Breast Cancer Screening among Women in Central Kerala, India: A Multicentric Study

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Keywords: Breast cancer screening, BIRADS, benign breast disease, screening program

Abstract

Introduction: Breast cancer is estimated to be the most common occuring malignancy among females in India. It also accounts for the highest number of cancer mortality rates. Majority of them leads to fatal consequences due to delay in recognition of signs or initiating treatment. Regular community based screening and education are pivotal to improve quality of life

Objectives: To assess the prevalence of breast cancer and other benign breast pathology among females in Central Kerala, India and to determine the associated factors of these diseases.

Methodology: This was a cross-sectional study conducted in Kerala, India that included 858 women. Data and relevant history was noted; followed by general examination and examination of both breasts by the clinician. Of these, 79 women required mammogram screening which were done and reported according to Breast Imaging Reporting and Data System (BIRADs score).

Results: Of the 79 women who underwent mammogram screening, the mean age was 47.35 ± 7.6 years. Majority of the reports (40.5%) showed BIRADS I while 38% showed BIRADS II; 19% showed BIRADS III and 2.5% showed BIRADS IV.

Conclusion: Based on mammogram screening, 57% had benign or probably benign lesions while 2.5% had lesions suspicious of malignancy. This posits the need for community based screening to detect malignant lesions early and to differentiate malignancy from benign lesions.

Introduction:

Breast cancer is a major public health problem affecting millions of women in developed as well as developing countries. Globally, it is the second commonest cancer and approximately 1.7 million new cases per year are reported and it accounts for 25% of all types of cancers [1]. In India, an estimate of above 100,000 new cases are diagnosed annually [2, 3]. According to the ICMR population based cancer registry data, more than 30% of all cancers in females in India, is breast cancer [4]. Its incidence is the commonest in Indian females of urban population, and the second commonest in the rural Indian female population after cancer of the cervix uterus [5-9]

Awareness programs and screening on breast cancer prevention and detection are still scarce in the remote and rural areas of our country when compared to the urban cities [2, 10]. Due to the excessive ubiquity of social stigma, illiteracy, lack of awareness and financial constrain prevalent in rural areas, women often do not present for medical care early. And so, the major patient population is receiving focused medical care only at locally advanced and metastatic stages. [2,11]. The overall survival decreases considerably with increasing tumour size and node involvement at the time of detection, even with optimal treatment.[12,13] Proper screening improves survival by detecting breast cancer at an early stage.

India lacks organized screening programs for common cancers [14]. Even though implementing clinical breast examination and mammography screening in India is an economic challenge, studies have shown that treating early-stage breast cancer is more cost-effective than treating late-stage disease [15]. Previous randomized trials have enumerated that mammographic screening of all women of the age group between 50 and 70 years can reduce the mortality from breast cancer by nearly 25 percent [16,17].

Multiple risk factors for carcinoma breast have been identified in different geographic region and ethnic group [18]. Genetic, reproductive, environmental and socioeconomic risk factors, obesity, young age at menarche, late age at first child and short period of lactation are the common predisposing factors [19]. A proper screening along with systematic health awareness initiatives, aimed at creating a healthy women population, can bring down the risk and morbidity of breast cancer.

Kerala, a South Indian state, is in the third stage of epidemiologic and demographic transition offered by low fertility rate and high life expectancy. The state is facing highest prevalence of diseases including cardiac disease, diabetes, cancer, chronic pulmonary disorders and their risk factors in the country [20]. Industrialization, Urbanization and economic development have had a great impact in accelerating the diet changes in the past decade. In developing countries like India, this change is significant on the health and nutritional status of its population. These rapid changes in Kerala have led to the increasing burden of breast cancer. Knowledge regarding the risk factors and efficient preventive strategies to control them are much needed to control breast diseases. This study focuses to assess the proportion and screening of risk factor in Kerala which is likely to provide clarity about the prevalence of breast cancer in the future, in other parts of India.

Methods and Methodology

A cross sectional study was conducted in three districts of Kerala (Ernakulam, Thrissur, Malappuram) to assess the prevalence of breast cancer and other benign breast pathology and to determine the associated factors of these diseases. This was a community based study, by conducting medical camps for women and was attended by 858 women. The details of the study was explained and an informed consent was obtained. Individually, their relevant medical history was noted and both breasts were examined along with their detailed general and systemic examination by a clinician. Of these, 79 women required the need for further mammogram screening which was done and reported according to Breast Imaging Reporting and Data System (BIRADs score). The data collected was coded and entered in micro soft excel and analyzed using SPSS version 23.

Results

A total of 858 women attended screening. Of which, 79 women underwent mammogram screening as advised by a doctor after physical examination. These reports focusses on the study population who needed mammogram screening. The mean age was 47.35 ± 7.596.

AGE GROUP	FREQUENCY
Below 41 years	15
41-50 years	34
51-60 years	29
More than 60 years	1

Table 1: Age groups of the study population. (N=79)

As this was a multicentric study involving different districts of Kerala,

Place	Frequency	Percent
Ernakulam	12	15.2
Malapuram	7	8.9
Thrissur	60	75.9
Total	79	100.0

Table 2: Depicts the frequency details of those hailing from the specified districts.

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The mammogram tests were reported according to Breast Imaging Reporting and Data System (BIRADs score).

BIRADS SCORE	Frequency	Percent
1 (Negative)	32	40.5
2 (Benign)	30	38.0
3 (Probably Benign)	15	19.0
4 (Suspicious for malignancy)	2	2.5
Total	79	100.0

Table 3: shows details of the mammogram screening according to this scoring system.

Age	BIRADS SCORE				Total
	1	2	3	4	
<41	7	6	2	0	15
41-50	12	14	7	1	34
51-60	12	10	6	1	29
>60	1	0	0	0	1
Total	32	30	15	2	79

Table 4 shows the detailed results of the number of women in each of the BIRADS scoring category according to their specified age groups

Discussion

This study focusses to assess the prevalence of benign and malignant breast pathology and determine its associated factors. If a lesion was spotted clinically, mammogram screening was advised and carried out. Mammogram is a well proven tool used widely for screening and is useful to delineate lesions between benign and malignant by categorizing them according to BIRADs scoring system. As this screening can assess this difference and important for detecting small lesions, this study can be considered significant. [21] Although this approach marks the possibility of overdiagnosis, this possibility was minimized as mammogram was conducted only for clinically relevant participants. [22] Mammogram claims an advantage to assess breast density as this may pose as a risk factor for breast cancer later on. [23,24]

Age is a crucial risk factor for breast cancer and it clinically helps to differentiate certain breast pathology too. In our study, majority (81%) are aged above 41 years which is relevant, belonging to age between 41-60 years. Age related BIRADs scoring showed that all women below 41 years (19%) showed only benign lesions while half of them showed negative for any lesions. These results were consistent with a similar study done in Nepal which showed carcinomatous changes only in those above 40 years. [25] While majority of those belonging to 41-60 age group showed benign lesions, 2.5% showed lesions that were suspicious of malignancy that required further investigations. A study done by Brinder Chopra et al [28] showed that the incidence of prevalence of breast cancer in younger age groups are increasing compared to Western countries and also shows peak in malignancy rates of the age group 41-60 years; which is similar to our study showing 2.5% lesions suspicious of malignancy only in this age group.

In view of the identified benign pathology in the overall population, the commonest was fibroadenoma which was followed by fibrocystic disease. Fibroadenoma constituted 40% and Fibrocysytic disease occurred in 16% of the population belonging to BIRADs II. Mima B. Maychet Sangma et al conducted a study among surgical outpatients in a tertiary hospital in South India which also backed fibroadenoma to be the commonest benign breast pathology. [26] However, a study in Mayo Clinic, USA showed that fibroadenoma is not an independent risk factor nor does it increase the rate of breast cancer occurence. [27]

Considering geographic backgrounds, Thrissur (75.9%) had the highest number of women with breast lesions ahead of Ernakulam and the Malappuram. This number consistutes negative as well as benign pathology and hence does not provide a substantial statement with regard to carcinoma. This increased number could possibly be due to increased attending females in Thrissur in view of community awareness. This could also depict the lack of early recognition probably due to unawareness of self breast examination and delay in approaching treatment.

In International terms; WHO reports show that a well developed country like USA has an incidence of 232,714 number of cases of breast cancer compared to only 144,937 cases in India.[29] This vast majority constitutes to various factors like smoking, alcohol consumption, physical inactivity and obesity which are all relatively on the higher side in the US. [29] As many studies show, these are crucial risk factors. [30] However, though the incidence is lower, the cancer mortality rates are higher in India (21.5%) making it the most common cause of cancer deaths in females here. While USA reports showing lower deaths (16.1%) is not surprising. This mortality rates owes to reduced community screening facilities, lack of awareness among mostly rural population and presentation at advanced stages. A cause of worry is the trend of increased incidence at younger age groups (41-60 years) in Asian populations compared to Western which could signify that the causes extend beyond lifestyle changes alone. [31] Since our study also shows malignancy suspicious lesions (2.5%) in this age group (41-60 years), it could be consistent with this trend. Also, this study highlights that the mass community awareness and improved screening methods in the state have led to diagnosing lesions at a much earlier stage like BIRADs II which are in par with the diagnostic stages of well developed countries. The old trend of illiteracy, late recognition and diagnosis at advanced stages still exist but could possibly be improving. Importance of community awareness and screening, self breast examination and early diagnostic approach cannot be further stressed upon.

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