



## Histomorphological Evaluation Of Invasive Ductal Carcinoma Of Breast In A Tertiary Care Centre-India

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### Abstract

In India, breast cancer is the most common cancer affecting the female population. Invasive ductal carcinoma is the most common histological subtype prevalent in India.<sup>[1]</sup> Prognostic factors studied through routine histopathological examination are tumour size, histological grade and lymph node metastasis.

**Objectives:** To study the prognostic factors like tumour size, histological grade and lymph node metastasis status in the study samples.

**Materials And Methods:** Study was conducted in the Department of Pathology, Government Stanley Medical College between November 2016 to April 2017. 108 Modified Radical Mastectomy (MRM) specimens with the histopathological diagnosis of Invasive Ductal Carcinoma of breast were enrolled. Clinical details like age and tumour laterality were collected from the histopathology requisition forms. Formalin fixed paraffin embedded tissue blocks were stained with haematoxylin and eosin stain to study the tumour size, histological grade, lymph node metastasis and margin status.

**Results:** Mean age of this study population was 53 years. Out of 108 cases, 21 cases belonged to Grade I, 65 cases belonged to Grade II, 22 cases were of Grade III tumours. 18 cases were of tumour size less than 2 cm, 68 cases belonged to tumour size of 2-5cm, 22 cases belonged to tumour size of more than 5 cm. 48 cases had less than 3 nodal metastasis and 60 cases had 4 to 9 positive lymph node metastasis. 3 cases had microscopically positive resected margins.

**Conclusion:** To conclude this study through histopathological examination, the study population had better prognosis with lower tumour grade, lesser tumour size and lymph node metastasis.

**Keywords:** Histomorphology, Invasive ductal carcinoma, Prognostic factors

### Introduction

In recent times there is an increase in incidence of breast cancer among the Indian female population.<sup>[1]</sup> According to the WHO classification, there are various histological subtypes of breast cancer. Among the various histological subtypes, Invasive ductal carcinoma is the most common subtype in our country<sup>[2]</sup>. Histomorphological

examination of the breast cancer remains the gold standard in analysing the prognostic factors. The salient prognostic factors which can be studied by routine histopathological examination are the tumour size, tumour grade and lymph node metastasis. The main objective of this study is to analyse the tumour grade, tumour size and nodal metastasis in the study population. Early diagnosis and the treatment can

reduce the mortality and morbidity among the breast cancer patients.

### Materials And Methods

After obtaining Institutional Ethical Committee clearance this study was conducted in Government Stanley medical college, a tertiary care centre in Chennai, Tamil Nadu, between November 2016 to April 2017. It was a descriptive prospective and retrospective study. **Inclusion Criteria:** Total of 108 modified radical mastectomy specimens with the histopathological diagnosis of Invasive Ductal Carcinoma were included in this study. **Exclusion Criteria:** All other histopathological subtypes, cases with the history of neoadjuvant chemotherapy, were excluded from the study. Clinical details like age and tumour laterality were collected from the histopathology requisition form. All the specimens were formalin fixed, meticulously grossed to detect the tumour size. Bits were taken, processed manually and their corresponding paraffin embedded blocks were made. Haematoxylin and Eosin stained slides were prepared from the paraffin embedded blocks.

Microscopic examination of all the slides were done to the analyse the tumour grade, the lymph node metastasis and resected margin positivity status. Tumours were graded by Nottingham modification of Scarff Bloom Richardson Grading System. All the data were entered in Microsoft Excel spreadsheet (windows10) and analysed statistically.

### Results

Mean age of this study population was 53 years, with the youngest case being 36 years old. 19 % of the cases (20 cases) were aged below 45 years and 81 % (88 cases) were aged above 45 years of age. Out of 108 cases, 74 cases (69%) were right sided breast cancer, whereas 34 cases (31 %) were left sided breast cancer. 18 cases (17 %) had tumour of size less than 2 cm, 68 cases (63%) were of tumour size more than 2cm but less than 5 cm and 22 cases (20%) had more than 5 cm tumour size. [Table 1]. Among the 108 cases, 21 cases (19%) belonged to Histological Grade I tumour, 65 cases (61%) belonged to Histological Grade II tumour [Figure 1], 22 cases (20 %) were of Histological Grade III tumours. [Figure 2], [Table 2].

**Table 1: Distribution of 108 cases based on Tumour size**

Tumour Size	Number of cases
Less than 2 cm	18(17%)
More than 2 cm and less than 5 cm	68(63%)
More than 5 cm	22(20%)

**Table 2: Distribution of 108 cases based on Histological Grades**

Histological Grade	Number of cases
Grade I	21(19%)
Grade II	65(61%)
Grade III	22(20%)

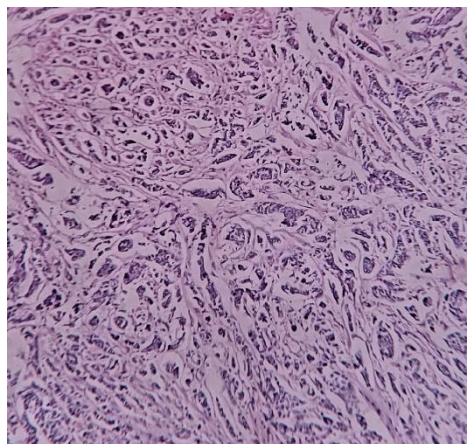
48 cases (45%) had nodal metastasis in less than 3 lymph nodes and 60 cases (55 %) had nodal metastasis in 4 to 9 lymph nodes. [Figure 3], [Table 3]. Out of 108 specimens, only 3 cases had positive resected margins.

**Table 3: Distribution of 108 cases based on Lymph node metastasis**

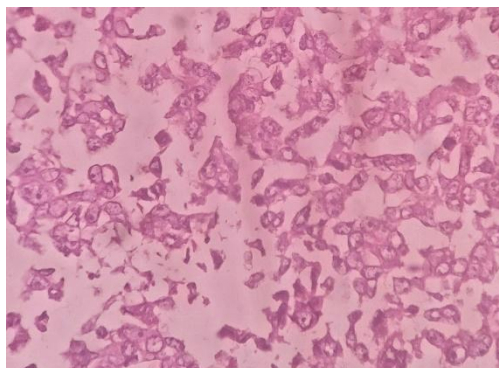
Number of positive lymph nodes	Number of cases
1 to 3 nodes	48(45%)

4 to 9 nodes	60(55%)
More than 10 nodes	0(0%)

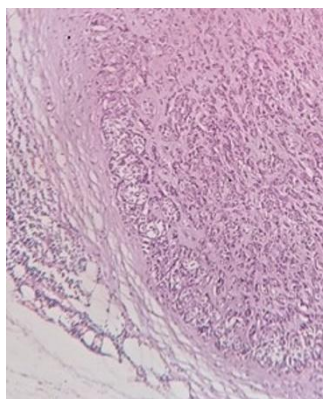
**Figure 1: Histopathological image of Grade II tumour.**



**Figure 2: Histopathological image of Grade III tumour**



**Figure 3: Histopathological image of lymph node with metastatic carcinomatous deposit**



**Discussion:**

In this study the mean age of the study population was 53 years, with 81% of cases (88) were above 45 years. This shows that in the present study, majority

of the cases were in perimenopausal and in postmenopausal state. This was in concordance with the study done by Shetty and Kusuma K N et al [3] and Pradhan A et al [4]. But this was in contrast with

other Indian studies which were carried over by Jitendra Singh Nigam et al<sup>[5]</sup> and A Goel et al<sup>[6]</sup> were the mean age of the study was below 45 years of age.

In the present study, majority of the cases were of tumour size more than 2cm but less than or equal to 5 cm (pT2 Stage of pTNM staging, AJCC 8<sup>th</sup> edition).<sup>[7]</sup> This result was similar to the studies done by Lavanya N et al<sup>[8]</sup>, Lakmini et al<sup>[9]</sup>, Shukla A et al<sup>[10]</sup> and Shetty and Kusuma K N et al<sup>[3]</sup>. This shows that in India, majority of the breast cancer patients presents with T2 stage.

In our study, majority of the tumour 65 cases (61%) were of Histological Grade II Tumour (moderately differentiated) which coincided with the other Indian studies by Manjunatha YA et al<sup>[11]</sup>, Reddy et al<sup>[12]</sup> and Dr Lavanya N et al<sup>[8]</sup>. This shows that majority of the Indian breast cancer patient presents with moderately differentiated tumours (Grade II).

In this study, 55% of tumours (60 cases) belonged to N2 involving 4 to 9 lymph nodes. This is in contrast with the other studies done in Indian women by Dr Lavanya N et al<sup>[8]</sup>, in Chinese women by Lin-Wei Wang et al<sup>[13]</sup> and in Iranian women by Afsharfard A et al<sup>[14]</sup> were majority of the cases had metastasis in less than 3 lymph nodes. This shows that our present study population had higher nodal metastasis.

In our study out of 108 specimens, only 3 specimens had tumour positive surgical resected margin. Rest of the specimens showed negative surgical resected margins. Thus our study population belonged to surgically resectable stage of breast cancer which in turn implies good prognosis.

### Conclusion:

In the present study, mean age of the study population was 53 years. This implies that in the study population, breast cancer were common among perimenopausal, postmenopausal women than the women of reproductive age group. This study population presented with the surgically resectable tumour with lesser tumour size (T2), lower Histological Grade (II) and Nodal metastasis (N2). Thus our study population have comparatively better prognosis than population with non resectable tumour of high tumour grade and nodal metastasis. Breast cancer awareness and motivation for breast self-examination can lead to early presentation of cancer

cases to the clinicians. Early diagnosis and treatment can reduce the morbidity and mortality of breast cancer. To conclude, this study highlights the importance of histomorphological examination of mastectomy specimens for not only diagnosing the cancer but also in establishing the prognostic indicators like tumour grade, tumour size and lymph node metastasis.

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