A Hospital Based Observational Assessment of the Histopathology of Benign Proliferative Breast Lesions in Peritumoral Area of Carcinoma Breast

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Abstract

Aim: The aim of the study was to determine histopathological features of different subtypes of carcinoma breast and correlate with the presence of proliferative lesions of breast in peritumoral area.

Methods: This Observational study was conducted for a period of 1 year at department of Pathology, Darbhanga Medical College and Hospital, Darbhanga, Bihar, India and A total of 100 cases that satisfied the inclusion criteria were included in this study. Specimens were received in 10% Formalin. Clinical details, gross findings including tumor size were noted.

Results: Age group of patients included in the study ranges between 32 to 76 years with a mean age of 54 years. Majority of the patients belonged to 51 to 60 years seen in 35 (35%) cases. 44 (44%) cases belonged to postmenopausal age group, 37 (37%) and 17(20%) belonged to perimenopausal and premenopausal age group respectively. In the present study, 55 (55%) of tumors were located at the right side, 45 (45%) at the left side breast. None of the patients had bilateral carcinoma. Of the 100 cases included in the present study 82 (82%) were Invasive Ductal Carcinoma of No Special Type (IDC NST). Most common findings in peritumoral area of breast were non proliferative epithelial lesions 53 (53%).

Conclusion: The present study concluded that non-proliferative breast lesions were the most predominant histological lesion in peritumoral area. Histopathological examination of peritumoral area in mastectomy specimens is a simple and valuable method that helps to stratify the risk of carcinoma in contralateral breast.

Keywords: Carcinoma of Breast, Proliferative Lesions, Peritumoral.

Introduction

Breast tissue is heterogeneous and complex in composition. It is composed of epithelium, stroma, and adipose tissue. Each normal constituent of a breast is a source of both benign and malignant lesions. [1] Carcinoma of breast is a multifactorial disease. Incidence of breast cancer, morbidity, mortality and survival rates vary in different parts of the world. [2] Breast cancer is the most commonly diagnosed cancer in women (24.2%) worldwide. It had been observed that about 30% of all breast cancers develop in women with prior Benign Breast Disease. The worldwide incidence of breast malignancy is 11.6% and 5-year prevalence is 36%. It is the fifth common cause of death worldwide. Lesion of breast can be inflammatory, benign and malignant. [3] Genetic changes associated with transitions from normal epithelium to hyperplasia, and ultimately carcinoma, involve a series of events referred to as initiation, transformation, and progression. [4] Benign Breast Diseases (BBDs) become more common during the second decade of life and peak during the fourth and fifth decades. [5] According to the risk of developing breast cancer, benign epithelial lesions of breast are classified into non-proliferative breast lesions, proliferative breast lesions without atypia and proliferative breast lesions with atypia. [6,7] Fibroadenoma and fibrocystic changes are the two most common BBDs. [8]

Although non-proliferative disease does not appear to be associated with increased breast cancer risk [9], proliferative disease without atypia and that with atypia (ductal carcinoma in-situ, atypical

hyperplasia, and sclerosing adenosis) have been associated with a 1.5- to 4-fold increased risk for breast cancer, respectively. [10]   Diagnostic methods like mammography, and fine needle aspiration cytology are being used that helps in preoperative assessment of breast lesions [11] Benign breast lesions should be distinguished from in situ and invasive carcinomas. This depends mainly on histopathological assessment which helps to recognize the patient's risk of developing carcinomas so that further screening, follow up and proper treatment modality can be initiated. [12]

Thus the aim of the study was to determine histopathological features of different subtypes of carcinoma breast and correlate with the presence of proliferative lesions of breastin peritumoral area

Materials and Methods

The Observational (Cross sectional) study was conducted for a period of 1 year at department of Pathology, Darbhanga Medical College and Hospital, Darbhanga, Bihar, India and A total of 100 cases that satisfied the inclusion criteria were included in this study. Specimens were received in

10% Formalin. Clinical details, gross findings including tumor size were noted. Specimen was serially sectioned at 1cm interval. Representative samples from main tumor and peritumoral areas were taken, processed manually and paraffin embedded. Sections were cut and stained with Haemtoxylin and Eosin (H & E).Histopathology findings in main tumor, Modified Scarf Bloom Richardson (MBR) grading, peritumoral area and lymph node metastasis were noted.

Inclusion Criteria: All mastectomy specimens with proven carcinoma.

Exclusion Criteria: Male patients, trucut biopsy, excision biopsy, post chemotherapy, post-radiotherapy specimens and metastatic tumours.

Statstical Analysis

Statistical Analysis was carried out using SPSS version 20.0. Data entered in excel sheet. Chi square test was done to assess statistical significance. A p value less that 0.05 was considered statistically significant.

Results

Table 1: Patient details

Age groups	N%
31-40	12 (12)
41-50	35 (15)
51-60	35 (35)
61-70	15 (15)
71-80	3 (3)
Menopausal age groups	
Premenopausal	19 (19)
Perimenopausal	36 (36)
Postmenopausal	44 (44)
Location of tumors	
Right	55 (55)
Left	45 (45)
Bilateral	0

Age group of patients included in the study ranges between 32 to 76 years with a mean age of 54 years. Majority of the patients belonged to 51 to 60 years seen in 35 (35%) cases. 44 (44%) cases belonged to postmenopausal age group, 37 (37%)

and 17(20%) belonged to perimenopausal and premenopausal age group respectively. In the present study, 55 (55%) of tumors were located at the right side, 45 (45%) at the left side breast. None of the patients had bilateral carcinoma.

Table 2: Descriptive analysis of histopathological diagnosis

Histopathology Diagnosis	Frequency	Percent
IDC NST	82	82
Tubular Carcinoma	1	1
IDC with Sebaceous Differentiation	2	2
Invasive Lobular Carcinoma	3	3
Metaplastic Carcinoma	4	4
Mixed Ductal and Lobular Carcinoma	3	3
Mucinous Carcinoma	3	3
Encapsulated Papillary Carcinoma	2	2

Of the 100 cases included in the present study 82 (82%) were Invasive Ductal Carcinoma of No Special Type (IDC NST).

Table 3: Descriptive analysis of benign proliferative lesions in peritumoral area

Benign proliferative lesions in peritumoral area	N%
Proliferative Disease with Atypia	12
Proliferative Disease without Atypia	35
Non-Proliferative Disease	53

Most common findings in peritumoral area of breast were non proliferative epithelial lesions 53 (53%).

Table 4: Comparison of clinicopathological parameters with benign proliferative breast lesions

	NonProliferative Disease n=53	Proliferative Disease without Atypia n=35	Proliferative Disease with Atypia n=12	p value
Age				
<50	21	15	9	0.36
>50	32	20	3	
Menopausal status				
Premenopausal (<45)	9	7	2	
Perimenopausal (45-55)	21	12	7	0.90
Postmenopausal (>55)	23	16	3	
Laterality of tumour				
Right	27	20	7	0.44
Left	26	15	5	
Histopathology Diagnosis				
IDC NST	48	30	6	0.005
Others	5	5	6	
MBR Grading				
Grade I	8	2	1	
Grade II	30	19	4	0.20
Grade III	15	14	7	
Tumour size				
<2 cm	14	3	2	
2 - 5cm	32	24	6	0.07
>5 cm	7	8	4	
Lymph node status				
Positive	10	15	6	0.02
Negative	43	20	6	

Grade II lesions were seen in 53 (53%) which was more common and followed by Grade III lesions in 36 (36%) and Grade I lesion in 11 (11%) patients. Out of the 100 cases, 62 (62%) had tumor size of 2-5 cm, 19 (19%) with size more than 5 cm and 19 (19%) with tumor size less than 2 cm.

Discussion

Breast cancer is the most commonly diagnosed cancer in women (24.2%) worldwide. The worldwide incidence of breast malignancy is 11.6% and 5 year prevalence is 36%. It is the fifth common cause of death worldwide. [13] Breast cancer is a diverse disease in terms of presentation, morphology and molecular profile. [14] Genetic changes associated with transitions from normal epithelium to hyperplasia, and ultimately carcinoma, involve a series of events referred to as initiation, transformation, and progression. [15] Hence, the identification of involved premalignant lesions is very essential in preventing progression

to development of breast cancer. [16] Benign breast diseases encompasses a spectrum of histologic entities usually subdivided into nonproliferative breast lesions, proliferative breast lesions without atypia, and proliferative breast lesions with atypia. [14] Nonproliferative changes do not increase the risk of cancer. Proliferative breast disease is associated with a mild increased risk, while proliferative disease (PD) with atypia confers a moderate increase in the risk of breast cancer. [10] Improved knowledge of breast carcinogenesis will provide insight for defining the high-risk groups, thus resulting in improved screening and management regimens.

Age group of patients included in the study ranges between 32 to 76 years with a mean age of 54 years. Majority of the patients belonged to 51 to 60 years seen in 35 (35%) cases. This was similar to study conducted by Jayker SS et al. [17] In their study, most of cases were seen in the age-group of

41–60 years. 44 (44%) cases belonged to postmenopausal age group, 37 (37%) and 17(20%) belonged to perimenopausal and premenopausal age group respectively. This was comparable to Laddha AG et al. [18] Where 32 (42.67) cases were in postmenopausal age group. Right breast was commonly affected than left side in our study. The finding in the present study was in contrast to study conducted by Agrawal GP et al. [19]

Of the 100 cases included in the present study 82 (82%) were Invasive Ductal Carcinoma of No Special Type (IDC NST). The finding in the present study was comparable to Jayker SS et al. [17] Reddy et al. [20] and Wang et al. [21] In their study observed 93.3%, 85.05% and 90.1% respectively. Most common findings in peritumoral area of breast were non proliferative epithelial lesions 53 (53%). Dupont WD et al. [10] observed a prevalence of proliferative lesions with atypia, proliferative disease without atypia and non-PD of 4%, 27%, and 69%, respectively. Grade II lesions were seen in 53 (53%) which was more common and followed by Grade III lesions in 36 (36%) and Grade I lesion in 11 (11%) patients. Mudholkar VG et al., (58.49%) and Sharma K et al., (46.91%) also found maximum cases in grade II category which is similar to our study [22,23] while Baveja P and Singh B found maximum cases in grade III category. [24]

Conclusion

The present study concluded that non-proliferative breast lesions were the most predominant histological lesion in peritumoral area. Histopathological examination of peritumoral area in mastectomy specimens is a simple and valuable method that helps to stratify the risk of carcinoma in contralateral breast. Positive correlation was seen with histopathological diagnosis, tumor size, lymph node status and benign proliferative lesions in peritumoral area.

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