Original Research Article

Histopathological study of distribution of non-neoplastic and neoplastic lesions in breast

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ABSTRACT

Introduction: Breast carcinoma is no longer seen as a single disease but rather a multifaceted disease comprised of distinct biological subtypes with varied natural history, presenting a diverse spectrum of clinico-pathological and molecular features with different therapeutic and prognostic implications. The present study was designed to evaluate the frequency, age, gender and histopathological features of breast carcinoma.

Materials and Methods: All specimens of mastectomy, lumpectomy and tru cut biopsies for histopathological examination were included except known case of malignancy and treated for malignancy. It was a retrospective study conducted in the Department of Pathology, GMERS Medical college and Civil Hospital, Sola, Ahmedabad from June 2017 to June 2019. The clinical details were recorded as per the proforma. Tissue for H&E sections were fixed in 10% formalin and subjected to routine paraffin embedded processing and stained with Hematoxylin and Eosin.

Results: Out of the total 230 cases of breast lesions, 113(49.13%) were diagnosed as benign neoplasm, 66 cases were malignant (28.69%) and 51 cases (22.18 %)were other non neoplastic conditions. Maximum numbers of patients, 109 cases (47.39%) were between 11-30 years. Out of 66 malignant breast lesions, 53 were diagnosed as Infiltrative duct cell carcinoma (80.30 %), followed by malignant phylloides.

Conclusion: The pattern of breast lesions provides information about clinicopathological profile of breast lesions. Histopathological diagnosis should be correlated with clinical diagnosis for patient's betterment.

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1. Introduction

Breast is a modified sweat gland composed of both epithelial and connective tissue elements.[1] Therefore neoplasms arising from breast have to be classified separately. Breast cancer is the most common malignancy in women in India.[2] Increases in the cases are related to birth of child in later age, shorter period of breast feeding, nulliparity or low parity. Breast diseases are more prevalent among females as compared to males and the pattern of breast diseases and their etiology varies among different countries and ethnic groups.

Breast cancer is one of the most frequently occurring cancer and cancer related deaths are highly prevalent worldwide, which has become a major public health challenge. Aim of this study is to understand spectrum of breast lesions in our geographic area and comparision of findings with other studies.

2. Materials and Methods

2.1. Inclusion criteria

All mastectomy, lumpectomy and trucut biopsy specimens received for histopathological examination suspected for neoplastic and non-neoplastic lesions of breast during the study period were included.

2.2. Exclusion criteria

Women who were known case of malignancy and had been treated for malignancy earlier and come for follow up were excluded.

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2.3. Study design

The present study was a retrospective study of 230 cases undertaken at the Department of Pathology, GMERS Medical College, Sola from June 2017 to June 2019. The specimens were received in different forms such as excisional biopsy [162 cases], modified radical mastectomy [39 cases], simple mastectomy [6 cases], tru cut biopsy [16 cases] and incisional biopsies [7 cases].

The clinical information was obtained from the biopsy requisition forms and the indoor case papers. Detailed gross examination was done and the specimens were fixed in 10% formalin followed by thorough sampling. For malignant tumors, the deeper surface was inked for examination of deep surgical margin. After fixation, representative tissue bits were taken from tumor proper, nipple and areola, deep surgical margin, adjacent breast and lymph nodes if available. The tissue bits were processed to make paraffin blocks. The sections were cut at 3-4 micron thickness and were stained with Hematoxylin and Eosin and microscopic examination was done.

The neoplastic lesions were classified according to WHO classification 2012.[3] Invasive Ductal carcinoma was graded according to Nottingham modification of Bloom – Richardson grading system.[4] The neoplastic lesions were analysed according to age distribution, nature of specimen, and histopathology. The non neoplastic lesions were studied according to the age distribution and histopathology. Mastitis was further analyzed according to its types.

3. Results

Histopathological analysis of all the cases is shown in Table 1. Of the total 230 cases, 179 cases (77.8%) had neoplastic lesions, 51 (22.2%) cases had nonneoplastic lesions. Total 113 (49.13 %) benign tumors were found. Fibroadenoma was the most common benign tumor, seen in 101 cases (43.9%) followed by phylloides seen in 8 cases (3.38%). Total 66 malignant tumors (28.69 %) were observed. The vast majority of cases with malignant breast tumors had invasive ductal carcinoma, no special type (53 cases) (Figures 1 and 2). The special subtypes encountered were invasive lobular carcinoma (3 cases)(Figures 4 and 5), tubular carcinoma (1 case), mucinous carcinoma (1 case), invasive papillary carcinoma (1case)(Figure 6) and cribriform carcinoma (1 case) (Figure 8). One patient had Ductal carcinoma in situ and 5 patients had malignant phylloides (Figure 3). Non neoplastic lesions were seen in 5 1 women (22.2%). Mastitis was the commonest nonneoplastic lesion (16 cases). There were 9 case s of gynecomastia in male (3.91%).

4. Discussion

Out of 230 cases of breast lesions, 113 cases (49.1 3%) were benign neoplasms, and 51 cases (22.18%) were

Fig. 1: Shows gross picture of invasive ductal carcinoma of breast – NST type with whitish infiltrating growth invading normal breast.
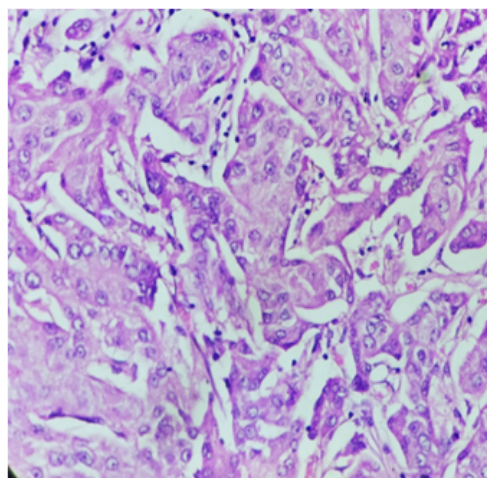

Fig. 2: Microscopic picture of invasive ductal carcinoma of breast –NST type showing marked pleomorphism, mitotic activity and least tubule formation suggesting Grade III modified Bloom Richardson score in H & E stain under 400x.

non neoplastic conditions and 66 cases (28.69 %) were malignant. Out of all nonmalignant lesions fibroadenoma constitutes most common lesion with 101 cases (43.48%). This was similar to study of Mansoor I[5] and another study by Adesunkanmi AR et al,[6] ,Amr[7] et al, reported 30.7%, Kulkarni et al,[8] Malik et al[9] 41% cases of fibroadenoma.

In present study the most common age of fibroadenoma was second and third decade which is comparable to the above studies.

In the present study, the ratio of benign to malignant lesions were 2.4:1, while it is 4.4:1 in Sree ND et al,[10] Kumar M[11] et al, studied that in Indian rural population the benign breast diseases are 5 to 10 times more common than breast cancers; but in our study it benign lesions are almost two times more than malignant lesions. While Aisha Memon[12] A et al, conducted in tertiary care center of

Table 1: Histopathological distribution of breast lesions

Category	Diagnosis	No of cases	Percentage
	Fibroadenoma	101	43.9
	Phylloides	8	3.6
Benign	Ductal Papilloma	1	0.44
	Hyperplasia	1	0.44
	Lipoma	2	0.88
	Invasive ductal carcinoma(NST)	53	23.04
	Invasive lobular carcinoma	3	1.30
	DCIS	1	0.44
	Invasive papillary carcinoma	1	0.44
Malignant lesions	Mucinous carcinoma	1	0.44
	Tubular carcinoma	1	0.44
	Cribriform carcinoma	1	0.44
	Malignant phylloides	5	2.1
	Inflammatory	20	8.6
	Granulomatous mastitis	9	3.92
	Fibrocystic disease	10	4.34
Non-neoplastic lesions	Micoglandular adenosis	1	0.44
	Mammary duct ectasia	1	0.44
	Galactocele	1	0.44
Lesions of male breasts	Gynecomastia	9	3.92
Total		230	100

Table 2: Distribution according to specimen type

Sr. No	Type of specimen	Non malignant lesions		Malignant lesions	
		No of cases	Percentage	No of cases	Percentage
1	Tru cut biopsy	6	2.6%	10	4.34%
2	Excisional biopsy	150	65.2%	12	5.26%
3	Incisional biopsy	7	3.04%	0	0%
4	Modified radical mastectomy	0	0%	39	16.95%
5	Simple mastectomy	1	0.44%	5	2.17%

Table 3: Age wise distribution of breast lesions

Age group	Benign	Malignant	Non neoplastic	Total	Percentage
11-20	49	0	7	56	24.3%
21-30	35	1	17	53	23%
31-40	22	19	10	51	22.4%
41-50	5	20	9	34	14.7%
51-60	2	15	4	21	9.1%
61-70	0	3	3	6	2.6%
71-80	0	5	1	6	2.6%
81-90	0	2	0	2	0.86%
91-100	0	1	0	1	0.44%

Table 4: Distribution according to modified Bloom Richardson grading

Grade	Total no. of cases	Percentage
I	9	19.56%
II	11	23.92%
III	26	56.52%
Total	46	100

Table 5: Comparison of grade of tumor with other studies

Other studies	Grade 1	Grade 2	Grade 3
Ahmed Z et al[20]	4.17 %	75.83%	20%
Mudduwa L et al[21]	14.6%	36.4%	49%
Ayadi L et al[16]	10.9%	63.2%	25.8%
Present study	19.5 6%	23.92 %	56.52 %

Table 6: Comparison of present study with other studies

	Fibroadenoma	Benign total	IDC(NST)	Malignant total
Present study	43.9%	71.31%	80.30%	28.69%
Sree ND et al[10]	46.35%	81.62%	79.41%	18.37%
Shanthi V et al[13]	51%	72%	78.57%	28%
Kulkarni et al[8]	62.32%	80.70%	84.85%	19.30%
Amr et al[7]	30.7%	84.8%	89.92%	15.2%
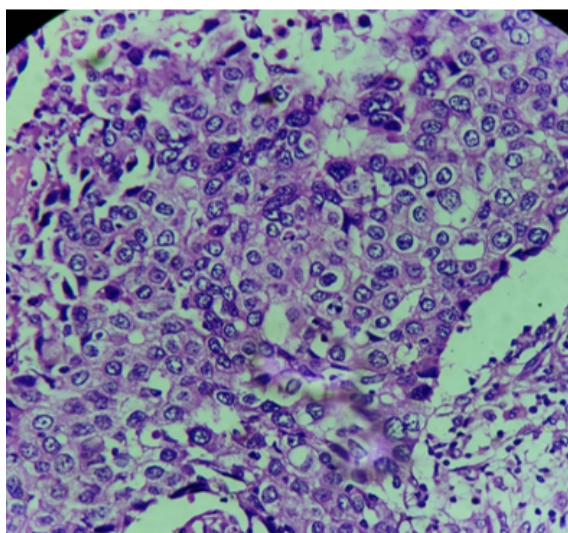
Fig. 3: Microscopic picture showing chondroid differentiation in Malignant phylloides tumor in H & E stain under 400x.
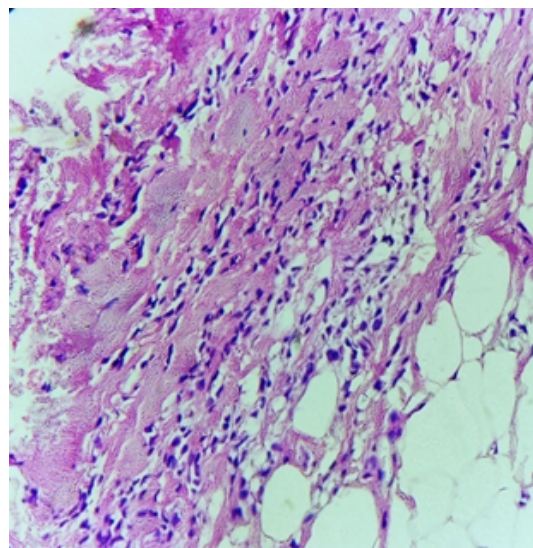
Fig. 4: Microscopic picture of lobular carcinoma of breast- signet ring type showing "Indian file pattern" in H & E section.

Pakistan shown that benign breast lesions are 10 times more common than breast cancers. Kumar M et al,[11] observed that incidence of benign breast diseases varies in different geographical areas, and benign breast diseases are common in developing countries but due to lack of education women disregard the breast lump.

As our study shows, incidence of malignancy is increasing in developing countries also due to various risk factors like life style change, late age at birth of child, lack of breast feeding etc. It is necessary that general features of individual breast diseases like incidence, age distribution, symptoms and palpatory findings should be observed as they are crucial and beneficial for the diagnosis and management of these lesions. Illiteracy, social taboo, unawareness result in delayed diagnosis in both benign and malignant lesions. Such delay in diagnosis of malignant lesions is associated with poor prognosis.

In the present study, 66 cases (29.56 %) were malignant. Shanthi V et al,[13] studied 100 breast lesions and found 28% malignant pathology. In a study of Pradhan et al,[14] in Nepal upto 15.5% cases were malignant. In another study reported from Nigeria, malignant lesions were diagnosed approximately 40% by Mayun et al.[15]

In the present study the mean age at presentation of carcinoma breast was 53.78 years which was 51.5 years in Sree ND et al[10]. In our study, 63.63% of cases seen in post menopausal age group with 36.3% occurring less than 45 years of age. In the study by Ayadi L et al[16] 51.6% of cases occurred in less than 50 years of age with median age of 51 years. Forty six percent of cases occurred in less than 45 years. In the study by Raina V et al,[17] 49.7% of cases occurred in less than 45 years and 48.5% cases in greater than 45 years. In the study by Saxena S et al,[18] of New Delhi reported that the median age of occurrence of carcinoma
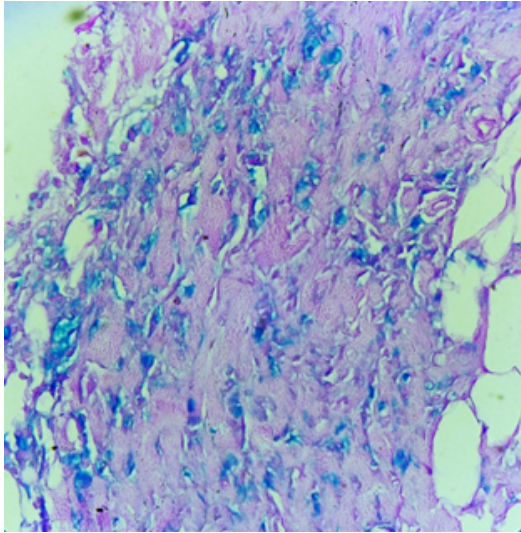
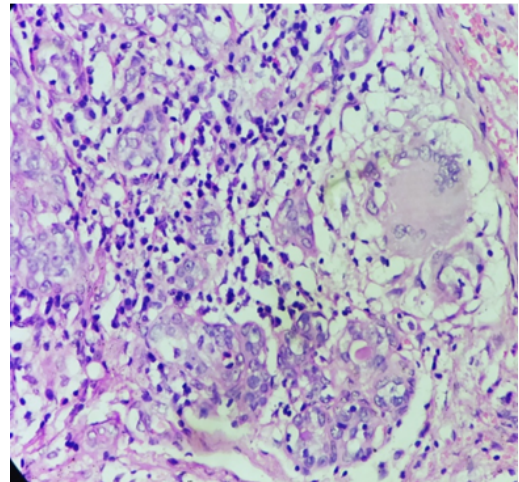**Fig. 5:** Alcian blue stain show positivity for mucin under 400x.

Fig. 7: Microscopic picture of Granulomatous mastitis showing multinucleated giant cell surrounded by lymphocytic infiltrate in H & E section under 400x.
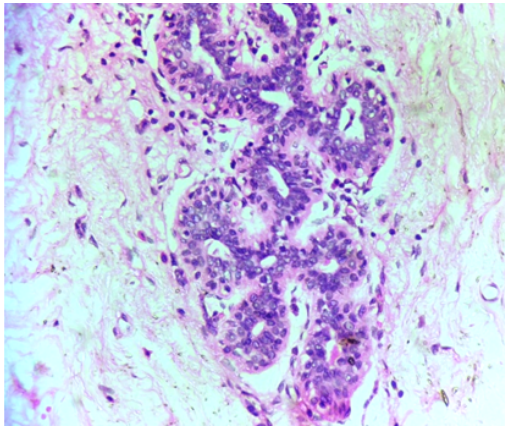

Fig. 6: Microscopic picture of invasive papillary carcinoma of breast showing papilla formation which invade stroma in H & E section under 400x.
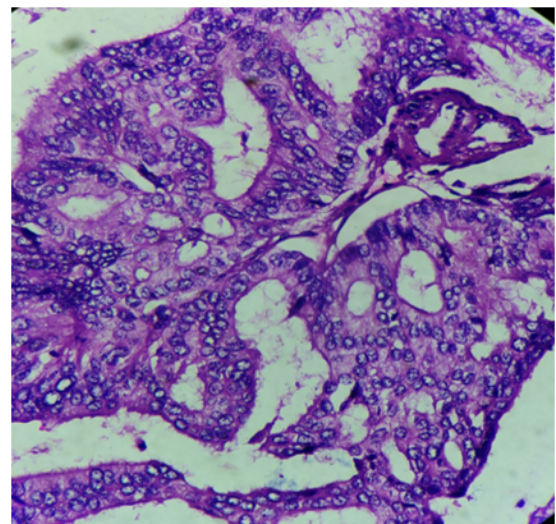

Fig. 8: Microscopic picture showing cribriform invasive carcinoma of breast with moderate pleomorphism in H & E section under 400x.

breast was 47.8 years. In the present study, out of 66 cases of malignant lesions, the commonest histological type was infiltrating duct cell carcinoma (NST) type (Figures 1 and 2) constituting 80.30 % of cases. In the studies by Raina V et al, Lokuhetty M, Ayadi L et al, were 92.8%, 86.3% and 83.8% respectively. [17][16][19]

Out of 66 malignant breast lesions, 53 were diagnosed as Infiltrative duct cell carcinoma – NST type (80.30%) (Figures 1 and 2) followed by 5 cases (7.5%) of malignant phylloides (Figure 3), 3 cases of lobular carcinoma (4.5%) (Figures 4 and 5) and each case of invasive papillary carcinoma (Figure 6) and tubular carcinoma, mucinous carcinoma. In a similar study of Shanthi V et al,[13] in which out of 28 cases 23 cases were diagnosed as ductal cell carcinoma, 2 as lobular carcinoma, 1 as medullary carcinoma, 1 as malignant Phyllodes and 1 case was

found to be mucinous carcinoma respectively. Raina V et al,[17] documented 2.9% of lobular carcinoma, medullary carcinoma 1.4% and Ayadi L et al,[16] reported 3, 8% of invasive lobular carcinoma, 3.2% mucinous carcinoma and 0.6% as metaplastic carcinoma.

In our study, infiltrating duct cell carcinoma is graded in 46 cases that are Modified Radical mastectomy and excisional biopsy specimen using modified Bloom Richardson grading system into three grades.7 cases were diagnosed in trucut biopsy which were not graded.

In the present study, the grade of tumor was well differentiated (grade 1) in 9/46 (19.56%) and grade 2 in 11/46 (23.92 %) and grade 3 in 26/46 (56.52%) of cases.

In the study by Ahmed Z et al,[20] documented 4.17% as grade 1 tumors, grade 2 were 75.83% and grade 3 tumors as 20%. Mudduwa L et al,[21] reported 14.6% as grade 1 tumors, 36.4% as grade 2 tumors and 49% as grade 3 tumors. The grade 1, grade 2 and grade 3 tumors in the study by Ayadi L et al,[16] was 10.9%, 63.2% and 25.8% (Table 5).

In the present study, lymph node metastasis in infiltrating duct cell carcinoma was seen in 54.28 % of cases and negative for metastasis in 45.71% of tumors. In the studies by various authors like Ahmed Z et al, Mudduwa L et al, Ayadi L et al, and Lokuhetty M, documented lymph nodes positive for metastasis as 74.77%, 57.7%, 65% and 41% respectively.[20][21][19][16]

In our study, non neoplastic lesions were 51(22.18 %), out of which 20 cases were suppurative mastitis, followed by fibrocystic diseases seen in 10 cases , granulomatous mastitis in 9 cases.

Table 6 shows comparison of present study with various other studies.

5. Conclusion

Most common breast lesion in our study was fibroadenoma mostly occurring in 2nd and 3rd decade of life. Malignant lesions were mostly seen in 4th and 5th decade of life. Increasing cases of breast malignancy in developing countries should ignite concern. It is due to multiple risk fctors like change in life style, shorter period of breast feeding, nulliparity etc. Due to lack of awareness, social taboo breast diseases present in the late stage of malignancy. Awareness must be generated among women to reduce the morbidity and mortality with breast lesions. The pattern of breast lesions provides valuable information concerning clinicopathological profile of breast lesions. The clinical diagnosis of a breast lump must be correlated with histopathological diagnosis for correct and adequate treatment of patient and better prognosis.

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