

HISTOPATHOLOGICAL SPECTRUM OF NEOPLASTIC BREAST LESIONS – A STUDY IN TERTIARY CARE CENTRE

Histopathology

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ABSTRACT

Background: Neoplastic breast lesions are major public health problem among females with markedly different outcomes of benign and malignant neoplasms. The present study was conducted to assess the prevalence, age, gender, and histological characteristics of breast cancer in a tertiary care hospital as there is an increase incidence of breast lesions among Indian women. **Aim:** The aim of the study was to analyse the various breast lesions with respect to age, gender & histopathological features in a tertiary care hospital. **Methods:** This is a retrospective study conducted from July 1st, 2021, to July 31st, 2022, in Department of Pathology, Medical College Baroda & SSG Hospital Vadodara. The specimens included were of MRM, Lumpectomy & Biopsy. The data was retrieved from histopathology requisition forms & reports. The H&E-stained slides were retrieved from the archive & reviewed. **Results:** Total 251 cases were reviewed of which 242 were females & 9 were males in the age group ranging from 12 to 85 years. Of these, 130 were benign & 120 were malignant. Fibroadenoma was the most common benign lesion & Invasive Ductal Carcinoma was the most common malignant lesion. Higher incidence of malignant lesions was observed in age group of 45-85 years and that of benign lesions in 20-40 years age group. **Conclusion:** Histopathology remains an important tool to diagnose & hence aid in management & prognosis of patient with any breast lesion. The study shows that significant number of cases of breast carcinoma were observed among neoplastic breast lesions is worrisome and a major matter of concern.

KEYWORDS

Histopathology, Infiltrating duct carcinoma, Fibroadenoma.

INTRODUCTION

Breast lesions include a wide range of histologic entities with various traits, from inflammatory lesions to malignant cancers. They are more common in women than in men.⁽¹⁾ Breast cancer is the major cause of morbidity and mortality in women globally. Breast lesions fall under a broad category of lesions that include numerous entities with a variety of traits.⁽²⁾ Worldwide, there is evidence of an increase in breast diseases as a result of availability of better screening tools and growing public knowledge of breast cancer.⁽¹⁾

The World Health Organization (WHO) estimates that 2.1 million women worldwide are diagnosed with breast cancer each year. An estimated 627,000 female cancer deaths occurred in 2018, accounting for 15% of total female cancer fatalities.⁽³⁾ India with the United States, and China account for over one-third of the breast cancer cases in the world, according to GLOBOCAN 2012. India is in a challenging condition as a result of the 11.54% rise in incidence rate and 13.82% rise in death rate from breast cancer between 2008 and 2012.^(4,5)

Breast lesions that are benign rather than malignant are more prevalent in women between the ages of 20 to 40, while the frequency of malignant diseases rises with age. After age 20, more than half of women experience the onset of a benign breast lesion of some kind.^(6,7) Breast cancer is a complex illness with significant regional variations in incidence, death, and survival rates.⁽⁸⁾

The majority of male breast lesions are benign, and the most frequent cause is gynecomastia. Male breast cancer is uncommon, accounting for less than 1% of total breast cancer cases.⁽⁹⁾

Age over 40, a history of breast disorders, a history of cancer in first-degree relatives, early menarche, and a late age at which to have a family are the risk factors for breast cancer that are most frequently present. When a patient has a benign lesion, they typically exhibit palpable nodules, thickening, masses, discomfort, and nipple discharge, yet they may also be completely asymptomatic.⁽¹⁾

Cysts, galactoceles, fibroadenomas, other benign tumours, fat necrosis, duct ectasias, papillomas, adenosis, radial scar, sclerosing

adenosis, and a range of epithelial hyperplasias with or without atypia are common among them. According to the subsequent risk of developing breast cancer, benign epithelial lesions are widely divided into three groups: non-proliferative breast lesions, proliferative breast lesions without atypia, and proliferative breast lesions with atypia.⁽¹⁰⁾

The current non-operative diagnosis of palpable breast lesions includes a 'triple assessment' of clinical examination, imaging (mammography and/or ultrasonography), and pathology which includes fine needle aspiration (FNA) or core needle biopsy (CNB).⁽¹¹⁾ Yet, the percentage of small, nonpalpable breast lesions that appear as microcalcifications on mammography has increased because of the introduction of mammographic screening programmes. The number of small tumours has also increased as a result of the growing usage of magnetic resonance imaging (MRI) scanning in high-risk women.^(12,13) As a result, the importance of a pathology diagnosis in deciding which patients to subject to surgery or follow-up has increased, and the certainty with which surgeons can make these choices depends on how conclusive non-operative pathology diagnosis are.⁽¹⁴⁾ The gold standard for the establishment of a diagnosis is histopathological examination.⁽¹⁾ Anushree CN et al conducted a study to analyse the histological spectrum of different neoplastic and non-neoplastic lesions, their age distribution, and clinical features from various types of biopsies, lumpectomy and mastectomy specimens. They found that majority of patients had benign lesions. The most common benign lesion was found to be fibroadenoma whereas most common malignancy was 'No special type' invasive carcinoma.⁽¹⁵⁾ Lekshmi DRM et al also found that the most prevalent benign neoplasm was fibroadenoma, and the majority of lesions were benign. Invasive carcinoma of no particular type was seen in the vast majority of instances with malignant neoplasms (NST) in their retrospective study.⁽¹⁾

As there is increase in the breast lesions among the Indian women, we conducted this study with the aim of evaluating the frequency, age, gender and histopathological features of breast carcinoma in a tertiary care hospital.

MATERIALS AND METHODS

This was a retrospective study conducted from July 1st, 2021, to July 31st, 2022, in Department of Pathology of Baroda Medical College & SSG Hospital Vadodara.

All breast specimens comprising of Modified Radical Mastectomy (MRM), Lumpectomy & Biopsy received for histopathological examination, suspected for neoplastic and non-neoplastic lesions of the breast during the study period were included in the study.

All the received biopsies and specimen were fixed in 10% buffered formalin. After routine gross examination and processing, Haematoxylin and Eosin staining for histopathological examination was done. The H&E-stained slides were retrieved from the archive & reviewed. The data was retrieved from histopathology requisition forms & reports.

The data were analysed according to age distribution, nature of specimen, and histopathology. The breast lesions were categorized as benign, malignant and borderline. The age wise distribution of the patients with category of breast lesion was also analysed.

Statistical Analysis

Descriptive statistics are tabulated as counts & percentages for categorical variables. Numerical continuous variables, e.g., age, gender are expressed as mean $\pm$ SD.

RESULTS

Present study includes data of 252 patients out of which 243 patients were females (96.42%) and 9 patients were males (3.57%). The age of the patients ranged from 12 to 85 years. The age wise distribution of the patients is given in table 1.

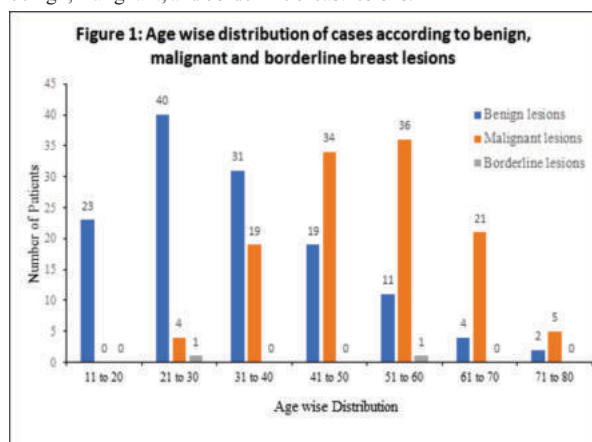
Table 1: Age-wise Distribution Of The Patients

Age Groups (in years)	Number of patients
11-20	23 (9.1)
21-30	45 (17.9)
31-40	50 (19.8)
41-50	53 (21.0)
51-60	48 (19.0)
61-70	25 (9.9)
71-80	07 (2.8)
81-90	01 (0.4)
Total	252 (100)

Numbers in parentheses indicate percentage.

The maximum number of patients with breast lesion are within age group of 41-50 years (21%) followed by age group of 31-40 years (19.8%). So, present study concludes that the maximum prevalence of breast lesions diagnosed in our institute was between age of 31 to 50 years. The prevalence in younger and older population is less.

Among 252 patients, 130 patients had benign breast lesion, 120 patients had malignant breast lesion whereas only two patients had borderline breast lesion. Figure 1 shows age wise distribution of benign, malignant, and borderline breast lesions.



The maximum number of patients with benign lesion were in the age group of 21-30 years of age whereas maximum number of the patients with malignant lesions were in age group of 51-60 years of age.

It was observed that among all cases, right sided breast lesions (52%) were more common than left sided breast lesions (46%). Only in four cases (2%) bilateral breast lesions were present.

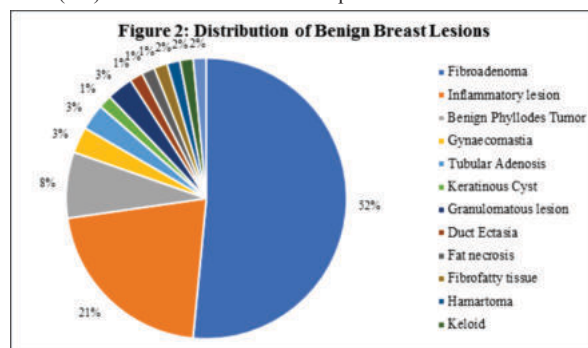


Figure 2 shows the different types of benign lesions observed in 130 cases of benign breast lesions and figure 3 shows distribution of 120 malignant lesions. Among the various benign lesions, fibroadenoma was the most common lesion (52% of benign lesions)(Figure 4) followed by inflammatory lesions (21% of benign lesions) and benign phyllodes tumour 8%(Figure 5).

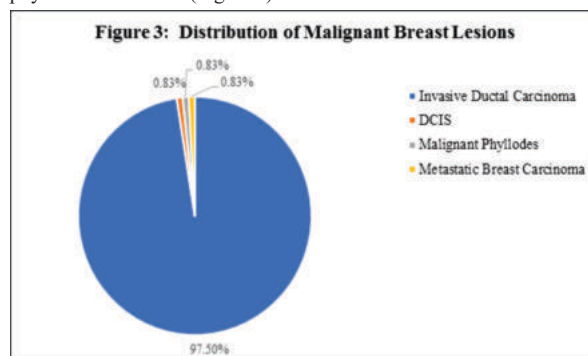


Figure 3 shows distribution of all types of malignant lesion cases the most common malignant lesion i.e., 117 (97.5%) cases of malignant lesions was invasive ductal carcinoma (Figure 6 & 7)

DISCUSSION

Present retrospective study assessed histopathological spectrum of breast lesions and the data collected from from histopathology requisition forms & reports. We analysed data of 252 patients in which 243 (96.42%) were females and nine (3.57%) were males. It has been established in the previous studies that prevalence of breast lesions is very common in females than males. The proportion of females among the patients with breast lesions in the previous studies was found to range between 96.3% to 97.3%. On the other hand, proportion of males was found to be between 2.7-3.7%.^(1;16;17;18;19) This data is in consensus with the findings of present study.

The majority of patients in our study were between age group of 21-60 years of age. We broadly categorised the patients in malignant, benign, and borderline lesions. Among all patients, more number of patients had benign lesions (51.59%). The patients with malignant lesions were found to be 47.62%. It is observed that the benign lesions are common in younger population (21-30 years of age) whereas malignant lesions in older population (51-60 years of age). Lekshmi DRM et al analysed 980 patients in their study and categorised patients into benign neoplasm, malignant neoplasm and non-neoplastic lesions. The maximum number of patients in their study had malignant neoplasms (53.16%). There were only 13.26% of patients with non-neoplastic lesions. They also observed that the age group 41-80 years had a much greater incidence of malignancy, and benign tumours were largely seen in the second and third decade.⁽¹⁾ Benign lesions were found to be more common in the study by Yadav DS and Jaiswal DY. Malignant lesions peak between the ages of 41 and 70, while benign lesions peak between 11 and 30 in their study.⁽¹⁹⁾ Anushree CN et al. found that among the 100 specimens 46 cases were benign, 35 cases were malignant whereas 19 were non-neoplastic. They also found that inflammatory breast lesions peak between the ages of 21 and 30, benign lesions between the ages of 31 and 40, and malignant lesions between the ages of 51 and 60.⁽¹⁵⁾ Of the 185 cases of breast lesions, 151 (81.62%) were determined to be benign, and 34 (18.37%) to be malignant in the retrospective study by

Divyasree N et al. The majority of patients (57.2%), ranged in age from 21 to 40 years in their study.⁽²⁰⁾ The data of current study is in consensus with most of the other studies. There is only one study we came across had more common malignant lesions than benign lesions. This difference can be due to the variation in the average age of the patients. In present study, there were more right sided breast lesions (52%) than left sided (46%) or bilateral lesions (2%). The involvement of the right breast was reported to be 52.22% by Pudale S and Tonape SD and 52% by Koorapati R and Kishan B, which is in good agreement with our findings.^(21;22)

The majority of comparable research found that the most prevalent benign neoplasm was fibroadenoma, and the most prevalent malignant neoplasm was NST type of Invasive Ductal Carcinoma.^(15; 20; 19) The present study is consistent with a number of studies conducted around the world. The incidence of fibroadenoma among benign lesions was 52%. While the rates reported by other studies are 32% by Anushree CN et al, 46.5% by Divyasree N et al and 77.33% by Yadav DS and Jaiswal DY.^(15; 20; 19) The difference in the rates is most probably due to variation in the sample size in every study but most common benign lesion is found to be fibroadenoma in every study.

In this study, the most common histological type was invasive ductal carcinoma accounting for 117 (97.5%) of the 120 cases of malignant lesions. A study by Shanthi V et al. found that out of 28 cases, 23 had ductal cell carcinoma as the diagnosis.⁽²³⁾ The most prevalent cancer, with 12 cases, was invasive duct carcinoma-no specific type in the study by Yadav DS and Jaiswal DY.⁽¹⁹⁾ Anushree CN et al also had 22% of invasive duct carcinoma-no specific type in their study.⁽¹⁵⁾

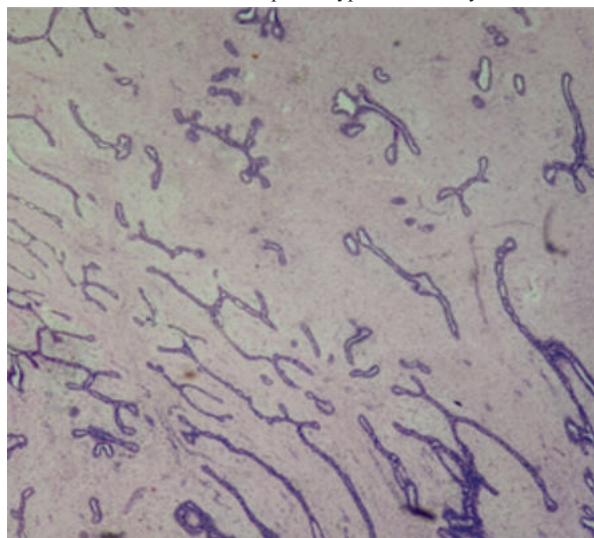


Figure 4: Fibroadenoma Showing Epithelial And Stromal Proliferation (H&E-40x)

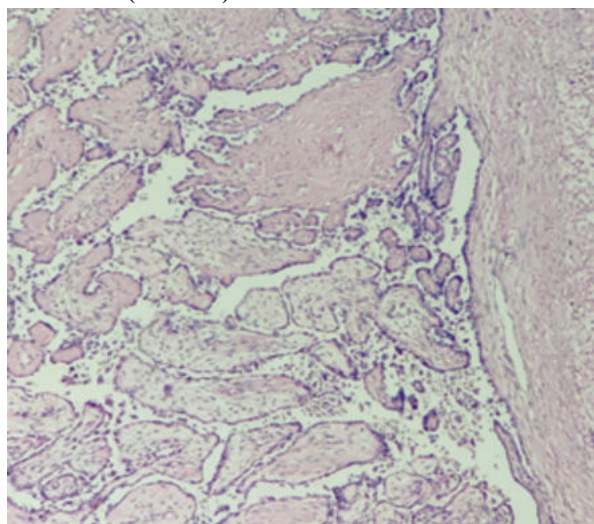


Figure 5: Benign Phyllodes Tumor Showing Leaf Like Projections And Predominant Stromal Proliferation (H&E –40x)

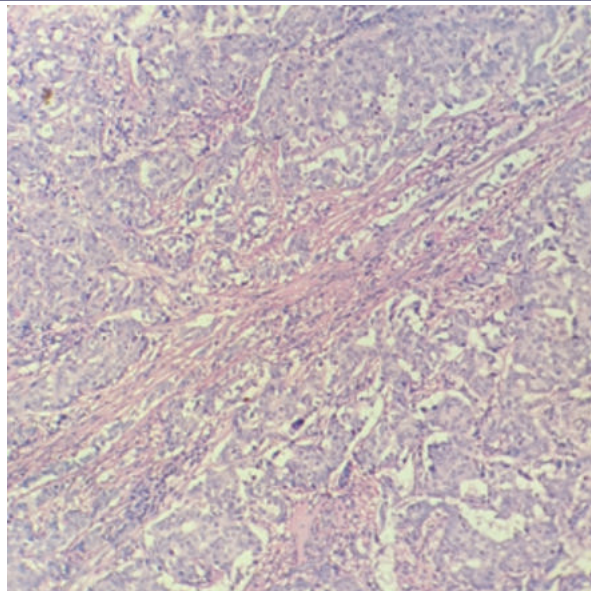


Figure 6: Invasive Ductal Carcinoma (H&E –40x)

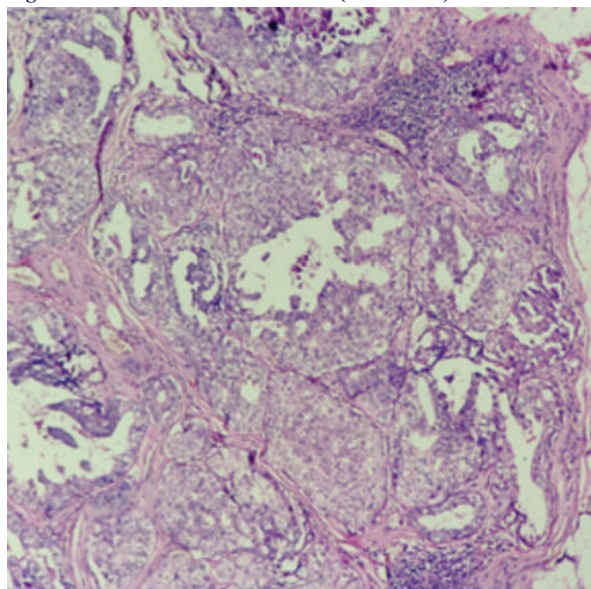


Figure 7: Invasive Ductal Carcinoma - Micropapillary Variant (H&E –40x)

CONCLUSION

Histopathological study of breast lesions plays an important role in diagnosis, treatment and prognosis of breast lesions. This study highlights the distinct incidences and histopathological characteristics of wide range of breast diseases. As this was a hospital-based study, it might not reflect the exact scenario of the population at large. The most frequent benign lesion is a fibroadenoma. Invasive duct carcinoma, the most prevalent of the malignant tumours, is seen in older women. The risk of developing cancer rises with age. Histopathological results can help in early breast lesion diagnosis. For patient management, the pattern of breast lesions is useful information.

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