Demographic and Clinico-Pathologic Profile of Breast Cancer Patients: A Four-Year Retrospective Analysis from a Tertiary Care Centre in Jharkhand, Eastern India

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Abstract

Aims and objectives- To assess the clinico-pathological profile of breast cancer patients attending the radiation oncology outpatient department of a single unit in a tertiary care centre in Jharkhand, Eastern India.

Methods and Material: A four-year retrospective analysis of breast cancer cases registered between May 2017- April 2022 was performed. Medical records of 365 patients were subjected to analysis.

Results: Mean age of presentation was 53 years. Incidence of right (49%) and left sided (50.5%) cancers were at par. About 70% were infiltrating ductal carcinomas, and 2.2% were lobular cancers. Grade 3 was the commonest differentiation (59%). The estrogen receptor positivity rate was 49%, the Progesterone receptor 41% and Her 2 neu 32%. 33% of cases were triple negative. T2 tumours (39%) were more commonly noted and among node positive cases (65%), N1 was most commonly recorded (30%). Involvement of UOQ (Upper outer quadrant) was most frequently (32%) observed on mammography. 61% of patients presented to Reporting institution post-surgery and were planned for adjuvant chemotherapy and radiotherapy. 22% of women were planned for neoadjuvant chemotherapy followed by surgery and adjuvant therapy. 80% of patients received anthracycline and taxane-based chemotherapy. Close to 90% of patients received a hypofractionated schedule of radiotherapy(40Gy/15fr/3W) and tolerated well. At a median follow- up (FU) of 24months 77% were free of disease and the death rate was 3.6%. Compliance to FU was poor with the passing years.

Conclusions: Breast cancers are the leading cancers in India. Region-specific demographic and clinico-pathological data will assist us to formulate precise cancer control and screening programs unique to that particular area of the country.

Keywords: Breast Cancer, Retrospective Analysis, Demography, Clinical Profile, Histopathology, Outcomes, Hypofractionated radiotherapy.

Introduction

Breast Cancer (BC) is the most common cancer worldwide having surpassed lung cancer in 2020. Across the globe, an estimated 2.3 million females were detected with BC in the year 2020 accounting for 25% of all cancers in women [1]. In India, more than 2 lakh women were diagnosed with the disease in 2020, whilst 90408 were lost to the illness in the same year. The ratio of incidence to death is 2.2, which roughly translates to the fact that for every 2 women detected with BC, 1 dies of it in India [2].

The National Cancer Registry Program (NCRP) analysed data from various cancer registries to ascertain the trend in incidence rates in India from 1988 to 2013. All population-based cancer registries exhibited a definite increase in the trend of BC in the country [3]. In 1990, the cervix was the leading site of cancer followed by breast in the registries of Bangalore (23.0% vs 15.9%), Chennai (28.9% vs 17.7%) and Delhi (21.6% vs 20.3%), barring Mumbai, where it was the most common incident cancer (24.1% vs 16.0%). Between 2000-2003, the trend underwent a drastic change with the breast overtaking as the leading site in all the registries except in the rural registry of Barshi (16.9% vs 36.8%) [4-5].

In India, 60% of the patients present at a locally advanced stage of disease [6]. Most patients present at a healthcare health care facility when there is a palpable lump or pain in the breast. Women tend to either ignore the minor symptoms, or are not aware of the screening tools like self/ clinical breast examination or mammography, and or their lack thereof in the rural areas.

Survival outcomes of BC patients in India reveal 5- and 10-year overall survival (OS) to be 79% and 66%, respectively [7]. The poorer survival rate of BC patients in India compared to the West is attributable to younger age at diagnosis, advanced stage of disease presentation, delayed commencement of definitive management and interrupted treatment [8].

Management of BC is multidisciplinary and has come a long way. Initially the most practiced treatment option was mastectomy followed by adjuvant chemotherapy and radiotherapy where needed. But now, a more conservative approach is followed whereby, the patient receives neo- adjuvant chemotherapy and or immunotherapy to downsize the tumour or assess pathologic response rates followed by breast conservation surgery in most cases and radiotherapy and hormonal therapy where applicable [9-11].

The field of surgery has undergone an evolution from mastectomy to breast conservation surgery with oncoplastic surgeries being the latest trend. More emphasis is being laid on the aesthetics of breast surgery as increasing evidence indicates that a bad cosmetic result can result in significant depression and worse quality of life [12,13]. Though in the incipient stage, oncoplastic surgery is surely to gain increased status over the coming years with greater accessibility and cost-effectiveness in India [14].

The choice of chemotherapy regimen has undergone drastic changes in the past few decades. Starting from the first-generation cyclophosphamide, methotrexate combination in the 1970s which brought about a 35% reduction in BC mortality, second-generation anthracycline-based chemotherapy regimens became the backbone in the 1980-90s with a further 20% reduction. Third-generation drugs, namely taxanes in combination are now the standard cytotoxics being prescribed in both early and advanced BC cases [15].

Radiotherapy too has progressed substantially in the last few decades from 2D- to 3D conformal planning with intensity-modulated techniques being used to a greater extent [16,17]. Hypofractionated regimens are the standard of care which has decreased the overall treatment time providing a significant benefit to the mothers [18,19]. To reduce normal tissue toxicity deep inspiratory breath-hold and partial breast irradiation techniques are being implemented across departments as well [20,21].

This study aims to enumerate the demographic and clinicopathologic profile of BC cases from a tertiary care centre in Eastern India which registers a sizeable tribal population. This will help in better understanding the attributes of the disease and augment cancer control strategies in this part of the country.

Materials and Methods

A total of 365 cases of BC were registered in a single unit of the Radiation Oncology outpatient department (RO OPD) from May 2017- April 2021. All patients were primarily worked up in either radiation or medical or surgical oncology departments as per protocol. Women presenting with a suspicious breast lump were subjected to routine blood tests including complete blood counts, liver and renal function tests, bilateral sono-mammography, chest x-ray (CXR) and ultrasonography (USG) of the whole abdomen (in early disease), or Computed tomography (CT) scans of the thorax and whole abdomen and or 18FDG WB PET-CT (Whole body 18-Fluoro de-oxygenase glucose positron emission) as part of the standard staging workup for locally advanced or metastatic disease. Bone scan was undertaken for patients with suspected symptoms

of bone involvement or routinely for cases staged as AJCC IIB (American joint committee on Cancer) and above. Trucut Biopsy was done to derive the pathological diagnosis along with IHC (Immunohistochemistry) for hormonal receptor {Estrogen receptor (ER), Progesterone receptor (PR)}and Her 2 neu (Human epidermal growth factor receptor 2) status. Those with a score of 2+/3+ on IHC were subsequently subjected to the FISH (Fluorescence-in-situ hybridization) test for confirmation of Her 2 neu status. Those already possessing a histopathological (HP) report underwent a review of slides and blocks of the biopsy specimen and or surgery specimen (if they had already undergone surgical intervention outside) for HP and receptor status confirmation. Grading of the tumours was done as per Nottingham modified Scarff-Bloom Richardson system and was assigned from I to III.

Patients were staged as per TNM (Tumour, nodes, metastasis) and AJCC staging system (8th edition). Early breast cancers included T1N0M0, T2N0M0, T1N1M0 and T2N1M0. T3, T4, N2, N3 and M0 were included in locally advanced breast cancers. All patients were discussed in a multidisciplinary tumour board (MDT) before therapeutic intervention at reporting institution (RI). Treatment for early breast cancers (EBC) included surgery {either breast conservation surgery (BCS) or Modified Radical mastectomy (MRM) plus axillary clearance followed by adjuvant chemotherapy, radiotherapy and hormonal therapy based on histopathology diagnosis, pathological staging and receptor status. Locally advanced BC (LABC) and triple-negative cases were treated with a combination of neo-adjuvant chemotherapy, surgery followed by adjuvant radiotherapy and chemotherapy as per guidelines +/-. The standard chemotherapy schedule included a combination of Adriamycin and Taxanes for a total of 6-8 cycles. Usual regimens were FEC 75/100- D (5 Fluorouracil, epirubicin, cyclophosphamide for 3 cycles followed by docetaxel x 3), or 4AC-T {Adriamycin, Cyclophosphamide x 4 cycles (3weekly/ 2weekly if dose- dense (DD) followed by Paclitaxel x 4 (3 weekly) or weekly x 12 cycles. Trastuzumab was prescribed in the neo -adjuvant setting as TCH (Taxane, carboplatin and Herceptin) regimen and then continued in the adjuvant setting for a year for Her 2 neu- positive patients as per recommendations. Adjuvant radiotherapy (RT) to a dose of 40Gy in 15 fractions over a period of 3 weeks was prescribed to the whole breast (in BCS) or chest wall (CW) (in post- mastectomy) followed by a tumour bed boost of 12Gy in 4 fractions/12.5Gy in 5 fractions with photon or electron as deemed suitable (based on breast density) for BCS patients. Deep inspiratory breath-hold (DIBH) was implemented in left- sided breast cancers.

Premenopausal patients were put on Tamoxifen 20 mg once daily, or post ovarian ablation and post-menopausal women received aromatase inhibitors (AIs) and calcium supplementation. Routine bone

mineral density (BMD) scans were performed at baseline (before starting AIs) and at regular intervals thereafter and those detected with osteoporosis were advised bisphosphonates. Women who received radiotherapy were reviewed during the process and thereafter on follow- up and toxicity was graded as per RTOG (Radiation therapy oncology group) acute and chronic toxicity criteria. Follow- up protocol was 6 weeks post- treatment completion followed by 3 monthly for 2-3 years and then 6 monthly onwards. Patients were graded as NED (No evidence of disease), SD (stable disease), PD (progressive disease), LR (Locoregional recurrence), and death was noted.

Results

The majority of the women hailed from the district of East Singbhum followed by the neighbouring districts of Seraikela-Kharsawan, Dhanbad and others. Apart from the home state, there were consultations from neighbouring states as well. Hinduism (77.3%) was the main religion being practiced among the consulted women followed by Muslims (13%) and others (Sarna; 5.7%). The mean age of the women was 53 years (Range24- 82 years). Most women belonged to the age group of 40-59 years (54%). A sizeable population (24%) were in their thirties. Incidence of left and right- sided breast cancers were at par (50.5 & 49 %), and 0.5% cases of bilateral breast cancer were recorded. 5% of women were nulliparous and 61% of women had up to three children. The average age at first childbirth and last childbirth was 22 and 27 years respectively. More than 90% of women had breast fed their child for more than 6 months. 54% of women were post-menopausal at the time of presentation [Table 1].

Histopathological diagnosis was available for 88.5% (n=323) of patients, out of which infiltrating ductal carcinoma (IDC) was reported in 68% of patients; invasive breast carcinoma was recorded in 16% of cases. 2.2% of cases were noted as invasive lobular carcinoma whilst adenocarcinoma was reported in less than 1% of cases. Grading was available for 67% of patients and grade 3 was most commonly noted (59%). Record of receptor status was available for 71.5% (n=261) of patients. Individually, ER and PR positivity rate was noted in 48% and 41% of women respectively, whilst it was 38% collectively. Triple-negative status was detected in 33% of cases. Stage information was available for 90% of patients(n=328).

District	N	% (out of 365)
E. Singbhum	152	41.6
Dhanbad	25	6.8
S Kharsawan	21	5.7
Ranchi	18	4.9
W. Singbhum	12	3.2
Bokaro	12	3.2
Giridih	11	3
Hazaribagh	11	3
Deoghar	10	2.7
Palamu	9	2.5
State		
Jharkhand	317	86.8
Bihar	24	6.6
WB	15	4.1
Odisha	6	1.6
UP	3	0.8
Religion		
Hindu	282	77.3
Muslim	47	13
Others (Sarna)	21	5.7
SI	7	1.9
C	6	1.6
B	2	0.5
Age group	**N**	**%**
<30	8	2
30-39	79	22

40-49	118	32
50-59	95	26
60-69	48	13
70-79	15	4
>/=80	2	1
Side		
Left	184	50.5
Right	179	49
Bilateral	2	0.5
Parity		
0	18	5
1-3	239	65
>/=4	108	30
Menopausal status		
Pre	169	46
Post	196	54

Table 1 State and district- wise (top ten of Jharkhand) distribution of patients, religion practised by them, age, side, parity distribution, and menopausal status of the patients (E. Singbhum- East Singbhum, W- West, S. Kharsawan- Seraikela Kharsawan, UP- Uttar Pradesh, WB- West Bengal, SI- Sikhism, C- Christian, B- Buddhism, N- Number)

Among all T stages, while T2 tumours were more common (39%, n=121/308), most patients presented with N1(30%, n=94/308) disease amongst all N stages [Table 2]. The average tumour size was 6.25 cm (range 1.2- 11.3cm). About 15% (n=51/328) of patients were metastatic at presentation. The most common site of metastasis were bones (34%, n=17) and lungs (n=15, 29%). About 32%(n=16) of patients had multisite involvement.

Histopathological details		
Group	N	%
Available	323	88.5
Unknown	42	11.5
Type		
IDC	221	68.4
IBC	52	16.1
IC	19	5.8
ILC	7	2.2
Malig. Phylloides	3	0.9
Metaplastic Ca	3	0.9
Adenoca	3	0.9
Others	15	4.6
Total	323	100
Grade		
1	11	5
2	77	36
3	128	59
Total	216	100
Receptor	Neg N(%)	Pos N(%)
ER	134(51)	127(49)
PR	154(59)	107(41)
HER 2 NEU	176(68)	85(32)
Total		261 (100)
Category	N	% (out of 261)
ER-/PR-	127	49

ER+/PR+	99	38
TNBC	87	33
ER-PR-/HER2+	41	16
TP	30	11.5
Stage	**N**	**%**
Available	328	90
Unknown	37	10
Total	365	100
TX	17	6
T1	19	6
T2	121	39
T3	62	20
T4	89	29
Total	308	100
NX	21	7
N0	87	28
N1	94	30
N2	64	21
N3	42	14
Total	308	100
M1	51	15.5%
		(Out of 328)

Table 2 Histopathological classification, grade distribution, hormonal status and stage distribution of the breast cancer patients (IBC- Invasive breast cancer, IDC- Infiltrating ductal cancer, ILC- Invasive lobular cancer, IC- Invasive cancer, Malig. – Malignant, Ca- Carcinoma, Adenoca- Adenocarcinoma, ER- Estrogen receptor, PR- Progesterone receptor, HER 2 NEU- Human epidermal growth factor receptor 2, TP- Triple positive, TNBC- Triple- negative breast cancer N- Number)

Mammography as a part of staging workup was available for 93% of patients (n=341). Involvement of the upper outer quadrant was most common (32%) followed by central, (14%) and the upper inner quadrants (13%). For 24% of patients, the quadrant remained unspecified. Chest x-ray as part of staging workup was done by most patients (n=141, 46%), followed by CT thorax (40%). 14% of patients had undergone whole body positron emission computed tomography (WB PET-CT) scan as part of the initial workup as well [Table 3].

Mammography		
Status	**N**	**%**
Available	341	93
ND	24	7
Site	**N**	**%**
All Q	24	7
Axillary Tail	2	0.6
Central	48	14.1
LIQ	12	3.5
LOQ	8	2.3
UOQ	110	32.2
Retro-areolar	8	2.3
UIQ	46	13.5
Unspecified	83	24.3
Total	341	100
Staging workup		
Status	N	%
Available	308	84
NA	57	16
Modality	N	% (Out of 308)
CT Thorax	124	40
CXR	141	46

CT Abdomen	118	38
USG Abdomen	85	27
Bone scan	133	43
18 FDG WB PET SCAN	43	14

The majority of patients presented at RI (reporting institution) post-surgery and were planned for adjuvant chemotherapy followed by radiotherapy +/- hormonal therapy (26%, n=80/308). About 22% of patients (n=67/308) were planned for neoadjuvant chemotherapy followed by surgery and adjuvant therapy as per staging and histopathological with receptor status report. 22% (n=67/308) of patients had been referred for chest wall or breast radiotherapy at RI. Almost 52% (n=189) of patients had received some treatment outside before presentation at RI, of which more than 90% had undergone surgery. About 66% (n=123) had undergone MRM (Modified radical mastectomy) and 22% had undergone breast conservation surgery (n=38). Chemotherapy regimens received outside have been enumerated in Table 4. Most patients (60%) received a combination of anthracycline and taxane- based therapy. 12 patients received radiotherapy to the chest wall +/- supraclavicular fossa (SCF) while 3 patients received palliative RT.

Modality	N	%
S	115	61
S+C	46	24
S+C+R	10	5
S+R	1	0.5
C	13	7
C+R	3	2
R	1	0.5
Total	189	100
Type of Sx		
BCS	38	22.1
MRM	113	65.7
LUMP	12	6.9
SMAC	7	4.1
WLE	2	1.2
TOTAL	172	100
CT Regimen		

4AC-12P	10	14
4AC-4T	18	25
4EC-12P	7	10
4EC-4T	8	11
AC/FEC	12	17
TRAST	5	6
OTHERS	12	17
TOTAL	72	100
PLAN	**N**	**%**
ACT->RT->HT	80	26
ADJ CT	38	12
PALL CT	19	6
NACT->SX->RT	67	22
PALL RT	9	3
ADJ RT	67	22
SX->ACT->RT	24	8
HT	2	0.6
BSC	2	0.6
Total	308	100

Table 4 Treatment details received outside including type of surgery and Chemotherapy (CT) regimens and treatment plan at RI (R- Radiotherapy, C- Chemotherapy, S- Surgery, BCS- Breast conservation surgery, SMAC- Simple mastectomy with axillary clearance, MRM- Modified radical mastectomy, LUMP-Lumpectomy, WLE- Wide local excision, AC- Adriamycin + cyclophosphamide x 4, T- Taxane x 4, EC-Epirubicin + cyclophosphamide, FEC- 5-fluorouracil, Epirubicin, cyclophosphamide, TRAST-Trastuzumab, RI- Reporting institution, ADJ RT- Adjuvant Radiotherapy, HT- Hormonal therapy, ADJ CT-Adjuvant Chemotherapy, ACT- Adjuvant CT, NACT- Neo-adjuvant CT, BSC- Best supportive care, SX-Surgery, PALL- Palliative, N- Number N- Number)

Of all the patients who underwent surgery, 97 women (36%, out of 269), underwent surgery at RI and all of them had undergone MRM. 214 patients received CT at RI (75%, out of 286) and most of them were in the adjuvant setting (54%). A significant percentage received NACT because of advanced stage disease (25%). A combination of anthracyclines with taxane was the most prescribed regimen (58%) and a sizeable proportion received trastuzumab with their chemotherapy (18%) **[Table 5]**. RT details of patients treated at RI are enumerated in Table 5. 87% of patients were treated with a Hypofractionated regimen of 40 Gy in 15 fractions over 3 weeks to the chest wall and whole breast + boost.

Most patients were planned with field- in- field technique and hybrid IMRT in later cases to attain uniform coverage of the volume target while reducing the doses to the critical structures.

Category	O	RI	TOTAL
	N (%)	N (%)	N
S	172(64)	97(36)	269
C	72(25)	214(75)	286
R	15(6)	227(92)	242
At RI			
Category	**N**	**%**	
ACT	116	54	
NACT	53	25	
PALL	22	10	
NACT-ACT	23	11	Out of n=214
CT regimens			
AC-T	124	58	
FEC-DOCE	12	6	
TRAS+CT	38	18	
AC/EC/FEC	16	7	
T+C	10	5	
OTHERS	14	6	Out of n=214
MODALITY	**N**	**%**	
3DCRT	124	55	
HYBRID IMRT	54	24	
DIBH (+ HYBRID IMRT)	37	16	
PALL(CONV)	12	5	Out of n= 227
SITE			
CW+SCF	153	67	
CW	31	14	
WB	18	8	
WB+SCF	12	6	
BRAIN	5	2	
BONE	7	3	Out of n=227
40 /15	196	87	
50 /25	16	6	Out of 227

30 /10	6	3
20 / 5	6	3
OTHERS	2	1

Table 5 Number and percentage of breast cancer patients who received treatment in total [both outside(O) and at RI], with CT(Chemotherapy) and RT(Radiotherapy) details received at RI. (R- Radiotherapy, C- Chemotherapy, S- Surgery, ACT- Adjuvant chemotherapy, NACT – Neoadjuvant Chemotherapy, PALL- Palliative chemotherapy, AC- T- Adriamycin + cyclophosphamide and taxane, FEC-DOCE- 5Fluorouracil, cyclophosphamide, epirubicin- Docetaxel, TRAS- Trastuzumab, T+C- Taxane + Carboplatin 3DCRT- 3-D conformal radiotherapy, IMRT- Intensity- modulated radiotherapy, DIBH- Deep inspiratory breath hold, PALL- Palliative, CONV- Conventional, CW- Chest wall, SCF- Supra-clavicular fossa, WB- Whole breast, N- Number)

Deep inspiratory breath hold (DIBH) was employed to treat left- sided breast cancers at a later date. Follow- up details were available for 77% of patients (n=280). The mean follow- up was 24 months. About 78% of patients were free of disease whilst death rate was 3.6%. Compliance to follow- up was poor and the visits to OPD kept dwindling with the passing years. Only 10% of patients attended follow in the 4th year. **[Table 6]**

					Number with percentage		
FU Status	**3M**	**6M**	**12M**	**18M**	**24M**	**36M**	**48M**
NED	44	21	59	29	21	17	26
PD	4		11	5	4	3	3
SD	5	1		1	1	2	
BSC				1			
DEATH	1	1	4	2	2		
DEFAULT	3	4	2	1	2		
Total	57(20%)	27(10%)	76(27%)	39(14%)	30(11%)	22(8%)	29(10%)

STATUS	N	%
CENSORED	85	23.3
NED	217	77.5
PD	30	10.7
SD	10	3.6
DEFAULT	12	4.3
DEATH	10	3.6
BSC	1	0.3

Table 6 Follow- up (FU) details of patients with month- wise distribution

(BSC- Best supportive care, NED- No evidence of disease, PD- Progressive disease, SD- Stable disease, NED- No evidence of disease, M- Month. Patients with not even one follow-up data have been censored.)

Discussion

BC is the commonest cancer worldwide accounting for 12.5% of all cancer cases [22]. In this study, we have evaluated the demographic and clinicopathologic profile of breast cancer patients reporting at RI.

The mean age of presentation was 53 years. More than 50% of patients belonged to the age group of 40-59 years. 24% of women were in the 30-years age group or lower. The peak age of incidence of BC is 60-70 years in the Western world whilst it is 40- 50 years in Asian countries [23]. Patients are a decade younger in developing countries than their counterparts in the developed world. The proportions of young patients (< 35 years) vary from about 10% in developed to up to 25% in developing Asian countries, which carry a poorer prognosis [24].

Most of the patients hailed from the home district (41%) followed by the neighbouring districts of Dhanbad, Ranchi, and Bokaro. 87% of patients hailed from the home state with a sizeable population reporting from neighbouring states as well.

Close to 80% of women presenting at RI practiced Hinduism whilst 13% were Muslim population. A significant 6% practiced other religion; namely Sarna, most commonly practiced by the tribal population in this part of the country. As of census 2011, 67.8% practice Hinduism, 14.5% are Muslims and a significant 12.8% of the population practice other religions in the state of Jharkhand [25].

Incidence of left and right- sided breast cancers were at par among the consulted population with a slight predominance of the left side (50.5%). Many studies have shown that unilateral breast cancer is more frequent in the left breast than in the right. The Icelandic cancer registry reported an excess of 13% in cancer incidence in the left breast [26]. In a large multi-institutional study from India, Doval et al reported comparable rates of left and right- sided BCs (51% & 49%) [27].

About 5% of the population was nulliparous whilst 65% of the women had up to 3 children. In an audit of breast cancer cases in Northern India, 8% were reported to be nulliparous and the median parity was 3 [28]. 54% of women were post-menopausal. In another study from the National capital region of India, 54% patients were found to be post- menopausal [29].

Invasive ductal cancer (-70%) was the most common histopathological diagnosis with grade 3 differentiation being the commonest (-60%). Gogia et al in their study reported 96% of cases to be infiltrating ductal carcinomas [30]. In a study of clinicopathological profile of young women with BCs, the authors reported grade 3 differentiation to be commoner among the young population (58%) [31].

Dinshaw et al in their study of early breast cancer treated with BCS, reported 70% of the tumours to be grade 3 [32].

49% of patients were ER- positive, 41% were PR positive whilst the overexpression rate of Her 2 neu was found to be 32%. 33% of cases had triple- negative disease. Rathod et al in a study of BC in Bihar reported ER positivity rate of 42%, PR 47%, and Her 2 Neu over expression in 39.8% cases. Triple negative breast cancers were reported to be 26.2% [33]. Gogia et al [30] in their study reported a hormone positivity rate of 58%, Her 2 Neu positivity rate of 29% and triple negative BCs to be 28%. The prevalence of TNBC in India ranges from 27% to 35% across studies, with an approximate estimate of 31%. This is comparable to the prevalence seen in African American women and is more than twice the rate seen in white women [34]. In their study of prevalence of TNBC in India, Kulkarni et al reported that TNBC positivity rate was found to be 24- 31%, which was on the higher side. Also, the positivity was found to be associated with younger age, higher grade of tumours and lymph node positivity than non- TNBC tumours [35]. TNBC incidence is 12%-13% in the West of all breast cancers with the highest prevalence in the Black population (22.5%-23.7%) [36,37]

Stage information was available for 90% of cases. T2 tumours were most common (39%) and lymph node metastasis was noted in 65% of patients. Suhani et al (28) in their audit of over 1000 breast cancer cases in northern India reported T2 tumours to be the most common followed by N1 metastasis (27). Gogia et al in their study of clinicopathologic profiles of breast cancer cases reported T2(37%) and T4(40%) tumours to be more common with lymph node positivity rate of 65% [30].

The upper outer quadrant was the most common site of tumour involvement followed by the central and the upper inner quadrants. In a study of correlation between site and stage of tumour, Shah et al in their study of the correlation between site and stage of tumour [38] reported UOQ as the most common site of involvement (52%). Rummel et al in their study stated that tumour location in the breast varies with the highest predilection for UOQ and the lowest for the lower inner quadrant [39].

MRM with axillary clearance was the most common surgical procedure performed both outside (66%) and in RI (100%). 22% of our patient cohort had undergone BCS outside. Suhani et al [28] in their study reported 77% of their patients to have undergone mastectomy. Gogia et al [30] reported 76% of patients being treated with mastectomy whilst 24% had undergone BCS.

90% of patients received chemotherapy either in the adjuvant or neoadjuvant setting. More than 80% of patients received anthracycline and taxane- based chemotherapy. Trastuzumab was received by 18% of patients in addition to routine chemotherapy or as part of the TCH regimen (Taxane, Carboplatin, and Herceptin). Gogia et al in their study [30] reported 90% of patients to have received chemotherapy either in the adjuvant or neo-adjuvant setting. More than 75% of patients received anthracycline and taxane combination chemotherapy in their study and 18% received TCH regimen.

Most patients received adjuvant radiotherapy with 3D conformal technique but with passing time planning with the hybrid technique was incorporated where 75% component of the plan was 3DCRT and the rest IMRT. This helped to reduce the tail- end hyper-dosage of the plan. Subsequently, the DIBH technique was employed to treat left- sided breast cancers. This helped to reduce the heart and lung doses. Most patients received a hypofractionated dosage of 40 Gy in 15 fractions over 3 weeks and treatment was well tolerated whilst the sarcomas or bigger- sized breast received the conventional fractionation of 50Gy in 25 fractions over 5 weeks.

Follow- up (FU) status was reported for 77% of patients. Median FU period was 24 months and 77% were found to be free of disease. Death rate was 3.6%. FU compliance was poor and the attendance became abysmally low with the passing years. At 3 and 4-year FU a mere 8-10% of patients turned up. Doval et al in their multi-institutional study reported 19% loss to FU at 60 months. About 65% of relapsed patients were lost to follow- up after first month of relapse [27]. The limitation of this study was fewer patient number and high attrition rate to FU. Survival outcomes could not be reported.

Conclusion

Breast cancer is the leading cancer among women in India. This study looked into the demographic and clinical profile of breast cancer patients from Jharkhand, Eastern India. Patients came in advanced stages and had a high attrition to follow up. Reporting of such data helps us to evaluate hospital services and devise cancer control measures in this part of the country.

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