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Original Research Article

Histopathological spectrum of Breast Carcinomas – A Retrospective study

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Abstract: The present study is to document the age distribution, prevalence, various histological types and microscopic grading of carcinoma breast. This retrospective study was carried out at Department of Pathology, Yashoda Hospital, Malakpet. Macroscopic and microscopic examination provided the tumor size, stage, grade, lymph node status, lympho-vascular invasion and perineural invasion. The study comprised 104 breast cancer patients . Invasive ductal carcinoma no speciic type was the most common type of breast carcinoma (90 cases) accounting 86.5% of total cases. Carcinoma with medullary features was second most common (6 cases) comprising 5.7% cases followed by mucinous, metaplastic and papillary carcinoma. Grade II tumors were most frequent grade observed in 76 cases (76%) followed by Grade III (14.0%) and Grade I (10%). As a conclusion invasive ductal carcinoma was the most common histological type breast cancer and the tumors were found at T2 and N3 stage i.e maximum at grade II. Our study provides prognostic significance of histo-pathological information in breast cancer management.
Keywords: Breast carcinoma, Modified radical mastectomy, Grading.

INTRODUCTION

Breast carcinoma is the most common malignant tumor worldwide. In our country, it is the second most common malignant tumor in females comprising 16 to 21%, the first being carcinoma cervix. Breast cancer is the most frequently occurring cancer among women in the developed as well as developing countries and it has become the major public health problem worldwide with nearly 1.7 million newly diagnosed cases in 2012 representing 25% of all female cancers [1, 2].

A study by Baker *et al*. suggested breast surgery (MRM) for Stage I and II diseases and radical mastectomy for Stage III as the best treatment of choice [3].

The histopathological factors of breast tumors like tumor size, lymph node status, histological type, histological grade, presence or absence of hormone receptors and age of patients play crucial role on chemotherapy and radiation therapy.

A carcinoma is considered as **Special Type** if **>90%** of the tumour shows special type differentiation. For a carcinoma to be considered as **No Special Type (IDC-NST/NOS)** >50% of tumour should lack special type differentiation. Those containing 50-90% of the characteristic morphology are considered as **Mixed NOS / Special Type Carcinomas.**

Latest **World Health Organisation** classification (2003) recognised **17** distinct histological special types.

Recent gene expression studies classified breast cancer into three **Molecular Phenotypes**: luminal, HER2 and basal-like [4, 5].

Type	Medullary	Mucinous	Metaplastic	Papillary
Incidence %.	2%	1.3 - 5.4% of all breast cancers.	2-5%	1-2%
Common age	young age	post menopausal	48 to 59 years	Post menopausal
prognosis	Favorable prognosis	Good prognosis.	Most of them are high grade Poor prognosis	Excellent prognosis
Molecular phenotype.	**basal like**	**luminal**	**basal like**	**luminal**

Nottingham modiied grading system comprises:

Tubule Formation

Score 1: Majority of tumors (>75%)
Score 2: Moderate degree (10% - 75%)
Score 3: Little or none (<10%)

Nulcear Pleomorphism

Score 1: Small, regular, uniform cells
Score 2: Moderate increase in size and variation
Score 3: Marked nuclear variations

Mitotic Counts

Score 1: 0-9 Mitoses/10 hpf
Score2: 10-19 Mitoses/10 hpf
Score 3: 20 or > Mitoses/10 hpf

Histological grading of breast carcinoma, based on Nottingham modiication of the Scarff Bloom and Richardson's (SBR) grading system.

Degree of differentiation	GRADE (Score)
Well differentiated	I (3-5)
Moderately differentiated	II (6-7)
Poorly differentiated	III (8-9)

Aims and Objectives

- To analyze the age wise incidence of breast malignancies.
- To study the spectrum of breast malignancies.
- To know the lymph node involvement in carcinoma breast

MATERIALS AND METHODS

It is a retrospective study was conducted between June 2011to July 2014. Tumor grading and staging were done according to the Nottingham modiication of the Scarff Bloom and Richardson's (SBR) grading system and TNM staging [where T describes the tumor size, N describes nodular involvement and M describes distant metastasis]. The tumors were given scores according to Nottingham Prognostic Index (NPI) scoring system.

RESULTS

There were a total of 104 MRM cases during the period of study. The youngest age at presentation was 25 years while the oldest being 75 years.

Table-1: AGE DISTRIBUTION

Age in years	No. Of cases	Percentage
20-29	3	2.9
30-39	11	10.6
40-49	18	17.3
50-59	36	34.6
60-69	20	19.2
70-79	16	15.4
	104	100

Table-2: Incidence of various histological types of breast carcinoma in the current study

Type	**No. of cases**	**Percentage**
Non invasive epithelial cancers	4	3.9
Invasive epithlial cancers	100	96.1
Invasive ductal carcinoma , NOS	90	90
Medullary carcinoma	6	6
Mucinous carcinoma	2	2
Metaplastic carcinoma	1	1
papillary carcinoma	1	1

Out of 4 non - invasive Epithelial Cancers -all are In situ ductal carcinoma .

Out of 100 invasive Epithelial Cancers.

Table-3: Nottingham modification of the Bloom–Richardson grading

Grading	No.of cases	Percentage
Grade 1	10	10
Grade 2	76	76
Grade 3	14	14

Table-4: Incidence of lymph node metastasis in mastectomy specimens

Type of neoplasm	Node positive cases	Percentage
IDC NOS	47	52.6
Medullary carcinoma	1	16.7
Mucinous carcinoma	1	16.7
Metaplastic carcinoma	0	-

Table 5 : Distribution based on tumour size and axillary lymph nodal status

Tumour Size (T stage)	Number of cases (Percentage %)	Axillary Lymph nodes (N stage)	Number of cases (Percentage %)
T1 (≤ 2 cms)	13	N0 (No nodes)	14
T2 (>2 cms - <5 cms)	60	N1 (1 – 3 nodes)	20
T3 (≥ 5 cms)	18.5	N2 (4 – 9 nodes)	30.5
T4 (Any size with chest wall or skin extension)	8.5	N3 (≥ 10 nodes)	35.5

DISCUSSION

Breast cancer is the most frequently occurring cancer among women in the developed as well as developing countries and incidence has increased at the rate of 3-4% in developing countries and often gets diagnosed at late stage [6].

In this study we found medullary carcinoma was the second common histological type, observed in 6 cases (5.7%) of total cases [7].

In our study we found majority of tumors were moderately differentiated grade II accounting 76 (76%) of cases followed by 14 (14.0%) tumors with well differentiated grade I and 10 (10%) tumors with poorly differentiated grade III. Reddy et al found significantly higher percentage of grade II tumors that was similar to our study [7].

Similarly, Acharya et al observed grade II tumors were most frequent comprising 47.40% of total tumors following grade I and grade III that are in accordance with our indings [4].

According to the AJCC TNM staging criteria, the tumor size varied from 1.0 cm to 9.0cm, with majority (60.0%) of tumors belonging to T2 (2.0 to 5.0 cm) stage, followed by T3 (more than 5 cm), T1 (Less than 2 cm) and T4 (tumor growing to chest wall or skin). A study observed 42.72% cases with T2 stage that correlate with our results [8].
Similarly, other studies also observed highest frequency of tumors with T2 stage [4,9].

In this study highest frequency of tumors belonged to N3 stage (35.5%) involving more than 10 nodes followed by, N2 stage (4 to 9 nodes involved) and N1 stage (1 to 3 nodes involved) and N0 stage (no nodes involved). In contrast to our study, other studies have shown N0 as the most common stage followed by N1, N2, N3 respectively [6-7,9].

In addition, we found 20 (62.5%) cases had lymphovascular invasion and 2 cases had perineural invasion. A study by Song *et al* reported 54.2% MRM cases i.e. maximum percentage of breast carcinoma had lymphovasular invasion [11].

Table-6: AGE COMPARISON

Most prevalent age (years)	Our study	Vissa Shanthi et al [12]	Ms Siddiqui et al [8]	Acharya et al [4]
	50-59	50-59	40-49	41-55

Table-7: HISTOLOGICAL SUBTYPE COMPARISON

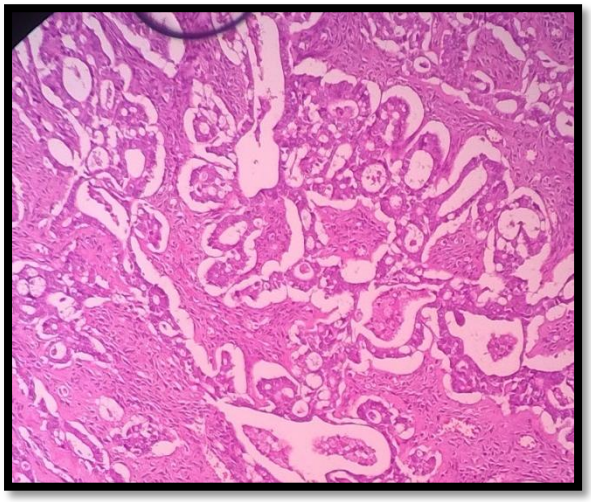
Type	Our study	Vissa Shanthi *et al*. [12]	Wang *et al*. [6]	Reddy *et al*. [7]
IDC, NOS	86.5	75.86	90.1	85.5
Medullary carcinoma	5.7	3.45		2.3
Mucinous carcinoma	1.9	3.45		4.02
Metaplastic carcinoma	0.9	-		0.9

DCIS –Non Invasive	Our study	Vissa Shanthi *et al.* [2]	M.S. Siddiqui *et al.* [8]
	3.9	3	1

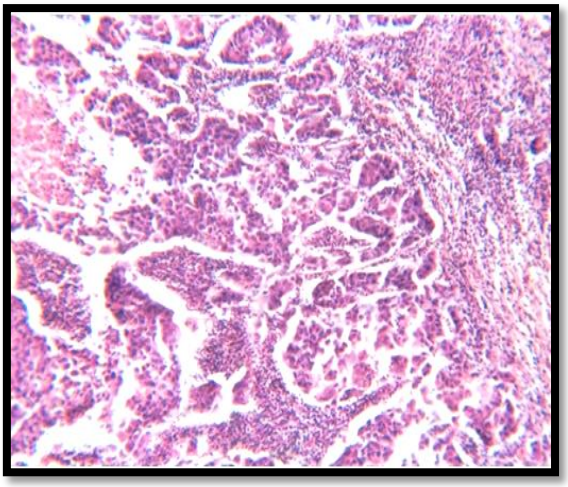
Table-8: Grade Comparison

Grade	Our study	Acharya *et al*. [4]	Reddy *et al*. [7]
Grade I	76 {highest}	{Highest}	{Highest}
Grade II	14		
Grade III	10		

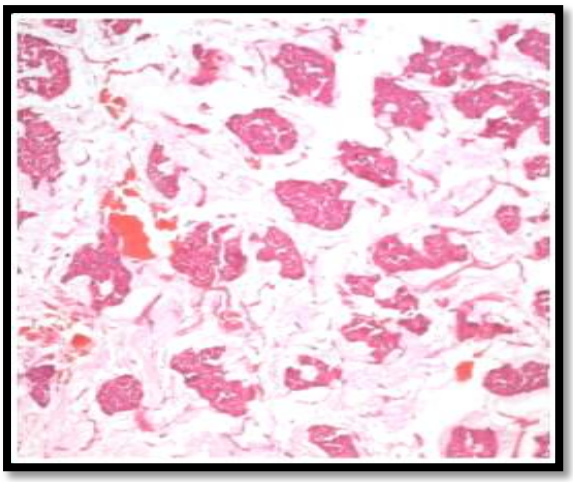
DCIS –Comedo type



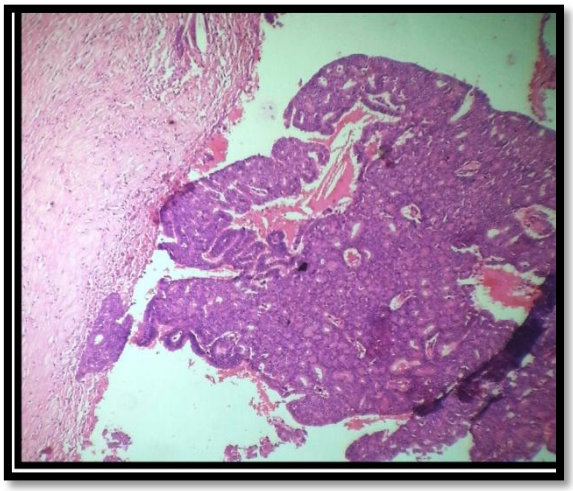
IDC- NOS



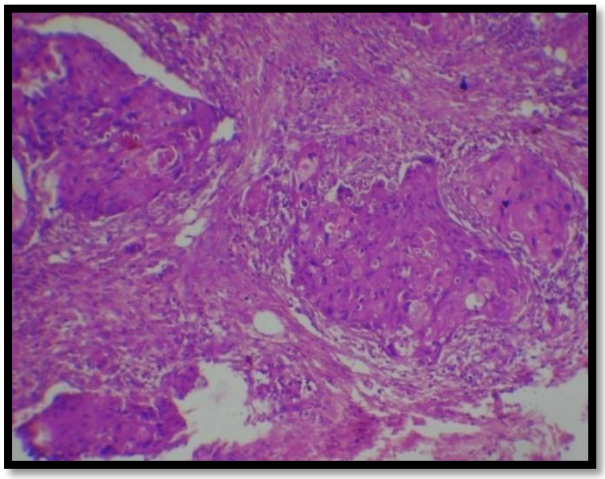
Medullary Carcinoma



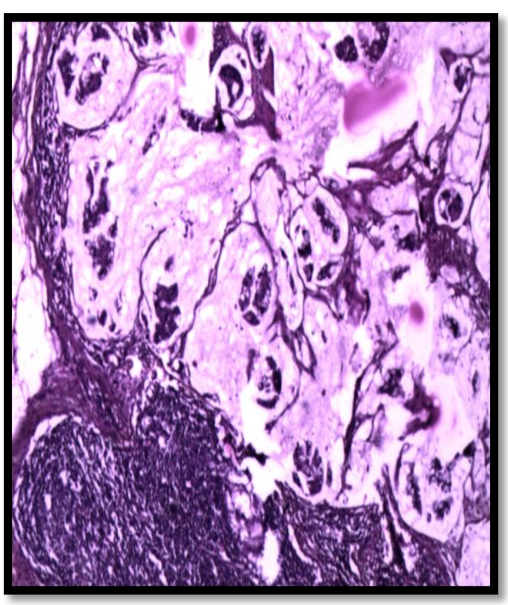
Mucinous Carcinoma



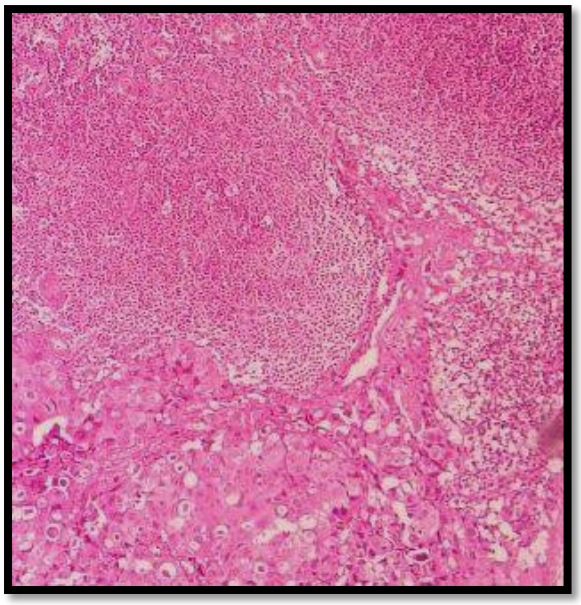
Papillary Carcinoma



Metaplastic Carcinoma



Mucinous carcinoma metastasis in lymph node



IDC deposits in lymph node

CONCLUSION

Nottingham Grading system is a simple, inexpensive, and routinely applicable way that provides an overview of the intrinsic biological characteristics and clinical behavior of the tumor, adding important information to other significant and time-dependent prognostic factors, such as LN status and size.

Invasive ductal carcinoma was the most common histological type breast cancer and the tumors were found at T2 and N3 stage i.e maximum at grade II. Our study provides prognostic signiicance of histo-pathological information in breast cancer management.

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