  $48.6 \pm 16.2$  (range, 15-78) years for men. Breast lesions were most frequently diagnosed in women aged 20-24 years ( $n = 91$ ) and 50+ years ( $n = 65$ ), and men aged 50+ years ( $n = 25$ ). The presenting complaints are summarized in Table 1. Palpable breast lump was the most common (96.7 %;  $n = 377$ ) while nipple retraction was the least common (1.3 %;  $n = 5$ ) presenting complaint. The median duration of presenting complaints in patients was 11 months for women and 4.5 months for men. The frequency distribution of all diagnosed breast lesions is shown. Fibroadenoma ( $n = 136$ ) and fibrocystic changes ( $n = 38$ ) were the most frequently diagnosed benign breast lesions whereas ductal carcinoma ( $n = 68$ ) was the most frequently diagnosed malignant breast lesion. Other frequently diagnosed breast lesions included gynecomastia ( $n = 33$ ), benign breast lesions, not otherwise specified ( $n = 20$ ), galactocele ( $n = 12$ ), intraductal papilloma ( $n = 12$ ), and fat necrosis ( $n = 12$ ).

Table 1: Presenting complaints of study population (n = 390)

Presenting complaint	Women	Men	Total
Palpable breast lump	335	42	377
Nipple discharge	29	0	29
Breast pain	18	9	27
Skin changes	22	0	22
Palpable axillary lymph node(s)	15	0	15
Nipple retraction	5	0	5
Median duration (in months)	11	4.5	8

#### 4. Discussion:

The primary objective of the present study was to determine the type and distribution of breast lesions diagnosed by breast cytology in Indian patients presenting to a tertiary referral hospital over a four year period. Of the total diagnosed breast lesions, 72.3 % were benign, which is in agreement with findings by Bjerregaard and Kung'u [14] and Panjvani et al. [16]. Fibroadenoma was the most commonly diagnosed lesion in premenopausal women, whereas gynecomastia was the most commonly diagnosed lesion in men, consistent with prospective and retrospective studies from Uganda [15], India [16], and Pakistan [17]. The most prevalent presenting complaint (377 patients) was palpable breast lump, which is consistent with previous findings in Kenya [18] and elsewhere [10, 17, 19]. Nipple discharge was the second most common presenting complaint (29 patients). Although nipple discharge is often suggestive of breast malignancy when unilateral, bloody, or associated with a breast lump [9, 20, 21], its diagnostic value is controversial [10, 20–23].

#### 5. Conclusion:

This study found that breast cytology effectively diagnosed neoplastic and non-neoplastic breast lesions. Neoplastic breast lesions occurred more frequently in women, while non-neoplastic lesions occurred more frequently in men.

#### 6. Limitations:

Due to the retrospective nature of the study, the extent and quality of the data collected may have been influenced by the nature of our solitary source, the record system. In some instances, the clinical information in the medical record lacked specificity. Inconsistency in the terminology used to report the final cytological diagnosis was another limitation that could have affected our findings.

#### 7. Recommendation:

More studies are needed to establish the suitability of triple test assessment for diagnostic evaluation of patients presenting with nipple discharge. Finally, despite the consistency of present findings with existing literature, the prevalence of breast diseases in India may be underestimated by the retrospective study design. To completely characterise the epidemiology of breast diseases in India, population-based investigations are necessary. To address the limitations associated with narrative reporting of breast cytology results, Dr. Rajendra Prasad Medical College, Tanda should adopt the recommended synoptic reporting format.

#### 8. Acknowledgement:

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## 9. List of abbreviations:

FNAC- Fine needle aspiration cytology  
PPV- Positive predictive value  
ENHL- Eritrean National Health Laboratory

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None declared

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- of Pathology, Dr. Rajendra Prasad Medical College, Tanda, Himachal Pradesh, India.
- Kavita Kumari** Assistant Professor, Department of Pathology, Dr. Radhakrishnan Medical College, Hamirpur, Himachal Pradesh, India.
- Vikas Gupta** Assistant Professor, Department of General Surgery, Dr. Rajendra Prasad Medical College, Tanda, Himachal Pradesh, India.
- Garima Thapa** Senior Resident, Department of Pathology, Dr. Rajendra Prasad Medical College, Tanda, Himachal Pradesh, India

## Author biography

**Aruna Gupta** Assistant Professor, Department