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CLINICO-EPIDEMIOLOGICAL PROFILE OF CARCINOMA BREAST AMONG WOMEN IN TERTIARY CARE HOSPITALS OF SOUTHERN KARNATAKA: A RETROSPECTIVE STUDY

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ABSTRACT

In today's world, one of the most common cancers in women is breast cancer (CABr) and is the second leading type of cancer seen in women in India. It is associated with various clinical outcomes depending on the time of diagnosis, staging, and type of response to the given treatment. It is also influenced by several factors like Diabetes Mellitus, hypertension, and hormone-related medications, in addition to genetic and familial factors. We intended to study the clinical and epidemiological profile of CABr patients seeking health care in tertiary care hospitals of Mangaluru, in South Karnataka, India. This hospital-based retrospective study was carried out among 56 women diagnosed with CABr. Data was collected using a pretested proforma, which included

their demographic details and lifestyle factors. Women with CABr were in an age range of 51–70 years. 37.5% of women were unemployed, and 12.5% of these women were found to be illiterate. 64.3% reported adhering to a mixed diet, and 12.5% of women with CABr were involved in smoking. 30.4% were found to be diabetic. The present study brought out the baseline characteristics of CABr and its association with factors like diabetes mellitus and substance abuse.

KEYWORDS: Carcinoma of Breast, Dietary Habits, Diabetes Mellitus.

1. INTRODUCTION

Cancer is a topic of great insight that has gained a lot of significance worldwide, and the most common form of cancer in women in today's world is breast cancer. Carcinoma of the breast (CABr) is a malignant tumour occurring mostly in women [1,2]. In India, the second most prevalent (21%) cancer in females is CABr after cervical cancer (26.1%). They include a family history of breast carcinoma, irregular menstrual cycles, excessive alcohol intake (1.5 fold), obesity, age, ethnicity (western, white women have a higher possibility), hormone therapy patients (Estrogen and progesterone administration) and genetic variability in the genes: BRCA1 and BRCA2 [1,3]. In normal cells, these genes help prevent cancer by making proteins that keep the cells from growing abnormally. If a person inherits a mutant variety of either of these genes, there is an increased risk of CABr. Mutated BRCA 1 increases risk by 80% and a BRCA 2 mutation increases the risk by 45%. There are a few more genes that have shown sporadic contribution CABr like CDH1, STK11, PALB2, ATM, TP53, CHEK2, and PTEN. Increased risk women [3,4]. Multiple factors, including gene mutations, significant family history, previous benign disease, age at menarche, and pregnancy, have been shown to significantly increase the risk of developing breast carcinoma [5]. Several factors contribute to the risk of breast carcinoma, with age being the primary factor, particularly among post-menopausal women. Other contributing factors include lifetime exposure of breast tissue to sex hormones like estrogen and women's parity. Hormone exposure could result from hormone replacement therapies, contraceptive usage, or an inherent increase in circulating hormones in the body [2, 5-7]. Diabetes mellitus (DM), often referred to as diabetes only, is defined as a group of chronic metabolic disorders associated with hyperglycaemia. Diabetes mellitus is broadly classified into two main types: Type 1 or juvenile diabetes or insulin-dependent diabetes mellitus (IDDM), and Type 2 or adult-onset diabetes or noninsulin-dependent diabetes mellitus (NIDDM) which is due to insulin resistance, sometimes combined with an absolute insulin deficiency [8, 9]. Type 2 DM has been recognized as one of the risk factors associated with the incidence of breast carcinomas. There is increasing evidence that higher expression of insulin-like growth factor (IGF) or insulin receptors (1R) is found in breast cancer women with T2DM as compared to those without diabetes, and the higher expression of insulin-like growth factor (IGF) or insulin receptors (IR). Elevation of circulating IGF-1 is possibly associated

with CABr risk [4, 10]. Studies report that there are increased levels of circulating insulin in post-menopausal women with breast cancer; this could be a connecting link between insulin resistance (seen in Type 2 DM) and CABr [11].

Based on the observations from the literature review, though numerous studies have documented in-depth knowledge about carcinoma of breast, diabetes and other clinical manifestations, there remains limited scientific literature correlating the association between carcinoma of breast with diabetes and other associated clinical conditions, especially in this part of the Country. Hence, the present work was undertaken to an intention to study the clinical and epidemiological profile of breast cancer patients among women seeking health care in selected tertiary care hospitals of Mangaluru, in South Karnataka, India.

2. METHODOLOGY

This was a hospital-based and time-bound retrospective study, and it was carried out in Kasturba Medical College Hospital, Attavar, Mangalore, District Government Wenlock Hospital, Mangalore and Government Lady Goshen Hospital, Mangalore. Study was conducted after the approval of the Institutional Ethics Committee, Kasturba Medical College, Mangalore (IEC KMC MLR 04-16/97). Women (n=56) who were diagnosed with carcinoma of the breast were chosen at random from the hospital case-records. The data was collected by visiting the hospitals during a period of 2 months with due permission from the Medical superintendent's office. Data collection was done using a pretested and vetted proforma, which included the patient's demographic details and lifestyle factors. The demographic details like age, education and employment status, and lifestyle details about dietary habits, alcohol consumption, and smoking were obtained from the hospital files and recorded. We also collected data regarding the diagnosis of Diabetes Mellitus. Data was curated and analyzed using the Statistical Package for Social Sciences (SPSS) version 11.5. and the results were expressed in frequency and percentage.

3. RESULTS

Our observations show that most of the women with CABr were in an age range of (51-70) years, with the mean age being 59.75 ± 9.99 years (Table 1). We also observed that a significant unemployment rate (37.5%) among women diagnosed with CABr. Interestingly, this high unemployment rate occurs despite a relatively low illiteracy rate among the

studied population; only 12.5% of these women were found to be illiterate, as depicted in Tables 2 and 3. However, it should be noted that the dataset does not provide an explanation for the observed unemployment status among these women.

In the observed cohort of women diagnosed with CABr, a significant proportion (64.3%) reported adhering to a mixed diet that included both meats and animal fats. In contrast, a smaller segment of the population (35.7%) reported themselves as vegetarians. Regarding alcohol consumption, it was noteworthy that only a single individual from the study group reported intake of alcoholic beverages. Furthermore, the prevalence of smoking within this cohort was identified to be 12.5%, as detailed in Table 4. We found that 30.4% of the patients with CABr were diabetic. However, no significant association was observed between breast carcinoma and diabetes mellitus, as shown in Figure 1.

4. DISCUSSION

In our study, we observed that most of the women were in the age range of (50-70) years, this observation is supported by the studies done in the past, which suggest that the risk of breast cancer is significantly higher and increases with an increase in age in women in the post-menopausal age group, as compared to their peri-menopausal or pre-menopausal counterparts [12]. This may be due to the accumulation of germline mutations in BRCA1, which significantly increase with age [3]. Studies suggest that the risk of developing breast cancer increases with age. It is well established that early menarche and delayed menopause increase the risk of developing breast cancer as the breast tissue has more prolonged exposure to the circulating estrogens [13, 14]. Pre-menopausal women have a higher risk of developing breast cancer than post-menopausal women [15, 16]. Previous studies report that office workers who sit for extended periods are at higher risk of CABr. Furthermore, those who are exposed to chemicals like pesticides and ionized radiation or have jobs that cause disruptions in the circadian rhythms are at a greater risk of developing breast carcinomas. In our study, 37.5% of women diagnosed with CABr were unemployed, and a small section (7.2 %) of patients were either involved in clerical jobs or they were shopkeepers or farmers, so there can be a mild association of occupation with the incidence of CABr in our study [17-20]. We observed that only 12.5% of women with CABr were illiterate, and 12.5 % were postgraduates. These observations are not enough to conclude that literacy or higher education will have any association with the

occurrence of breast carcinomas. However, some studies in the past do indicate that there is an increased risk of CABr among women with higher education levels, with a stress on the fact that other confounding factors like alcohol use and hormone therapy may play a mediating role for their observations [21, 22]. We also found that most of our patients were on a mixed diet, which included meat and animal fats. Studies have shown a higher incidence of breast cancer among non- vegetarians when compared to those on a vegetarian diet. However, red and processed meat intake does not appear to independently increase the risk of breast cancer; it might have weak but positive associations (23). This is supported by studies, that have shown that a diet that is rich in saturated fatty acids may be associated with an increased risk of breast carcinoma [5]. High intakes of vegetables, fruit, cheese, and soy products, as well as low intakes of red and processed meat, are associated with lower breast cancer risks (23, 24). It could be assumed that including fruit and vegetables in the diet could protect against breast cancer due to the presence of a variety of phytochemicals and anti-oxidants, which exert a counter mechanism to the cancer cells [23]. Studies also suggest that a dietary pattern characterized by a diet rich in fruits and vegetables, whole grains, and fish but poor in red meats and animal fats has been positively associated with a longer overall survival of the breast [24-26]. However, the effect of these factors on breast cancer mortality seems not significant in most studies. Many studies have been done attempting to fathom a link between alcohol intake and breast cancer, and most of them suggest that alcohol intake does play a role in increasing the risk of breast carcinoma, the results have been controversial. Some of these studies also suggest that abstinence from alcohol may decrease the risk of breast cancer [27, 28]. In the presence of other risk factors like estrogen exposure, there has been evidence of the CABr risk increasing significantly [29]. There is a linear correlation between alcohol consumption and the incidence of breast cancer in women, extending across the spectrum of intake levels commonly reported [27, 30-32]. Smoking and alcohol intake do not show any correlation with the incidence of breast carcinoma in the present study. Although studies have shown a positive correlation between smoking habits and alcohol consumption and increased risk of CABr [5], Smoking habits before breast cancer diagnosis unfavorably affect overall survival. However, the effect of smoking on mortality from breast cancer, if present, is limited [33-35]. Although studies do support the fact that

smoking causes of cancer due to the multiple and potent chemical carcinogens that are present in the smoke [36–39]. In the present study, there were a few CABr patients (34.4%) were found to be positive for diabetes, so we found no strong association between these two diseases. Research has shown that breast cancer and Diabetes Mellitus have several common risk factors which may confound this association [9]. The epidemiological evidence that was collated in previous reports suggested that there was an increased risk and mortality of most cancers with diabetes and women with diabetes had a significantly increased risk of CABr relative to non-diabetic women [8]. The present study also showed that there were post-menopausal female patients only who were diagnosed with breast cancer, which is in accordance with previous studies. Though there were a few patients with CABr found to be positive for diabetes, there was a weak association found between them. The present findings also reveal that the proportion of women with CABr consuming alcohol & smoking were more prone to diabetes. Though in these diagnosed cases of CABr a mixed diet showed a higher trend of diabetes as compared to a vegetarian diet, alcohol, smoking and mixed diet were not found to be the contributing factors for the development of the disease.

5. CONCLUSION

We found no significant association between

carcinoma of the breast and diabetes mellitus although other risk factors for breast cancer can coexist. Carcinoma of the breast and diabetes may not show a positive correlation, but early diagnosis and treatment still remain the mainstay of management. Hence, this research explores the correlation between Carcinoma Breast and diabetes including the other Clinico-Epidemiological Profile in women, an area less explored in scientific literature. With CABr being the second leading type of cancer seen among women in India and with increasing evidence that higher expression of IGF or 1R is found in breast cancer women with T2DM, this study investigates the regional relevance as both CABr and T2DM are one of the major public health burdens. Therefore, understanding the co-relation between these health conditions will not only help to implement better preventive strategies but also aid in effective management plans. This is also crafted in line with National health Policies (Non-Communicable Disease Movement in India) and Sustainable Development Goals of United Nations 3 and 4, fostering awareness and promoting healthier lifestyles.

6. LIMITATIONS OF THE STUDY

The study was conducted in a short time-period with a small sample size. We could not consider the ethnic differences in the occurrence of CABr.

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Table 1: Age Group Distribution of the Study Population (n = 56).

Age Group (yrs.)	Frequency	Percentage
41-50	13	23.2
51-60	20	35.7
61-70	12	21.4
71 and above	11	19.6

Table 2: Occupation Distribution of the Study Population (n = 56).

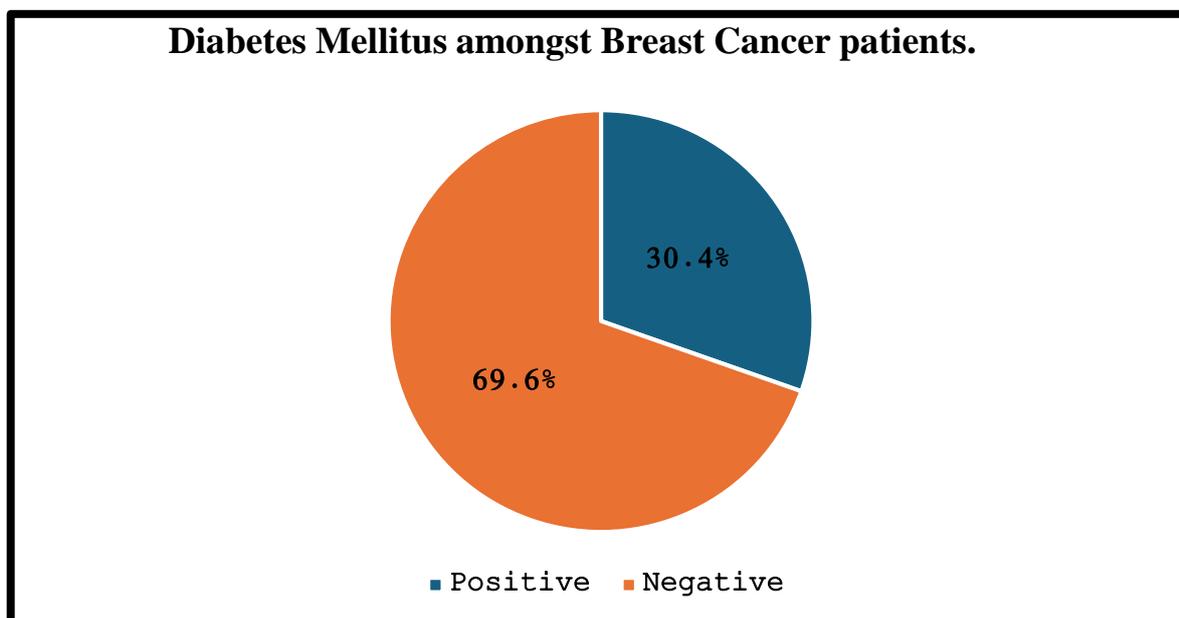
Occupation	Frequency	Percentage
Unemployed	21	37.5
Unskilled	15	26.8
Semi-Skilled	5	8.9
Skilled	5	8.9
Clerical/Shop Keeper/ Farmer	4	7.2
Semi-Professional	1	1.8
Professional	5	8.9

Table 3: Education Profile of the Study Population (n = 56).

Education	Frequency	Percentage
Illiterate	7	12.5
Middle School	5	8.9
Primary School	10	17.9
High School	16	28.6
Graduation	11	19.6
Post-Graduation	7	12.5

Table 4: Lifestyle Factors and Dietary Habits Among the Study Population (n = 56)

Lifestyle Factors		Frequency	Percentage
Alcohol Intake		1	1.8
Smoking		7	12.5
Diet	Vegetarian	20	35.7
	Mixed	36	64.3

**Figure 1: The Association Between Women Diagnosed With Carcinoma of Breast and Those Found to Be Positive for Diabetes Mellitus.**