Section: Pathology

Original Research Article

CLINICOPATHOLOGICAL PROFILE OF BREAST CARCINOMA PATIENTS ADMITTED IN A GOVERNMENT TERTIARY CARE CENTRE OF UTTARAKHAND

A.R. Piyush[1], Naveen Chandra[2], H.S. Pandey[3]

[1]*Associate Professor & PhD research Scholar HNBUMEU, Government Doon Medical College, Dehradun, Uttarakhand, India*
[2]*Professor, Government Medical College, Almora, Uttarakhand, India*
[3]*Professor, Government Medical College, Haldwani, Uttarakhand, India*

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Corresponding Author:
Dr. A.R. Piyush,
Associate Professor & PhD research Scholar HNBUMEU, Government Doon Medical College, Dehradun, Uttarakhand, India
Email: drarpiyush@gmail.com

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ABSTRACT

Background: Breast carcinoma remains a leading cause of morbidity and mortality among Indian women. It exhibits a wide range of clinical presentations, diverse immunohistochemical profiles, and different histopathological subtypes, each associated with a specific clinical course and outcome. This study aimed to examine the various clinicopathological aspects of breast carcinoma, as a comprehensive understanding of these characteristics is essential for accurate diagnosis, prognosis, treatment planning, and predicting outcomes.

Materials and Methods: It was a cross-sectional, hospital-based, prospective study, conducted in the Department of Pathology at Government Doon Medical College and associated Hospital, Dehradun, over a period of 4 years. A total of seventy modified radical mastectomy specimens of breast carcinoma, diagnosed and operated in the Department of Surgery of the same hospital, were included. A comprehensive clinical history and examination, along with detailed gross examination and microscopic findings, were recorded in each case.

Results: Out of 70 cases, Invasive ductal carcinoma NOS was the most common variant, accounting for 62 cases (88.6%). Histological grading of the tumors was performed using the Scarff-Bloom-Richardson (SBR) grading system. Grade 2 tumors were the most common, observed in 34 cases (54.8%), followed by Grade 1 tumors, which accounted for 17cases (27.4%). The maximum patients were in fifth decade and presented with left-sided breast carcinoma (54%) cases. Inflammatory carcinoma was observed in 2 cases.

Conclusion: This study underscores the pivotal role of histopathological examination in the diagnosis and prognostication of breast cancer. Accurate histopathological confirmation is indispensable for reliable clinical diagnosis and the development of effective treatment strategies.

Keywords: Breast, Carcinoma, Histopathology.

INTRODUCTION

Breast carcinoma is the second leading malignancy in India, constituting11.5% of all cancer cases. Among women, breast cancer is the most commonly diagnosed cancer (24%), leading to a mortality rate of15.4%.[1] An increased risk of breast cancer is linked to having a first pregnancy later in life, not breastfeeding, late onset of menopause, use of hormone replacement therapy, smoking, and obesity.[2] Breast cancer also displays a wide range of histomorphological patterns, each associated with distinct biological behaviors, clinical characteristics, and subtypes. A thorough clinical examination, mammographic imaging, and fine-needle aspiration cytology remain the widely accepted and reliable diagnostic approaches for evaluating patients presenting with a solid breast mass.[3,4] The important pathological prognostic factors in invasive breast

carcinoma include patient age, tumour size, lymph node metastasis, histological type, and grade.[5]

The objective of this study was to investigate the clinicopathological spectrum of breast carcinoma, with particular emphasis on age distribution, relevant clinical parameters, and the detailed histomorphological characteristics observed in each case.

MATERIALS AND METHODS

It was a cross-sectional, hospital-based, prospective study, conducted in the Department of Pathology at Government Doon Medical College and associated Hospital, Dehradun, conducted over a period of 4 years. A total of seventy modified radical mastectomy specimens of breast carcinoma, diagnosed and operated in the Department of Surgery, Government Doon Medical College and Hospital, were included. All females diagnosed with malignant epithelial breast tumors confirmed by histopathological examination were included in the study.

Specimens of the patient previously treated with chemotherapy/radiation/immunotherapy,

premalignant and benign disorders of the breast, mesenchymal tumors, inadequate or suboptimal specimens, and incomplete clinical records were excluded from the study.

Data were collected using a structured proforma, which included patient demographics, clinical presentation, and gross and histopathological findings.

All relevant gross and histomorphological features, including tumor size, focality, tumor type, tumor grade, lymph node involvement, extranodal extension, lymphovascular/ dermal invasion, details of the in-situ component if present, margin status, and skeletal muscle involvement, were recorded and analyzed. Cases with distant metastasis were also taken into account. SPSS version 23.0 was utilised for data entry and analysis. To summarise continuous variables, descriptive statistics like mean, median, and standard deviation were employed. Frequencies and percentages were used to represent categorical variables. The study employed chi-square tests to evaluate the correlation between category variables. Statistical significance was attained when the p-value was less than 0.05.

RESULTS

Females with breast carcinoma were included in this study. The age of women ranged from 28 to 85 years, with the maximum patients in the fifth decade. The mean age calculated was 50.2 years. Detailed age-wise distribution is given in [Table 1]. All the females were married, and 65(92.8%) were multiparous, 3 were primiparous, and 2 were nulliparous. 3(4.2%) patients were lactating at the time of presentation. 38 patients (54.2%) presented with left-sided breast disease, and the rest were right-sided; however, one of the patients had a bilateral malignant breast lesion at the time of presentation. The majority of females belonged to a lower socioeconomic status.

Maximum patients presented with breast lump (96%) of which 5(7%) cases had an ulcerative/ulcero-proliferative mass, while 4 (5.7%) patients additionally had nipple discharge.10(14.2%) females had overlying skin findings like retracted nipple and areola complex while 6(8.5 %) patients had peau d'orange appearance of breast. Two of the patients had metastasizing lung lesions at the time of presentation. The duration of noticing/detecting palpable lump of all the patients varied from few days to 7 months. The upper outer quadrant was the most commonly involved site in 28(40%) cases. 2 patients were of inflammatory carcinoma at the time of clinical presentation.

Table 1: Age wise distribution of patients(n=70)

Sr.no	Age Group	Number of Patients	Percentage (%)
1	≤40 years	7	10%
2	41-50 years	30	42.8%
3	51-60 years	22	31.5%
4	≥60 years	11	15.7%

Out of 70 cases, Invasive ductal carcinoma NOS was the most common variant, accounting for 62 cases (88.6%), [Figures 1 and 2] followed by 2 cases of Invasive Lobular Carcinoma [Figure 4], breast and 2 cases of Mucinous carcinoma. 1case each of Invasive micropapillary carcinoma, Cribriform carcinoma, Metaplastic breast carcinoma and Invasive papillary carcinoma were also noted [Table 2]. The tumor grading among the patients of invasive ductal carcinoma was done by standard Scarff-Bloom-Richardson (SBR) grading system. Grade 2 was most frequently noted [Table 3].

Table 2: Histopathological types of malignant breast carcinoma(n=70)

Sr.no	Tumor type	Number of patients	Percentage
1	Invasive ductal carcinoma NOS	62	88.6%
2	Invasive Lobular Carcinoma	2	2.9%
3	Mucinous carcinoma	2	2.9%
4	Invasive micropapillary carcinoma	1	1.4%
5	Invasive papillary carcinoma.	1	1.4%
6	Cribriform carcinoma	1	1.4%
7	Metaplastic breast carcinoma	1	1.4%

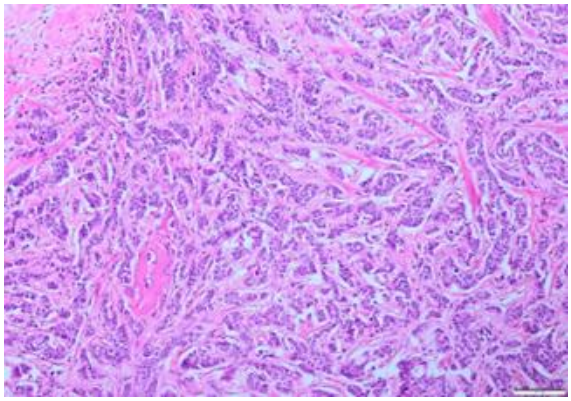
Table 3: Histopathological grade of Invasive ductal carcinoma(n=62)

Sr.no	Tumor grade	Number of patients	Percentage
1	Grade 1	17	27.4%
2	Grade 2	34	54.8%
3	Grade 3	11	17.8%

Tumor necrosis was observed in 42(60%) of cases, while tumor desmoplastic response was noted in 38 cases. Grade 1 tumors were least associated with tumor necrosis and tumor desmoplasia. 22(31.4%) of patients having invasive ductal carcinoma had an associated in situ ductal component as well. The morphology of ductal carcinoma in situ varied in all the cases from comedo pattern [Figure 3], being the predominant type. Cribriform, solid micropapillary patterns of ductal carcinoma in situ were also observed. 2 of the total cases showed an extensive in situ ductal carcinoma component.

19 cases of Invasive ductal carcinoma and both the cases of lobular carcinoma showed lymphovascular invasion. 5(7%) cases with lymphovascular invasion additionally showed invasion in dermal lymphatics.

Most common pathological T stage was T2 (60%) followed by T3 (17.3%), T1(15.7%), and T4 (7%). 28 (40%) of total 70 patients showed positive involvement of axillary group of lymph nodes. Most common pathological nodal stage was N1 (64.3%) followed by N2 (25%) and N3(10.7%). 2 cases showed distant metastasis to lung at the time of presentation.



Figure(H&E) 1: Grade 1 Invasive ductal carcinoma, No special type

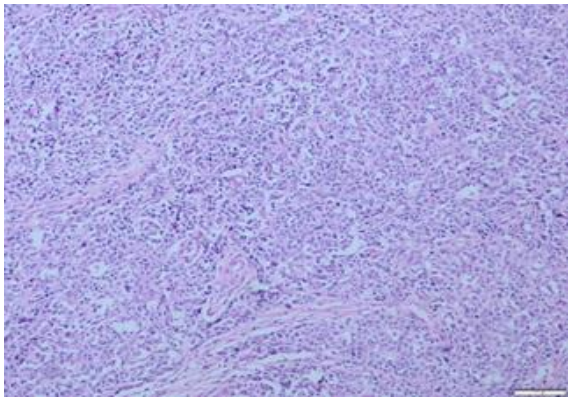
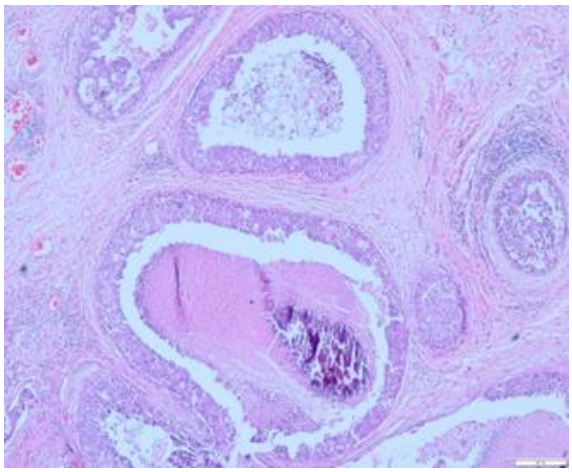
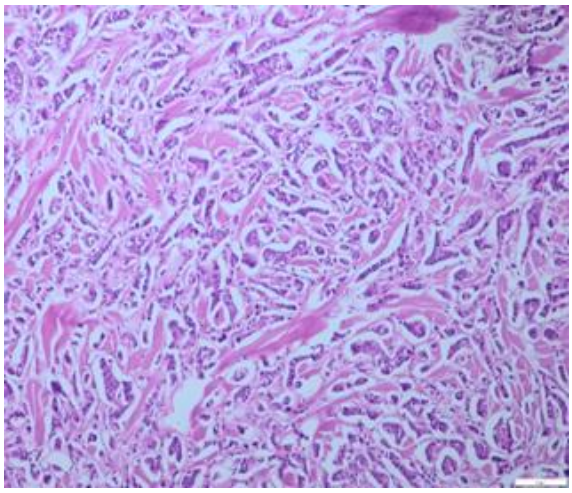


Figure (H&E) 2: Grade 3 Invasive ductal carcinoma, No special type



Figure(H&E) 3: Ductal carcinoma in situ, comedo type with micro calcification



Figure(H&E) 4: Invasive lobular carcinoma

DISCUSSION

In the present study, we analyzed data from all female breast cancer patients for a period of four years at the Department of Pathology, Government Doon Medical College and Hospital, Dehradun. In our study, the majority of the patients were in the fifth decade. Similar findings in age distribution was noted by Punneshetty DS et al,[6] Alghamdi TH et al,[7] and Nigam JS et al.[8] This age distribution is slightly earlier than that observed in Western populations, where the average age at diagnosis tends to be above 60 years. All our patients were married and multiparaous, which is again in concordance with Nigam JS et al,[8] and Wani SQ et al.[9] The predominance of left-sided tumors and the upper outer quadrant as the most frequently involved site noted in ours and a few other studies, likely related to the large amount of breast parenchymal tissue in this region.[8,10,11] However, few studies documented a

greater number of patients with right-sided lesions.Most patients presented with a palpable lump (97%), making it the most common clinical presentation, which is in concordance with Beniwal A et al and SahaK et al.[11,12] Number of patients with nipple discharge and skin changes remains variable among different studies. These changes in the skin and nipple–areola complex typically appear in the later stages, indicating a long-standing and advanced local disease. Delayed presentation is often linked to factors such as lack of awareness, absence of pain, low socioeconomic status, limited access to medical care, and social barriers. Morphologically, invasive ductal carcinoma (IDC NOS) represented 88.6% of cases, closely mirroring proportions reported in different studies ranging from 84% to 90%.[11,13-15] Presence of various rare histological subtypes is noted in almost the same frequency among different studies. The majority of tumors were moderately differentiated (Grade 2) in our study, correlating with findings from a similar study, however few studies noted a preponderance of grade 3 in their study.[11,16,17] Tumor necrosis and desmoplastic reaction were common, particularly in higher-grade tumors, highlighting their potential role as markers of aggressive behavior. Lymphovascular invasion was observed in 27% of patients in our study, almost comparable findings were observed by SahaK et al and Pinder et al.[12,18] Pinder et al also concluded that vascular invasion was strongly associated with lymph node stage, tumor size and histological grade. Our study also derived the observation that 40% of our patients showed axillary lymph node involvement, this is slightly lower as compared with other studies emphasizing nodal metastasis in 61% and 57% by Amr et al and Saha et all respectively.[12,19]

CONCLUSION

Breast cancer incidence is on the rise in India, posing an increasingly urgent public health challenge. Implementing educational initiatives on women's health, promoting breast self examination and improving access to mammography and FNAC can significantly enhance early detection rates in resource constrained settings. This study highlights the prognostic value of histopathological findings in guiding treatment decisions and formulating effective management strategies for breast carcinoma. The detailed analysis of histopathological parameters provides critical insights that aid in predicting disease behaviour, tailoring individualized therapy, and improving overall clinical outcomes.

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