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Epidemiological study of Carcinoma breast in tertiary referral center of Jharkhand

AUTHOR

Abstract
Background: *With an estimated 1.67 million new cancer cases being diagnosed, breast cancer represents nearly 25% of all cancers and goes on to become the most common cancer in women. From various studies we can see a significant increase in cancer associated morbidity and mortality in the Indian sub-continent. Even though the use of various screening methods like mammography and MRI are proving to be effective; identification of various risk factors like age, hormone levels, age at menarche, childbirth and menopause are now gaining importance.*
Objectives: *The aim of the study was to find out the incidence of different types of breast cancer and to determine the related risk factors in the same population.*
Methodology: *A prospective, observational type of study conducted in the Department of General Surgery, Rajendra Institute of Medical Sciences, located in Ranchi of Jharkhand. The study population constituted of female patients diagnosed with carcinoma breast aged > 18 years. 74 participants were included after consecutive sampling. Detailed history and clinical examination was done to establish proper diagnosis. Data were entered into a Microsoft Office Excel spread sheet and analyzed using SPSS IBM version 21.0.*
Results: *The study included a total of 74 participants aged 36-67 years. A positive family history was seen in 4.1% of study participants. 8.9% were belonging to overweight and obese category. 58.1% had Left sided breast involvement & 41.9% had right sided. 60.8% had upper outer quadrant involvement while 25.7% and 13.6% had upper inner quadrant and lower outer quadrant involvement respectively. 20.3% had a mass >5cm, while 79.7% had a mass of size between 2cm to 5cm. 79.7% belonged to stage T2N1 and 20.3% to stage T3N1. 6.8% each were found to be ER positive and PR positive, while 2.7% were HER-2 neu positive.*
Conclusion: *The study noted an increased left breast involvement, upper-outer quadrant was commonly affected, majority had ductal carcinoma and commonly the size of the mass was between 2cm to 5 cm. Majority belonged to stage T2N1 and ER, PR and HER-2 neu positive status was found to be 6.8%, 6.8% and 2.7% respectively. Also, a positive family history, age at menarche and obesity were found to be risk factors.*
Keywords *Types of breast cancer, demography of breast cancer and incidence*

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I. Introduction

Representing nearly a quarter (25%) of all cancers, breast cancer is the most common female cancer worldwide with an estimated 1.67 million new cancer cases being diagnosed in 2012. A slight increase in prevalence was seen in women from less developed regions (883 000 cases) when compared to those from the more developed (794 000) regions.[1]

An overall increase in the prevalence of breast cancer has been noted worldwide which can be attributed to the increased incidence and improved treatments. As a disease with high incidence and death rate, breast cancer has a scary importance in developing countries. Even though in India, the age adjusted incidence rate of breast cancer is lower (25.8 per 100 000) than in United Kingdom (95 per 100 000); the mortality is at par (12.7 vs 17.1 per 100 000).[2]

Clearly evident from various global and Indian studies is the significant increase in the incidence of cancer and cancer-associated morbidity and mortality in the Indian subcontinent.[3–7] Earlier cervical cancer was The most common cancer in Indian woman has changed from cervical cancer to breast cancer with the incidence of breast cancer surpassing cervical cancer and becoming the leading cause of cancer related mortality. Regardless of this current trend, cervical cancer still remains the most common cancer in women in rural India.[8]

Mammography is a widely accepted screening approach in detecting breast cancer and it has been successful in helping to reduce the mortality significantly. Other more sensitive screening methods like Magnetic Resonance Imaging (MRI) have also been implemented and deliberated upon during the last decade. The possibility of developing breast cancer is ominously dependent on a wide array of risk factors such as sex, aging, estrogen, family history, gene mutations and unhealthy lifestyle. Intensive studies conducted over the past

several years showed that 20-30% of the newly diagnosed breast cancer cases may be associated with the occurrence of various risk factors which would actively initiate or modify the process of neoplastic transformation of breast cells. The most important deleterious factors for breast cancer were found to be age over 40 years, history of mammary gland diseases, history of cancer in first-degree relatives, early menarche and late childbearing (after 35 years of age), and woman's age at menopause.[9]

Objectives

The objectives of the study are

1. To find out the incidences of types of breast cancer in our population.
2. To determine demographic profile of patients with breast cancer.

II. Material And Methods

Study design : The study was a prospective, observational type of study.

Study site :

The study was conducted in the Department of General Surgery, Rajendra Institute of Medical Sciences, located in Ranchi of Jharkhand. This hospital is 1500 bedded Multi-Speciality Hospital with Advanced Diagnostic Tools.

Study population :

The study population constituted of female patients presenting in the Department of General Surgery of Rajendra Institute of Medical Sciences, diagnosed carcinoma breast. The study participants who fulfilled inclusion criteria were included in the study.

Inclusion criteria :

1. Patients presenting to the surgical out patient department with carcinoma breast
2. Patients with age > 18 years

Exclusion criteria :

1. Age less than 18 years
2. Benign breast diseases such as fibroadenoma etc.,
3. Patients with known co-morbidities leading to raised CRP values

Study duration :

This study was carried out from Jan 2017 to October 2018

Sample size determination :

The study is a prospective observational study, all the patients diagnosed with breast cancer during this period were included. A total of 74 patients, who were diagnosed with breast cancer and fulfilled inclusion criteria. The total sample size included in the study was 74. Thus for the present study, 74 participants who fulfilled the inclusion criteria were included.

Sampling method

The sampling method is consecutive sampling method done in Department of Surgery in the hospital. The study participant diagnosed with features of carcinoma breast whosoever fulfiled the inclusion criteria and willing to participate in the study were included successively.

Data collection techniques and tools

All the necessary information regarding the study were explained to the patients. Informed written consent was taken from the patients who were willing to participate in the study. After obtaining written informed consent in local vernacular language, the patients who were fulfilling the inclusion criteria were included in the study. Detailed history and clinical examination was done to establish proper diagnosis. In addition to routine investigations such as total leucocyte counts, serum electrolytes, serum creatinine, random blood sugar, Mammography/Ultrasound of breast were done. FNAC was performed. ER/PR/ HER-2 NEU receptor status was ascertained.Stages of breast cancer, hormone receptor status and histopathological diagnosis and risk factors of breast cancer were assessed.

Data Entry and analysis

All the data collected were entered in to a spread sheet on Micro Soft Office Excel Sheet and later transferred to SPSS IBM version 21.0 for analysis.Required univariate and bivariate analysis was done. The qualitative variables are described in the form of proportions and quantitative variables are described in the terms of mean, median, range and standard deviation. Data was checked for normality before applying appropriate tests of significance. Significance of difference in proportions (qualitative variables) was calculated using chi square test. Significance of *p* value was taken as $p< 0.05$.Significance difference in means was calculated using independent t test.

Ethical considerations

Ethical permission was obtained from ethics Committee of Rajendra Institute of Medical Sciences.Printed consent form was given to the participants if she could read, or it was to read out to him the presence of another person, after which the participant was asked to sign (or place thumb impression) on the form. The confidentiality of the study participants was maintained at all points of the study.

III. Results

Socio-demographic profile of study participants

The present study included a total of 74 participants. The age of the study participants ranged from 36-67 years with mean (±SD) age was 50.9 (±7.4) years. Among the study participants, majority were from tribal area (58.1%), followed by rural(31.1%) and urban area (10.8%). District wise distribution of patients as below : Giridh- 41(55.4), Daltaganj- 26(35.1), Lohardaga-3(4.1), Purulia-2(2.7) and other districts-2(2.7). Majority (82.4%) were hindus, followed by muslim (13.5%), sikh (2.7%) and Christian (1.4%). Occupation of study participants was Skilled worker, 6(8.1), Semiskilled worker 15(20.8), Unskilled worker 34(45.9) and Housewife 19(25.7). (Table 1)

Table 1 Socio-demographic profile of the study participants. (N =74)

S.No.	Variables	N(%)
1.	**Age group**	
	30-45 years	19(25.7)
	46-60 years	45(60.8)
	>60 years	10(13.5)
2.	**Residence**	
	Tribal	43(58.1)
	Rural	23(31.1)
	Urban	8(10.8)
3.	**District**	
	Giridh	41(55.4)
	Daltaganj	26(35.1)
	Lohardaga	3(4.1)
	Purulia	2(2.7)
	Other districts	2(2.7)
4.	**Education**	
	Illiterate	46(62.2)
	Primary	16(21.6)
	High school	10(13.5)
	Graduate and above	2(2.7)
5.	**Occupation**	
	Skilled worker	6(8.1)
	Semiskilled worker	15(20.8)
	Unskilled worker	34(45.9)
	Housewife	19(25.7)
6.	**Socioeconomic class***	
	Class I	3(4.1)
	Class II	13(17.6)
	Class III	23(31.1)
	Class IV	29(39.2)
	Class V	6(8.1)
7.	**Religion**	
	Hindu	61(82.4)
	Muslim	10(13.5)
	Sikh	2(2.7)
	Christian	1(1.4)
8.	**Diet history**	
	Non vegetarian	62(83.8)
	Vegetarian	12(16.2)
9.	**Family history of breast cancer**	
	Present	3(4.1)
	Absent	71(95.9)

Among the study participants, 8(8.9%) were belonging to overweight and obese category as per Asian Indian classification of BMI. Left sided breast was involved in 58.1% whereas in others 41.9% right sided. Among the quadrants, upper outer quadrant-60.8% upper inner quadrant-25.7% and lower outer quadrant-13.6%. The size of the mass was 2cm to 5cm was 79.7% and >5cm in 20.3% Majority (79.7%) belog to stage T2N1 and remaining (20.3%) belong to stage T3 N1. ER positive status was found in 5(6.8%) study participants. PR positive in 5(6.8%) and HER-2 neu positive in 2(2.7%) of study participants.(Table 2)

Table 2 Distribution of the study participants according to features of carcinoma . (N =74)

S.No.	Tumor specification	N(%)
1.	**Side of breast**	
	Left	43(58.1)
	Right	31(41.9)
2.	**Quadrant of breast involved**	
	Upper outer	45(60.8)
	Upper inner	19(25.7)
	Lower outer	10(13.6)
3.	**Type of carcinoma**	
	Ductal carcinoma	60(81.1)
	Lobular carcinoma	14(18.9)
4.	**Size of the lesion**	
	2cm to 5cm	59(79.7)
	>5cm	15(20.3)
5.	**Stage of carcinoma**	
	T2 N1	59(79.7)
	T3N1	15(20.3)
6.	**ER**	
	Positive	5(6.8)
	Negative	69(93.2)
7.	**PR**	
	Positive	5(6.8)
	Negative	69(93.2)
8.	**HER- 2 neu**	
	Positive	2(2.7)
	Negative	72(97.3)

IV. Discussion

The present study was done to find out the incidence of various types of breast carcinoma and to find out the risk factors of carcinoma breast. The present study included a total of 74 participants. The age of the study participants ranged from 36-67 years with mean (±SD) age was 50.9 (±7.4) years. In a study by Kamath R et al [10] which reported that All the study participants were between 25 to 69 years of age group. In a study by Pakseresht S et al [11] it was found that age group ranged from 25 years to 80 years.

Family history of breast cancer was seen in 3 (4.1%) of study participants. Similar finding was done in a study [11] done which reported that a positive history of breast cancer in first degree relatives was also associated with an increased risk of breast cancer ($p < 0.05$). Similar family history was found in other studies by Badwe RA et al[12] and Pakseresht S et al [11]. Thus, positive family history of breast cancer, age at menarche and obesity could be considered as significant risk factors for carcinoma breast. In a previous study done [14] Non-vegetarian diet, literacy status and a history of stillbirth and abortion did not emerge as significant risk factors for breast cancer in our study. A study by Ashok L et al it was found that The study suggests that non vegetarian diet is the important risk factor for Breast Cancer and the risk of Breast Cancer is more in educated women as compared with the illiterate women.[13]

Incidence of types of carcinoma breast

Among the study participants, left sided breast was involved in 58.1% whereas in others 41.9% right sided. Among the quadrants, upper outer quadrant-60.8% upper inner quadrant-25.7% and lower outer quadrant-13.6%. Majority had ductal carcinoma -81.1% and others 18.9% had lobular carcinoma. The size of the mass was 2cm to 5cm was 79.7% and >5cm in 20.3%. Majority (79.7%) belong to stage T2N1 and remaining (20.3%) belong to stage T3 N1. ER positive status was found in 5(6.8%) study participants. PR positive in 5(6.8%) and HER-2 neu positive in 2(2.7%) of study participants. From previous studies[14,11-13] Most common site is upper quadrant which is similar to our study finding. Usually patients present with lump at stage T2, which is represented in our study. This is similar with previous studies.[10-14]

V. Conclusion

In our study left sided breast was involved in 58.1% whereas in others 41.9% right sided. Among the quadrants, upper outer quadrant-60.8% followed by upper inner quadrant-25.7% and lower outer quadrant-13.6%. Majority had ductal carcinoma -81.1% and others 18.9% had lobular carcinoma. The size of the mass was 2cm to 5cm was 79.7% and >5cm in 20.3%. Majority (79.7%) belong to stage T2N1 and remaining (20.3%) belong to stage T3 N1. ER positive status was found in 5(6.8%) study participants. PR positive in 5(6.8%) and HER-2 neu positive in 2(2.7%) of study participants. In our study it was found that positive family history, age at menarche and obesity were found to be risk factors.

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