Risk factors of breast cancer among women in Central India

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Abstract

Most common malignancy affecting women worldwide is breast cancer accounting for more than one million cases. The exposure to various risk factors attributes the geographical variation in incidence of breast cancer. Thus, study of risk factors of breast cancer is important and might contribute to current knowledge on this important topic. Hence the present study was carried out to study risk factors of breast cancer in Central India. In a tertiary care hospital based longitudinal study, 85 histopathologically or cytologically confirmed cases of breast cancer were enrolled. Particulars age at menarche, menopause and first full term pregnancy, marital status, parity of patient and history and duration of breast feeding and family history of breast cancer in first degree relative were taken. Mean age of occurrence of carcinoma breast was 50.01± 11.592 years, of menarche was 15.21 ±1.381years, of menopause was 44.94±5.016 years, of reproductive age was 29.52 ±4.661 years, of first full term pregnancy was23.13 ± 4.2556 years. Married patients were 82(96.47%) of patients, 81(95.3%) had no family history. 82(96.5%) of cases had breast fed their children and mean duration of breast feeding was19.2± 9.932 months.None of the risk factors described in literature were classically seen in present study further suggesting the awareness of breast cancer and breast self examination the need of hour in current scenario in rural India.

Keywords: Breast cancer, Risk factors, Awareness.

Introduction

Breast cancer is fast becoming number one cancer in India and its incidence and mortality varies from region to region and is the most common malignancy diagnosed among women in developed countries and in developing regions it ranks second to cervical cancer.[1,2] Urbanization, industrialization, change in life styles and population growth have contributed to epidemiological transition with increasing incidence in developing countries at present. Lifestyle changes due to delayed marriages, late 1st child birth, contraception, reduced period of lactation, one child norm in working ladies etc. are responsible for increasing incidence in Indian scenario; hence there is a need to find out risk factor.

It is estimated that cancer rates could increase by 50% to 15 million new cases in the year 2020[3] with a sharp increase in numbers over past 30 years.[4] Worldwide breast cancer is the most frequent cancer in women and represents the second leading cause of cancer death among women after lung cancer.[5,6]

Currently in India as many as 1,00,000 new patients are being detected every year and an increase of 12% has been documented over past three decades in India now with annual incidence of 20.01/ 100000 population which contributes to about 60% of all cancers among women jointly with cancer cervix and ovary in India.[7] The cancer registries also suggest that age standardized incidence rates are rising even more rapidly in low incidence regions such as Africa and Asia probably due to socioeconomic and lifestyle e.g. late child bearing and associated changes in menstrual patterns in developing countries.

The exposure to various risk factors attributes the geographical variation in incidence of breast cancer. Increasing age is considered as important risk for breast cancer. The high risk factors due to prolonged exposure to endogenous estrogens are early menarche, late menopause, late first full term pregnancy, nulliparity and no breast feeding.[8,9,10,11] Family history of breast cancer increases the cancer risk by two to three folds.[12] Studies have proved that certain modifiable risk factors like unhealthy diet with high fat and physical inactivity resulting in overweight and obesity as increased risk for breast cancer in high income countries.[13] Other risk factors are hormone replacement therapy, smoking and excessive alcohol intake.

Not much data is available about the role of various risk factors for breast cancer in Indian women. A few earlier studies have reported the association of reproductive risk factors with increased risk for breast cancer. Thus, study of risk factors of breast cancer is important and might contribute to current knowledge on this important topic. The present study attempts to identify the various risk factors associated with breast cancer in central India.

Materials and Methods

The study was carried out at a tertiary care hospital based longitudinal study carried out from October 2012 to November 2014. The study population included all female patients presenting with lump in breast and 85 histopathologically or cytologically confirmed cases of breast cancer were included. Patient not willing to join trial were excluded. Using a proforma and preformed questionnaire containing particulars like age, age at

menarche, menopause, first full term pregnancy, marital status, parity of patient, history and duration of breast feeding and family history of breast cancer in first degree relative were taken initially drafted in English and later translated to Marathi at time of admission.

Results

The mean age of occurrence of carcinoma breast was 50.01± 11.592 years with a range of 26-75 years. On observing decade wise distribution, breast cancer was most commonly observed in age group of 31-40 years accounting for 28.2% cases followed by41- 50 years accounting for 24.7% of the cases.82 (96.47%) of patients were married women and only 3 (3.53%) were unmarried. The minimum age of menarche was 12 years and maximum was 19 years with mean of 15.21±1.381 years. 50(58.8%) of patients were postmenopausal while 35(41.2%) of patients were premenopausal. The minimum age of menopause was 31 years with maximum 55 years with a mean of 44.94±5.016 years. It is hypothesized that longer the total reproductive age greater is the risk for breast cancer because of longer duration of exposure of breasts to oestrogen. In present study total reproductive age of patients varied from minimum of 17 years to maximum of 39 years with mean reproductive age of 29.52 ±4.661 years (Table 1).

The minimum age at which first child was born was 15 years and maximum age was 40 years with mean age of 23.13 ± 4.2556 years. Nulliparity is an important risk factor for breast cancer and in the present study 82(96.47%) patients were multipara. 29(34.1%) of patients had two children and followed by 26(30.6%) having 3 children. As the number of children increased the incidence of breast cancer decreased in as shown in Table 3.

Breast feeding is said to have a protective role in prevention of breast cancer. In present study, 82(96.5%) of cases had breast fed their children. The mean duration of breast feeding was19.2± 9.932 months with a range of 2- 60 months. The incidence of breast cancer decreased as the duration of breast feeding increased. Family history of breast cancer in first degree relative has an increased risk of breast cancer. In present study, less than 5% cases had family history while the remaining cases 81(95.3%) had no family history.

Table 1: Demographic presentation of risk factors of breast cancer

Risk factors	N	Minimum	Maximum	Mean	Std. Deviation
Age	85	26	75	50.01	11.592
Age of menarche	85	12	19	15.21	1.381
Age of menopause	50	31	55	44.94	5.016
Total reproductive age	50	17	39	29.52	4.661
age at first birth	82	15	40	23.13	4.256
Duration of breast feeding in months	82	2	60	19.20	9.932

Table 2: Relation of breast cancer and Number of children

No. of children		
Number of children	Cases	Percent
1	11	12.9
2	29	34.1
3	26	30.6
4	7	8.2
5	7	8.2
6	2	2.4
Unmarried	3	3.5
Total	85	100.0

Discussion

Carcinoma of breast is most common cancer of women worldwide and incidence is gradually increasing throughout the world and is becoming major health problem. In present study of 85 females were recruited, treated and followed for upto 2 years, the mean age of patients was 50.01±11.592 years, which is quite similar to those reported in literature.

Table showing mean age distribution in different studies

Study	Year	Mean age(years)
Siddique et al[14]	2000	48 years
Raina et al[15]	2005	47 years
Pakseresht et al[16]	2006	47.73 years
Suchismita et al[17]	2008	46 years
Shilpa Asegaonkar[18]	2012	48.2 years
Present study	2015	50.01 years

Literature quotes the mean age in western countries to be greater than 55 years as shown by Albergaria et al[19] while mean age of Indian patients is a decade earlier. When viewed in relation to age in decade it was found that greater than 50% patients were observed in 31-50 years quite consistent with literature. It was also observed that one fourth of the patients were young in 20-40 years of age group which is also consistent with Indian literature.[20,21,22] The young age is been associated with larger tumour size, higher number of axillary lymph nodes, poor tumour grade, low rates of hormone receptor-positive status, earlier and more frequent loco regional recurrences, and poorer overall survival.[23,24] On doing this within group analysis it was noted that more advanced disease was found in younger patients.

Table showing age comparison with different studies

Age in years	Sen and Dasgupta series[21]	Rakesh Chopra[22]	Present study
21-30	3.33%	3.2%	2(2.4%)
31-40	23.8%	18.1%	24(28.2%)
41- 50	36.9%	32.7%	21(24.7%)
51-60	25.2%	25.9%	19(22.3%)
61-70	7.61%	14.8%	18(21.2%)
71-80	3.8%	5.3%	1(1.2%)

A majority (96.47%) of females who developed breast cancer were married and these statistics compare well with the Indian statistics.[17] Unmarried in Indian scenario is synonymous with nulliparity due to social fabric as unmarried motherhood is not prevalent in Indian society. Early age at menarche is associated with increased risk of breast cancer.[25] There is 5% to 15% decrease in risk for developing breast cancer later in life for each year of menarcheal delay.[26,27] In present study the mean age of menarche was 15.21 years which is quite similar with the literature.[16] The mean age at menopause in present study was 44.94 years which is quite similar to studies in rural India[18] where mean age of menopause was 41.6 years and by Pakseresht[16] et al in 2006 in Delhi showing mean age of menopause 44.92 years. Post menopausal women have a 15-50% lower risk of breast cancer than premenopausal women of the same age and child bearing.[28] In present study premenopausal women accounts for 41.2% of breast cancer cases. The results show equal occurrence in premenopausal females which is quite consistent with study by Raina et al.[15] Contrary to it breast cancer

occurs mainly in postmenopausal age in western literature.[29] While the majority of breast cancer patients in western countries are postmenopausal and in their 60s and 70s, the picture is quite different in India with pre-menopausal patients constituting about 50% of all patients.[29] Women who have had more menstrual cycles because they started menstruating at an early age (before age 12) and/or went through menopause at a later age (after age 55) have a slightly higher risk of breast cancer.[30] This may be related to a higher lifetime exposure to the hormones like oestrogen and progesterone.[31] Hence, it seems likely that total duration of menstrual life is an important factor related to the risk of developing breast carcinoma. In present study the mean total reproductive age was 29.52 years. Many epidemiological studies have revealed the younger a woman is when she has her first full term pregnancy; the lower is her risk of breast cancer. Lai FM et al[32] stated women having first full term pregnancy younger than 30 years, more than 3 full term pregnancies and breast feeding for more than 3 years displayed significant protective role against breast cancer. In present study the mean age at first full term pregnancy was 23.13 years and 3(3.53%) patients were nullipara. Our results showed similarity with study by Pakseresht et al[16] showing mean age at first delivery 20.8 years. Another study[33] showed only 2.4% of patients were nullipara and 43.5% of patients had parity 1-2 and 54.1% had parity >3 which were consistent with our results.

Several studies carried out around the world have reported lactation as a protective factor for breast cancer[34] and the collaborative group on hormonal factors in breast cancer 2002[35] suggested that when compared with women who had breast fed for more than 18 months, women who had breast fed for less than 6 months had a more than 11 fold significant risk of breast cancer. A reduced risk of about 30% was also observed among women who breastfed for 6-12 months as compared with women who breast fed less than 6 months. In present study the mean duration of breast feeding was 19.2 months. Breast feeding is commonly practiced in India. Only nulliparous face the risk of developing breast cancer. Family history of breast cancer in mother, father, sister or daughter increases the risk of developing breast cancer. Risk is more stronger if malignancy develops in premenopausal age or less than 50 years of age.[36] A history of even an ovarian cancer increases the risk of breast cancer. In present

study only 4.7% patients gave history of carcinoma of breast, quite common to Indian literature by Raina et al.[15]

Conclusion

In conclusion the mean age of presentation for breast carcinoma is a decade earlier in our patients compared to patients from west. Hence mammography as a screening tool is less likely to be as effective, due to higher density of breast tissue at younger age which decreases the sensitivity of mammography. Thus there is a need for developing other cost effective screening modalities for breast cancer in addition to propagating breast self-examination in masses for early detection.

Our study revealed roles for some modifiable determinants of breast cancer that can be focussed by public health intervention. Accordingly, the women who have one or more of the risk factors should take the special attention to mitigate risk of breast cancer. Early completion of family with longer duration of breast feeding remains the best option not only for the prevention of breast cancer, but also for overall health and well-being of family. None of the risk factors described in literature were classically seen in present study further suggesting the awareness of breast cancer and breast self-examination the need of hour in current scenario in rural India.

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