

HISTOPATHOLOGICAL SPECTRUM OF BREAST LESIONS IN A RURAL TERTIARY CARE CENTRE: A RETROSPECTIVE STUDY

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ABSTRACT

Background: Breast lesions encompass a diverse group of pathological conditions, ranging from benign and inflammatory processes to premalignant lesions and invasive malignancies. Histopathological evaluation plays a pivotal role in confirming the diagnosis, characterizing the nature of these lesions, and facilitating appropriate clinical management. The aim of this study was to determine the frequency of breast lesions, analyse their histopathological spectrum, and classify them as inflammatory, benign, premalignant, and malignant entities. **Materials and Methods:** The retrospective study was carried out in the Department of Pathology, Government Nagapattinam Medical College. A total of 150 breast lesions were analyzed among patients aged between 13 to 80 years from both genders. **Results:** In the present study, majority of the samples were from females (96.7%). We observed that among the 150 breast lesions examined, 70% were benign lesions, while 25.3% were malignant lesions. We also observed inflammatory and premalignant lesions among 2.7% and 2.0% of the samples respectively. The most frequently observed benign lesion was fibroadenoma (46%). The most common malignant lesion in our study was invasive carcinoma of no special type (ductal) (20%). In our study, benign lesions were mainly seen in patients aged 21–50 years, whereas malignant lesions occurred more often in those older than 50 years. **Conclusion:** Benign breast lesions were more frequently encountered than malignant lesions in the present study. Histopathological examination remains essential for the accurate diagnosis and characterization of breast lesions. Early detection, together with timely histopathological evaluation, can facilitate appropriate management and may contribute to improved outcomes and reduced morbidity associated with breast cancer.

INTRODUCTION

Breast lesions possesses significant public health problem globally, due to their increased prevalence as well as its impact on the quality of life of the affected person. Breast lesions comprise a wide variety of pathological conditions such as inflammatory, benign, premalignant and invasive neoplasms. Delayed diagnosis is associated with an increased risk of morbidity and mortality. Breast lesions commonly present as palpable breast lumps, nipple discharge, pain or localized swelling. As benign and malignant breast lesions may show overlapping findings on clinical examination and radiological investigations, histopathological examination is essential for confirming the diagnosis and accurate categorization of these lesions.^[1-5]

Benign breast conditions account for a significant proportion of breast lesions. It is particularly

common among younger women, with fibroadenoma being the most commonly observed benign lesion followed by fibrocystic change in routine clinical practice. Although most benign breast lesions have a favorable prognosis, some proliferative lesions may carry a higher risk of progression to malignancy. Therefore, careful histopathological assessment is important for establishing the diagnosis and planning appropriate follow-up. Despite advances in the diagnosis and treatment of malignant breast lesions, it remains an important cause of cancer-related morbidity and mortality among women worldwide. Breast cancer is currently the most commonly diagnosed cancer globally, with its incidence exceeding that of lung cancer. The disease still remains as a major public health concern, particularly in low- and middle-income nations.^[6-8]

This study aimed to estimate the frequency of breast lesions as well as to analyse their spectrum in rural Tamil Nadu. The lesions were categorized as

inflammatory, benign, premalignant, and malignant entities. Their distribution was also analyzed in relation to the age and sex of the patients.

MATERIALS AND METHODS

This retrospective study was undertaken in the Department of Pathology, Government Nagapattinam Medical College. A total of 150 histopathologically diagnosed breast lesions from patients aged 13–80 years were reviewed. Cases with a histopathological diagnosis of a breast lesion were retrieved from the departmental records and pathology archives for the study period. All patients, irrespective of age or sex, whose breast specimens were examined histopathologically were eligible for inclusion. Cases with incomplete pathological documentation, inadequate tissue for diagnosis, duplicate records, or missing essential clinicopathological information were excluded from the study. Breast lesions were categorized into benign, malignant, inflammatory, and premalignant groups based on histopathological findings. Quantitative variables were presented as mean $\pm$ standard deviation (SD). Categorical variables were reported as percentages. The association between the variables was assessed using the unpaired t-test. A p value below 0.05 was considered statistically significant. The study was undertaken after obtaining approval from the Institutional Ethics Committee. All patient related information were kept confidential, and the data collected and reviewed for this study were anonymized before analysis.

RESULTS

In the present study, we analysed 150 histopathologically diagnosed breast lesions. The most common age group in our study was 21–50 years (50%), followed by ≤ 20 years (32.7%) and ≥ 51 years (17.3%). Females constituted majority of the study population (96.7%), while males accounted for only 5 (3.3%) participants. Regarding menopausal status, 111 (74.0%) participants were pre-menopausal, 34 (22.7%) were post-menopausal, and 5 (3.3%) were not applicable. Right-sided breast lesions (55.3%) were more common than left-sided breast lesions (36.7%). Bilateral breast lesions and lesions involved the right accessory breast were observed in 7.3% and 0.7% of the study participants respectively. Excision biopsy specimens were the most commonly received specimens (69.3%), followed by Modified radical mastectomy (16.7%) and true-cut biopsy specimens (5.3%). Histopathological examination revealed that benign breast lesions were the commonest (70.0%), followed by malignant lesions (25.3%), inflammatory lesions (2.7%), and premalignant lesions (2.0%).

A statistically significant association was observed between age and the histopathological category of breast lesions. All lesions among participants aged

≤ 20 years were benign, whereas malignant lesions were predominantly observed in patients aged ≥ 51 years (19 cases) and those aged 21–50 years (19 cases). Malignant lesions were more common in postmenopausal women (25 cases). Benign lesions were predominantly seen in pre-menopausal women (96 cases). No statistically significant association was found between gender and lesion category or between laterality and lesion category. In contrast, specimen type demonstrated a statistically significant association with lesion category ($p < 0.001$).

Among the 150 breast specimens, fibroadenoma was the most frequently encountered histopathological diagnosis, accounting for 69 cases (46.0%). The second most commonly observed breast lesion was invasive carcinoma of no special type (ductal), which accounted for 30 cases (20.0%). Fibroadenoma with fibrocystic changes constituted 17 cases (11.3%), while fibrocystic changes alone accounted for 5 cases (3.3%). Gynecomastia was identified in 4 cases (2.7%). Atypical ductal hyperplasia, duct ectasia, phyllodes tumour, and tubular adenoma were less frequent, with 2 cases (1.3%) of each. One case (0.7%) each was recorded for acute inflammatory pathology, duct ectasia with carcinoma in situ, granular cell tumour, invasive lobular carcinoma, mucinous carcinoma, metaplastic carcinoma, malignant phyllodes tumour, lymphocytic mastitis, lymphocytic mastopathy, mastitis, proliferative breast disease without atypia, usual ductal hyperplasia, myxoid fibroadenoma, invasive breast carcinoma with medullary pattern, invasive breast carcinoma with mucinous component, invasive breast carcinoma (clear cell tumour), and metaplastic spindle cell carcinoma.

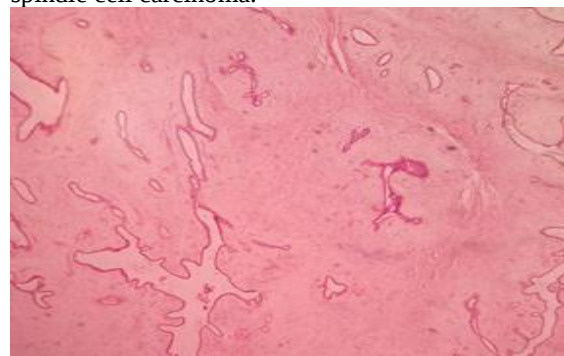


Figure 1: Fibroadenoma

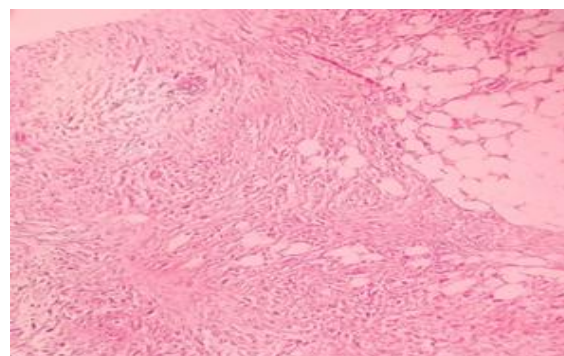


Figure 2: Invasive carcinoma of no special type (Ductal)

Table 1: Sociodemographic characteristics and pathological features of the study participants (n=150)

Variables	Frequency	Percentages
Age		
≤ 20 years	49	32.7
21 – 50 years	75	50.0
≥ 51 years	26	17.3
Gender		
Female	145	96.7
Male	5	3.3
Menopausal Category		
Not Applicable	5	3.3
Post-Menopausal	34	22.7
Pre-Menopausal	111	74.0
Laterality		
Bilateral	11	7.3
Left	55	36.7
Right Accessory	1	.7
Right	83	55.3
Specimen type		
Core needle biopsy	2	1.3
Excision biopsy	104	69.3
Incision biopsy	4	2.7
Microdochestomy	1	.7
Modified radical mastectomy	25	16.7
True cut biopsy	8	5.3
Wide local excision	5	3.3
Simple mastectomy	1	.7
Category		
Benign	105	70.0
Inflammatory	4	2.7
Malignant	38	25.3
Premalignant	3	2.0

Table 2: Correlation between various study characteristics and category of the lesions

Variables	Benign	Inflammatory	Malignant	Premalignant	p value
Age					
≤ 20 years	49	0	0	0	< 0.001*
21 – 50 years	52	2	19	2	
≥ 51 years	4	2	19	1	
Gender					
Female	101	4	37	3	0.946
Male	4	0	1	0	
Menopausal Category					
Not Applicable	4	0	1	0	< 0.001*
Post-Menopausal	5	2	25	2	
Pre-Menopausal	96	2	12	1	
Laterality					
Bilateral	11	0	0	0	0.540
Left	36	3	15	1	
Right Accessory	1	0	0	0	
Right	57	1	23	2	
Specimen type					
Core needle biopsy	1	0	1	0	< 0.001*
Excision biopsy	96	3	4	1	
Incision biopsy	2	0	2	0	
Microdochestomy	1	0	0	0	
Modified radical mastectomy	0	0	25	0	
True cut biopsy	2	1	4	1	
Wide local excision	3	0	1	1	
Simple mastectomy	0	0	1	0	

*p value < 0.05 was considered statistically significant.

Table 3: Histopathological findings of the observed specimens (n=150)

Variables	Frequency	Percentage(%)
Fibroadenoma	69	46
Invasive breast carcinoma of no special type	30	20
Fibroadenoma with fibrocystic changes	17	11.3
Fibrocystic changes	5	3
Gynecomastia	4	2.7
Atypical ductal hyperplasia	2	1.3
Duct ectasia	2	1.3
Phyllodes tumour	2	1.3

Tubular adenoma	2	1.3
Acute inflammatory pathology	1	0.7
Duct ectasia along with features of carcinoma in situ	1	0.7
Granular cell tumour	1	0.7
Invasive breast carcinoma (Clear cell tumour)	1	0.7
Invasive breast carcinoma with Medullary pattern	1	0.7
Invasive breast carcinoma with mucinous component	1	0.7
Invasive lobular carcinoma	1	0.7
Lymphocytic mastitis	1	0.7
Lymphocytic mastopathy	1	0.7
Malignant phyllodes tumour	1	0.7
Mastitis	1	0.7
Metaplastic carcinoma	1	0.7
Metaplastic spindle cell carcinoma	1	0.7
Mucinous carcinoma	1	0.7
Myxoid Fibroadenoma	1	0.7
Proliferative breast disease without atypia	1	0.7
Usual Ductal Hyperplasia	1	0.7

DISCUSSION

Breast lesions are being diagnosed with increasing frequency, which may be attributed to greater awareness among women, improved access to health-related information, and the growing practice of breast self-examination. Globally, benign breast lesions are more frequently encountered than inflammatory and malignant lesions. In the present study we analyzed 150 specimens to determine the frequency and spectrum of breast lesions and classify the observed lesions into inflammatory, benign, premalignant, and malignant categories.

Half of the study participants were aged 21–50 years (50%), while 32.7% were ≤ 20 years and 17.3% were ≥ 51 years. Benign breast lesions were significantly more frequent in participants younger than 20 years, whereas malignant lesions were significantly more frequent in those aged ≥ 51 years. Similar findings were reported by Malvia et al,^[9] who observed that benign breast lesions were more common among younger and premenopausal women in India and the malignant lesions became more common with increasing age. Similar observations have also been documented by Bhavani et al,^[10] and Manasa et al.^[11] We observed that the breast lesions were more common among the females as compared to male. Bhavani et al,^[10] noted that in their study 93.6% of the specimens were females while Dnyaneshwar et al,^[12] observed that 97.8% were female patients. These findings suggested that breast lesions are more common among females than males.

In the present study we found that right-sided breast lesions were more frequently observed (55.3%) as compared to left-sided lesions (36.7%) followed by bilateral lesions. Rao et al,^[13] reported that unilateral breast involvement was more common than bilateral involvement, with a slight predominance of right-sided lesions. Bhavani et al,^[10] Raju et al,^[14] and Kalyani et al,^[15] have reported no significant association between the involved breast sides and the nature of the lesion similar to the observations in our

study. Although the reasons for differences in breast lesion laterality remain unclear, variations in breast anatomy and tissue volume have been proposed as possible contributing factors.^[10–15] We observed that benign breast lesions were more common than malignant breast lesions. The observation made by Maurya et al,^[16] Oluwle et al,^[17] and Pai et al,^[18] are in line with our observations. Fibroadenoma was the commonest observed benign lesion in our study similar to the findings documented by Maurya et al,^[16] Sree et al,^[19] and Malik et al.^[20] Studies conducted by Bhavani et al,^[10] Dnyaneshwar et al,^[12] and Kalyani et al,^[15] have reported that invasive carcinoma of no special type (ductal) was the commonest malignancy. These observations were similar to the observations made in our study.

CONCLUSION

In our present study, benign breast lesions were more frequent than malignant lesions. Histopathological examination played an important role in establishing an accurate diagnosis. Timely evaluation of suspected malignant lesions may help in appropriate patient management and improve clinical outcomes. Fibroadenoma was the most commonly observed breast lesion, followed by invasive carcinoma of no special type (ductal). Histopathological evaluation helps in distinguishing benign lesions from malignant ones. Invasive carcinoma of no special type (ductal) represented 20% of the cases in our study, highlighting the importance of awareness, regular screening, and timely diagnosis.

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an effective analysis of the histopathological spectrum of breast lesions and their clinicopathological characteristics in a rural tertiary care setting.

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REFERENCES

1. Siddiqui MS, Kayani N, Pervez S, Aziz SA, Muzaffar S, Setna Z, et al. Breast diseases: a histopathological analysis of 3279 cases at a tertiary care center in Pakistan. *Journal of Pakistan Medical Association*. 2003;53(3):94.
2. Ghoghari MD, Manmath SY. A Histopathological Study of Breast Lesions in a Tertiary Care Center: A One-Year Retrospective Analysis. *International Journal of Pharmaceutical and Biological Science Archive*. 2016; 4(4): 96-103.
3. Rosai J. Rosai and Ackerman's Surgical Pathology. 11th ed. Philadelphia: Elsevier; 2018.
4. Chalya PL, Mabula JB, Rambau P, Mchembe MD, Kahima KJ, Chandika AB, Giiti G, Masalu N, Ssentongo R, Gilyoma JM. Marjolin's ulcers at a university teaching hospital in Northwestern Tanzania: a retrospective review of 56 cases. *World journal of surgical oncology*. 2012 Feb 15;10(1):38.
5. Strobbe L. 383 Contribution of cytological CSF analysis to the management of patients with breast cancer; a retrospective analysis over two decades. *European Journal of Cancer Supplements*. 2010 Jan 1.
6. Guray M, Sahin AA. Benign breast diseases: classification, diagnosis, and management. *Oncologist*. 2006;11(5):435-49. doi:10.1634/theoncologist.11-5-435.
7. Dupont WD, Page DL. Risk factors for breast cancer in women with proliferative breast disease. *N Engl J Med*. 1985;312(3):146-51. doi:10.1056/NEJM198501173120303.
8. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin*. 2021;71(3):209-49. doi:10.3322/caac.21660.
9. Malvia S, Bagadi SA, Dubey US, Saxena S. Epidemiology of breast cancer in Indian women. *Asia Pac J Clin Oncol*. 2017;13(4):289-95. doi:10.1111/ajco.12661.
10. Bhavani C, Neeraja M, Sravani P. A study of histopathological spectrum of breast lesions in a tertiary care hospital. *International Journal of Clinical and Diagnostic Pathology* 2019; 2(2): 356-360
11. Manasa Reddy M, Raghu K. Histopathological Spectrum of Neoplastic and Non-neoplastic Breast Lesions: A Two Years Study. *Int J Sci Stud*. 2017; 4(11):158-162
12. Dnyaneshwar JS, Kale PB, Giri A, Valand AG. A Histopathological study of Neoplastic and Non-Neoplastic Breast lesions at a Rural tertiary care centre in India; *Indian Journal of Pathology: Research and Practice*. 2017; 6(2):387-392.
13. Rao SP, Rajkumar A, Satyanarayana V. Clinicopathological study of breast lesions in a tertiary care hospital. *J Clin Diagn Res*. 2016;10(4):EC05-EC08.
14. Raju GC, Jankey N, Naraynsingh V. Breast disease in young west Indian women: an analysis of 1051 consecutive cases. *Postgrad Med. J*. 1985; 61:977-8.
15. Kalyani S, Mehraj Banu OA. Study of Breast Lesions in the tertiary health care center. *International Journal of recent trends in Science and Technology*. 2016; 18(3):415-419
16. Maurya G, Singh SK, Pandey P, Rashmi. Histopathological spectrum of neoplastic and non-neoplastic breast lesions: A three years study in rural tertiary care center. *International Journal of Medical Science and Clinical Invention* 2020; 7(1): 4721-4725
17. Oluwole SF, Freeman HP. Analysis of benign breast lesions in blacks. *Am J Surg*. 1979; 137:786-789
18. Pai S. The spectrum of benign breast diseases among females: A 6-year histopathological study. *Indian journal of Pathology and Oncology*. 2019;6(4):561- 567
19. Sree ND. clinicopathological study of breast lesions over a period of one year in a tertiary care center. *Int J Res Med Sci*. 2018 Oct;6(10):3397-3402.
20. Malik M, Salahuddin O, Azhar M, Dilawar O, Irshad H, Sadia SA. Breast diseases; spectrum in wah cantt; POF hospital experience. *Professional Med J*. 2010 Sep;17(3):366-72.