

Clinico-Pathological study of carcinoma breast in a tertiary care hospital from West Bengal, India: A Cross-Sectional Observational study



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Submission: 08-05-2021

Revision: 12-08-2021

Publication: 01-09-2021

ABSTRACT

Background: Breast cancer is one of the most common cancer in women. BC represents a heterogeneous group of tumors that are diverse in behavior, outcome, and response to therapy. **Aims and Objective:** The present study was undertaken to assess various clinical parameters and to evaluate correlation with histo-pathological grading in breast carcinoma patients. **Materials and Methods:** The study was conducted in the Surgical outpatient department and Indoor surgical wards of Deben Mahato Sadar Hospital (DMSH), Purulia, West Bengal from July, 2019 to December, 2020. 104 patients with diagnosis of BC aged between 20 years to 80 years were selected. **Results:** Among 104 patients, 41.3% patients were in the group of 41-50years. This study revealed that the patient had mostly IDC i.e. 78.8% and had triple negative BC (51.9%). Association of HPE vs. Stage, subtypes vs stage and Tru-cut biopsy vs HPE were statistically significant. **Conclusion:** The study showed that breast cancer tends to present in middle aged women and positively correlate with the present markers of bad prognosis.

Key words: Breast Cancer (BC); Tru-cut Biopsy; Histopathological Examination (HPE)

Access this article online

Website:

<http://nepjol.info/index.php/AJMS>

DOI: 10.3126/ajms.v12i9.36997

E-ISSN: 2091-0576

P-ISSN: 2467-9100

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INTRODUCTION

Breast cancer is one of the most common cancers in women, worldwide and accounting for 25% of women with cancer, which are diagnosed every year throughout the world. Breast cancer is also listed as second leading cause of cancer related to death among women in the world.^{1,2} Breast cancer is also regarded as the most common cancer in women in many metropolitan cities, such as New Delhi, Mumbai, Ahmadabad, Kolkata, Trivandrum and the second most common cancer in the rest parts of the country.^{3,4,5} So screening and early diagnosis of the disease can lead to a good prognosis and a high survival rate. Mammography is a widely used screening approach in the detecting of breast

cancer and proved to help reduce the mortality effectively. Other screening methods, such as Magnetic Resonance Imaging (MRI), which is more sensitive than mammography, have also been implemented and studied during the last decade. BC represents a heterogeneous group of tumors that are diverse in behavior, outcome, and response to therapy. The prognosis and treatment of the disease depends on various parameters such as the tumor size, lymph node status, histopathology, grade, stage and immuno-histochemistry status. Over the past decade, gene expression profiling and their correlation to immuno-histochemical markers have led to the identification of different molecular subtypes of breast cancer: 1) Luminal A 2) Luminal B 3) HER2 Positive 4) Basal-like. The present study was undertaken to assess

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various clinical parameters and to evaluate correlation with histo-pathological grading in breast carcinoma patients.

Aims and objective

- 1) To describe the mode of presentation of breast carcinoma.
- 2) To find out the ultrasonographic features of breast carcinoma among participants.
- 3) To correlate clinical findings, tru-cut biopsy and post-operative histopathology reports.
- 4) To determine Positive Predictive Value of tru-cut biopsy report with respect to Post operative histopathology report.

MATERIALS AND METHODS

The study was conducted in the surgical outpatient department and Indoor surgical wards of Deben Mahato Sadar Hospital (DMSH), Purulia, West Bengal from July, 2019 to December, 2020. All the patients with diagnosis of BC aged between 20 years to 80 years were included in the study. Pregnant, Lactating women with BC, All inoperable advanced breast malignancies, Multifocal/Multicentric BC, Previous radiotherapy in BC, Previous breast surgery on same side breast cancer were excluded from the study. The study was an observational prospective study, where total one hundred and four cases were selected. Inferential statistics e.g. unpaired-'t'-test, chi-squared test, odds ratio (OR) with its 95% confidence interval (CI) etc. were used to establish the relation between input and output variables. P value of <0.05 will be considered as statistically significant.

RESULT

Among 104 patients, 43(41.3%) patients were in the age group of 41-50years. Only 5(4.8%) patient were in the age group of 71-80years old (Table 1).

We observed in our study that 49 (47.1%) patients had menarche at 11-13years and 80(76.9%) patients were married. Sixty (57.7%) patients had Menopausal status and maximum patient i.e. 63 (78.8%) patients had a history of breast feeding. Maximum patients i.e. 36(45.0%) patients had parity 1. Only 8(7.7%) patients had family history of BC and 15(14.4%) patients presented with obesity (Table 2).

Among 104 patients, 60(57.7%) patients had lump and 81(77.9%) patients had pain. 19(18.3%) patients presented with ulceration and 15(14.4%) patients presented with nipple discharge. 68(65.4%) patients had tumor location at UO. Among 104 patients 99(95.2%) patients had malignancy on USG. After True cut biopsy, only 6(5.8%) patients had atypical hyperplasia (Table 3).

Table 1: Age Distribution among patients

Age in Years	Frequency	Percent
21-30	8	7.7%
31-40	25	24.0%
41-50	43	41.3%
51-60	8	7.7%
61-70	15	14.4%
71-80	5	4.8%
Total	104	100.0%

Table 2: Risk Factors among patients

Parameters	Frequency	Percentage	
Marital Status	Married	80	76.9
	Unmarried	24	23.1
Family History	No	96	92.3
	Yes	8	7.7
Menopausal Status	No	44	42.3
	Yes	60	57.7
Age at Menarche	<11 years	16	15.4
	11-13 years	49	47.1
	>13 years	39	37.5
BMI	Normal	49	47.1
	Over weight	40	38.5
	Obese	15	14.4
Breast Feeding	No	17	21.3
	Yes	63	78.8
Parity	1	36	45
	2	26	32.5
	3	8	10
	≥4	10	12.5

After HPE report we observed that 82(78.8%) patients had IDC and only 3(2.9%) patients had MC. Maximum patient i.e.59(56.7%) patients had Stage 3. 56(53.8%) patients had tumor size 2 to 4.9 cm and44(42.3%) patients had ≥5. 34(32.7%) patients had nodal status >9. Maximum patient i.e. 72(69.2%) patients had stage III and 87(83.7%) patients had NPI ≥5. 9(8.7%) patients were positive HER2nue and 54% patients were TNBC (Table 4).

Association of HPE vs. Stage was statistically significant ($p<0.0001$).Association of Subtypes vs. Stage was statistically significant ($p=0.0243$) (Table 5).

Association of Tru-cut biopsy vs HPE was statistically significant ($p<0.0001$) (Table 6).

DISCUSSION

In our study, we have found, 25(24.0%) patients were in the age group of31-40 years old and 43(41.3%) patients were in the age group of41-50years. This present study also showed that 49(47.1%) patient had menarche at 11-13years old. Some other study found that breast cancer with an average age at diagnosis of 59.4 years.⁶ Another study showed that age range was 18 to 82 years, with a mean of 45.17 years.⁷ This study showed that maximum patients i.e. 80 (76.9%)

Table 3: Clinical, Radiological and Histological Features Among Patients

Clinical Parameters		Frequency	Percentage
Lump	No	44	42.3
	Yes	60	57.7
Pain	No	23	22.1
	Yes	81	77.9
Ulceration	No	85	81.7
	Yes	19	18.3
Nipple Discharge	No	89	85.6
	Yes	15	14.4
Quadrant Involvement	C	14	13.5
	LO	12	11.5
	UI	10	9.6
USG	UO	68	65.4
	Benign	5	21.3
	Malignant	99	78.8
Tru-cut Biopsy	Atypical	6	5.8
	Hyperplasia	4	3.8
	DCIS	89	85.6
	IDC	2	1.9
	LC	3	2.9

Table 4: Clinico-pathological Parameters and Molecular Subtypes Among Patients

Clinico-pathological Parameters		Number of Patient	Percentage
Subtypes	HER Positive	9	8.7
	Luminal A	23	22.1
	Luminal B	18	17.3
	Triple Negative	54	51.9
HPE	DCIS	5	4.8
	IDC	82	78.8
	LC	14	13.5
	MC	3	2.9
Stage	I	7	6.7
	II	20	19.2
	III	59	56.7
	IV	18	17.3
Tumor Size	<2cm	4	3.8
	2-4.99cm	56	53.8
	≥5.00	44	42.3
Nodal Status	0	8	7.7
	1-3	16	15.4
	4-9	46	44.2
	>9	34	32.7
Grade	1	8	7.7
	2	24	23.1
	3	72	69.2
NPI	≤5.4	87	83.7
	>5.4	17	16.3

were married. Also we have seen in our study that 60 (57.7%) patient presented with breast lump and 81(77.9%) patients had pain. This study also revealed that 19 (18.3%) patients had ulceration at the time of presentation and 15(14.4%) patients had Nipple discharge. According to some other study, most patients presented with breast lump.⁸ Few other study also supported this fact and the lump was associated with nipple discharge and ulceration.⁹ The presenting complaints were a pain followed by pain with lump was also found by some study.¹⁰ We have seen in our study

Table 5: Association between HPE vs Stage and Subtypes vs stage

Parameters		Stage I	Stage II	Stage III	Stage IV
HPE	DCIS (Col%)	4(57.1)	1(5)	0(0)	0(0)
	IDC (Col%)	2(28.6)	9(45)	53(89.8)	18(100)
	LC (Col%)	1(14.3)	10(50)	3(5.1)	0(0)
Subtypes	MC (Col%)	0(0)	0(0)	3(5.1)	0(0)
	HER 2 neu(Col%)	1(14.3)	3(15)	5(8.5)	0(0)
	Luminal A (Col%)	4(57.1)	4(20)	7(11.9)	8(44.4)
	Luminal B (Col%)	1(14.3)	4(20)	9(15.3)	4(22.2)
	TNBC (Col%)	1(14.3)	9(45)	38(64.4)	6(33.3)

Table 6: Association between Tru-cut biopsy vs HPE

Tru-cut Biopsy	HPE				
	DCIS	IDC	LC	MC	TOTAL
Atypical Hyperplasia (Row %)	2(33.3)	2(33.3)	2(33.3)	0(0.0)	6(100)
DCIS (Row %)	2(50)	2(50)	0(0.0)	0(0.0)	4(100)
IDC (Row %)	1(1.1)	78(87.6)	10(11.2)	0(0.0)	89(100)
LC (Row %)	0(0.0)	0(0.0)	2(100)	0(0.0)	2(100)
MC (Row %)	0(0.0)	0(0.0)	0(0.0)	3(100)	3(100)
Total (Row %)	5(4.8)	82(78.8)	14(13.5)	3(2.9)	104(100)

that maximum patients i.e. 68(65.4%) patient presented with upper outer quadrant tumor. In this study, we also observed that 60(57.7%) patients were postmenopausal and 63(78.8%) patients were in the breast-feeding group. The study also revealed that maximum patient i.e. 36(45.0%) patients had parity 1 and 8 (7.7%) patients had family H/O breast cancer. The study showed maximum patients had normal BMI i.e. 49(47.1%). Some other study revealed that maximum participants were in the age group of 41-50 years and belonged to lower class with mean age at menarche of 13.3 years, maximum patients were in premenopausal and most of them had upper outer quadrant involvement.¹¹

In this study, we observed 99(95.2%) patients had USG suggestive of malignancy. The study showed that on tru-cut biopsy, 6(5.8%) patients had atypical hyperplasia, 4(3.8%) patients had DCIS, 89(85.6%) patients had IDC, 2(1.9%) patients had LC and 3(2.9%) patients had MC. But we observed in this study that all the patient had carcinoma of which maximum patient had IDC i.e. 82(78.8%) after HPE examination. Another study found that Tru-cut biopsy had a sensitivity of 95.1%, specificity of 100%, positive predictive value of 100%.¹² IDC, NOS is the most common histological type of breast cancer according to some other study.⁸ We found in our study that maximum patient had higher stage of presentation i.e. 59(56.7%) patients had stage III disease and 18(17.3%) patients had stage IV disease. The study

showed that 56(53.8%) patients had tumor size 2 to 4.9 cm and 44(42.3%) patients had tumor size ≥ 5 cm. We found in our study that 46(44.2%) patients presented with 4 to 9 nodes and 34 (32.7%) patients presented with >9 nodes. We also found that 72(69.2%) patients had grade-III and 87(83.7%) patients had ≥ 5.4 NPI. The study showed maximum patient had triple negative breast cancer i.e. 54(51.9%). Other study showed that size of the mass was more than 5 cm involving multiple quadrants of breast and with positive lymph nodes in most of the cases and histologically, grade 3 tumor is most prevalent in this population.⁸ TNBC accounts for approximately 15-20% of newly diagnosed breast tumors according to some other study.^{13,14} This study also revealed that association of HPE vs. Stage was statistically significant ($p < 0.0001$) and association of Subtypes vs. Stage was statistically significant ($p = 0.0243$). The study also showed that association of True cut biopsy vs HPE was statistically significant ($p < 0.0001$).

CONCLUSION

In our study we have shown, the clinico-pathological properties and mode of presentation of breast cancer in a district hospital of west Bengal, India. The study showed that breast cancer tends to present in middle aged women and positively correlate with the present markers of bad prognosis. Also we have seen that TNBC is more prevalent at this area as evident from this study. More research is needed targeted at this group of patients as it is emerging as a therapeutic challenge to breast surgeons and oncologists.

ACKNOWLEDGEMENT

The authors take this opportunity to thank Department of Radiology and Pathology for their whole hearted support for this study.

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Author's Contribution:

DKS - Data collection and prepared first draft of manuscript; **MMN** - Interpreted the results; reviewed the literature and manuscript preparation; **SB** - Concept, coordination, review of literature and manuscript preparation; **SC** - Concept and design of the study; **AKD** - Statistically analyzed and interpreted, preparation of manuscript and revision of the manuscript.

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Source of Funding: None, **Conflict of Interest:** None.