CHANGES IN THE AETIOLOGICAL FACTORS PATTERN OF BREAST CANCER IN BASRAH; A PROSPECTIVE STUDY

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Abstract

This is a prospective case control study conducted over a period of two years to evaluate the risk factors of breast cancer in Basrah.

One hundred and ten female patients with carcinoma of breast were admitted to the general surgical department in three main referral hospitals in Basrah and those attended to Basrah breast clinic, compared with (140) women who had no breast cancer from the population as a control group were included in the study. The patients were diagnosed to have breast cancer according to the results of fine needle aspiration cytology biopsy and the results of histopathological examination of excisional biopsy taken from the primary growth in the breast.

The study involved history, physical examination, laboratory & radiological investigations, ultrasonic study and the results of fine needle aspiration cytology biopsy and histopathological examination.

The data showed that the range of age of the group affected was (41-50 years); the patients were mostly from urban areas (66.36%); the married patients were most commonly affected than single patients (77.27%). Most of them (76.3%) had a history of breast feeding and (27.2%) of patients had a history of contraceptive pills taking.

Sixty two patients had acceptable range of body mass index, and seven patients only had a family history of breast cancer.

The study showed that the epidemiological pattern of the risk factors of breast cancer were altered to some extent according to the environmental, psychological and nutritional changes that occurred in our country in the last decades.

Introduction

Breast cancer is the commonest malignancy among women, and it is the commonest cause of death in middle aged women in western countries. Each year there are approximately 30,000 new cases and 16,000 deaths from the disease in the UK[1]. The age-adjusted incidence of new cases has been steadily increasing since the mid 1940s, in the 1970s the probability of a women in the United States developing breast cancer was estimated at 1 in 13, while in 1996 the frequency was 1 in 8[2]. Despite the steady increase in incidence, the overall breast cancer mortality has remain static, this relative decrease in mortality rate reflects the early detection of the disease[3].

Worldwide, breast carcinoma is an epidemiologic problem. England and Wales have the highest national age-adjusted mortality for breast cancer (27.7 per 100,000 population).

United States ranks thirteenth with (22.0 cases per 100,000). Nuns and

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Jewish women have a higher than average incidence[3,4].

The etiological factors which include; geographical: Where it occurs commonly in the western world[1,5].

The age: Since the incidence steadily rises so that by the age of 90, nearly 20% of women are affected[1]. The gender: Where less than 1% of patients with breast cancer are male[5]. Genetic factors: It occurs more commonly in women with a family history of breast cancer than in the general population[6,7].

The committee on diet, nutrition and cancer of the national academy of science concluded that a causal relationship exist between dietary mammalian fat and the incidence of breast cancer. Fried, high fat foods can increase the risk of developing breast cancer approximately two folds[2,8].

The role of exogenous hormones, in particular the oral contraceptive pill and hormonal replacement therapy in the development of breast cancer is more controversial. The World Health Organization study suggested that there is neither an increase or a decrease in the risk of breast cancer with the use of the injectable contraceptive depot-Medroxy progesterone acetate (DMPA)[3-7].

The majority of data suggest that breast cancer risk is directly correlated with relative weight, the risk of obese women is 1.5-2 times higher than for non obese women[9-12].

Previously, breast feeding of long duration (more than 36 months in a life time) was thought to reduce the risk of breast cancer, this observation is no longer considered valid[2]. For women in whom menopause occurs after the age of fifty-five the risk of developing the disease is twice as high as for those whose menopause started before age forty-five[2,8].

Infertility and nulliparity are associated with a higher probability (30-70%) for developing breast cancer in comparison with the probability for parous women. With decreasing age at the time of first pregnancy, the risk decreases proportionately[2,3].

Women with a history of primary breast cancer have a risk 3-4 times higher for primary cancer in the contralateral breast[2,10] and women with a history of previous ovarian or endometrial carcinoma have a relative risk of about 1.3 to 1.4 for development of a primary cancer of the breast[3,13].

Atomic bomb survivor from Nagasaki and Hiroshima, women with high dose radiation for acute postpartum mastitis and women who have received multiple chest fluoroscopic examination for treatment of pulmonary tuberculosis have a high incidence of breast cancer. Risk from multiple exposures to relatively low doses is similar to the risk of one large dose of similar radiation yield[14].

Radiotherapy for breast cancer may increase the risk for cancer of the contralateral breast. Risk of breast cancer is reduced after radiation treatment for cancer of the cervix as a result of reduction of estrogen[15].

The aim of this work is to evaluate the risk factors of the breast cancer in Basrah, and to determine the significance of these factors in the development of the disease.

Patients and methods

This is a prospective case-control study for evaluation and analysis of the risk factors of breast cancer in Basrah. It extend from December 2001 to January 2004.

A total of (110) female patients with breast cancer were studied, versus (140) women without breast cancer as a control. The patients included in the study were those admitted to three major hospitals in Basrah; Basrah General Hospital, Al-Saddir Teaching Hospital, and Al-Mawanae Hospital, and also include those patients attended

the breast clinic at Al-Saddir Teaching Hospital as an outpatient.

The control group included in the study was collected from the hospital; as relatives of the patients, visitors, medical and paramedical staffs and also from the general population.

The records were analyzed for the age of the patients, place of residency, occupation, marital status, family history of breast cancer, breast feeding, smoking, contraceptive pills taking and body mass index.

Routine investigations were taken into account, all patients were diagnosed to have a breast cancer on the bases of fine needle aspiration cytology biopsy and/ or excisional biopsy taken from the tumour.

The risk factors for the development of breast cancer in the patients were compared with the control groups of approximately the same age group and place of residency, the determination of the significancy of the risk factors was obtained from X^2 test and p-value.

Results

Over two years period, (110) patients were included in the present study, all of them were females.

The age ranged from 20 years to over 60 years, (37.2%) of the affected patients occurred in the age group (41-50 years). The p-value for the risk factor (age distribution) was >0.05 i.e. not significant, as shown in Table I.

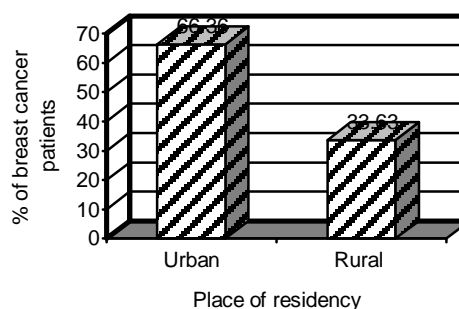**Table I: Age distribution of the patients**

Age group (years)	Case No. (%)	Control No. (%)
(20-30)	3 (2.72%)	5 (3.57%)
(31-40)	26 (23.63%)	36 (25.71%)
(41-50)	41 (37.27%)	48 (34.28%)
(51-60)	22 (20%)	30 (21.42%)
61+	18 (16.36%)	21 (15%)
Total	110	140

Geographical distribution

It has been shown that (73) patients (66.33%) were lived in the urban areas, while (37) patients (33.63%) were lived in the rural areas. The p-value of this factor (place of residency) was more than 0.05 i.e not significant, as shown in Table II.

Table II: Geographical distribution of patients with breast cancer in Basrah

Place of residency	Case No. (%)	Control No. (%)
Urban	73 (66.36%)	100 (61.42%)
Rural	37 (33.63%)	40 (28.57%)
Total	110	140

Occupation

The majority of the patients were housewives (97) patients, while the others (13) patients were working patients. As shown in Table III. The p-value for this risk factor (occupation) more than 0.05 i.e not significant.

Table III: The distribution of patients according to the occupation

Occupation	Case No. (%)	Control No. (%)
Housewives	97 (88.18%)	118 (84.28%)
Working patients	13 (11.81%)	22 (15.71%)
Total	110	140

Marital status

The majority of the patients were married (85) patients (77.27%), while only (17) patients were single. The p-

value of this risk factor (marital status) was more than 0.05 i.e not significant, Table IV.

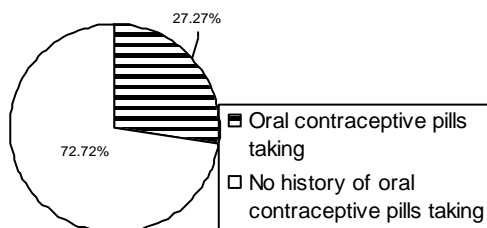Table IV: Marital status among breast cancer patients

Marital status	Case No. (%)	Control No. (%)
Single	17 (15.45%)	23 (16.42%)
Widow	8 (7.27%)	14 (10%)
Married	85 (77.27%)	103 (73.57%)
Total	110	140

Oral contraceptive pills taking

Thirty patients (27.27%) had a history of oral contraceptive pills taking but most of the patients (80) had no history (Table V). The p-value was more than 0.05 i.e not significant.

Table V: Relationship of oral contraceptive pills taking with breast cancer

Risk factor	Case No. (%)	Control No. (%)
Oral contraceptive pills taking	30 (27.27%)	39 (27.85%)
No history of oral contraceptive pills taking	80 (72.72%)	101 (72.14%)
Total	110	140

Smoking habit

There is an increased incidence of breast cancer among non smokers (96) patients (87.27%), while only (14) patients were smokers. The p-value was less than 0.05 i.e significant (Table VI).

Table VI: Smoking status among breast cancer patients

Risk factor	Case No. (%)	Control No. (%)
Smokers	14 (12.72%)	6 (4.28%)
Non smokers	96 (87.27%)	134 (95.71%)
Total	110	140

Breast feeding

Eighty four patients were breast feeders (76.36%) while twenty six patients (23.63%) were non-breast feeders. The p-value was less than 0.05 i.e significant (Table VII).

Table VII: Breast feeding status among breast cancer patients

Risk factor	Case No. (%)	Control No. (%)
Breast feeding	84 (76.36%)	89 (63.57%)
Non breast feeding	26 (23.63%)	51 (36.42%)
Total	110	140
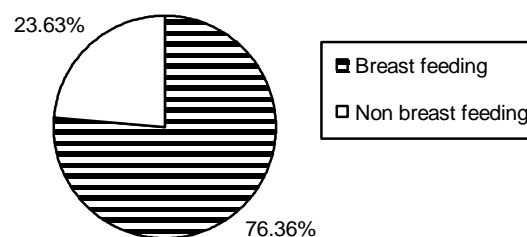
The body mass index[10]

Sixty two patients had acceptable range of body mass index (56.36%), while (16) patients were obese (14.54%), and (3) patients only had morbid obesity. The p-value was less than 0.05 i.e significant (Table VIII).

Table VIII: Body mass index (BMI) status among the breast cancer patients

BMI	Case No. (%)	Control No. (%)
Below acceptable range <18.5	3 (2.72%)	3 (2.14%)
Acceptable range (18.5-24.9)	62 (56.36%)	54 (38.57%)
Overweight (25.0-29.9)	26 (23.63%)	61 (43.57%)
Obesity (30.0-39.9)	16 (14.54%)	20 (14.28%)
Morbid obesity ≥40	3 (2.72%)	2 (1.42%)
Total	110	140

Family history of breast cancer

Seven patients only had a family history of breast cancer (6.36%), and the majority of the patients (103) had no family history of breast cancer. The p-value was more than 0.05 i.e not significant (Table IX).

Table IX: The family history of breast cancer among breast cancer patients

Risk factor	Case No. (%)	Control No. (%)
Family history of breast cancer	7 (6.36%)	6 (4.28%)
No family history of breast cancer	103 (93.63%)	134 (95.71%)
Total	110	140

Discussion

Breast cancer is the most common site specific cancer in women and is the leading cause of death from cancer for females 40 to 44 years of age[2,4].

It is well accepted that breast cancer arises in a multistep fashion[6,7], there is at least a five folds variation in the incidence of the disease reported among different countries, although this difference appears to be diminishing. Women living in less-industrialized nations tend to have lower rate of breast cancer than those living in industrialized countries but, Japan appear to be an exception[3,16].

In the present study, more than one third of the patients (41 female patients) were in the age group (41-50 years), these figures are in keeping with assumption and other observations that the incidence of this disease increases as age increases.

The study also demonstrate that about two thirds of the patients (73 patients) live in the urban areas and this might be contributed for two reasons; More industrial environmental contamination in the urban area, than rural areas. Secondly, most of the patients who reside in the urban areas presented early because the near distances to the main hospital and higher education[7,16].

Comparing this fact with Menck et al. study from the University of California which showed that a lower percentage of early diagnosed breast cancer was reported for the non urban country/ country groups[16].

The housewives were the most commonly affected in (88.18%) of the total number of the patients, but in comparison with the control group, this factor was not significant. The majority of the breast cancer patients in the present study were married (77.27%) of the total number, and this contributed for the reason that the married female patients might have adverse psycho-social factors like: life event stressors, social support, defense style, and emotional control and their inter-actions[17]. In particular the past and present circumstances that our country were exposed. This fact is supported by a study of prince et al. from the American cancer society which was concluded that women experiencing a stressor objectively rates as highly threatening and who were without intimate emotional support had a nine folds increase in risk of developing breast carcinoma[17].

Thirty patients only (27.27%) had a history of contraceptive pills taken, and the p-value was not significant. By

comparing this with a model of breast cancer risk from the Breast Cancer Detection Demonstration Project (BCDDP) by Gail and Coworkers who reject many factors that did not contribute to breast cancer risk, these include: oral contraceptive use, long-term menopausal estrogen use, modest alcohol consumption and cigarette smoking[2]. The risk of developing breast cancer with oral contraceptive use is only slight and disappears 10 years after stopping the pill[1,13].

Ninety six patients (87.27%) were not smokers, although the (p-value was significant), but the smoking is not a usual habit for the women in our community, and as mentioned above by the Breast Cancer Detection Demons-tration Project (BCDDP) which omit the smoking as a risk factor of the breast cancer[2].

The present study shows that (84) patients had breast feeding (76.36%), the p-value was significant. The trend toward breast feeding was adopted by the nursing mothers in our community probably due to the economic disturbance that occurred in our country that made the formula feeding more expensive, in spite of that the breast feeding is no longer consider as a protective factor against the breast cancer[3].

Sixty two patients had acceptable range of body mass index[(10)] (56.36%), while (16) patients had obesity (14.54%). This is in comparison with a study of Lam and associates from University of Vermont College of Medicine who concluded that weight, BMI and breast density were independently associated with breast carcinoma risk[12].

Seven patients only had a family history of breast cancer (6.36%), in comparison with a study of Lynch and associates who documented the frequency of sporadic, familial and hereditary breast cancer variants, with documentation of pedigree, familial

breast cancer may constitute as greater as one third of the total incidence of breast cancer cases[3,12]. This could be explained by the affects of the environmental factors and it's role in the development of the breast cancer disease in the group of the patients of the present study over the familial and the hereditary predisposing factors for the individual patient. This was supported by Tokunga et al. in follow up of atomic bombs survivors, the association between radiation and breast cancer was well established[14]. Since the mammary cells when exposed to radiation will show gradual phenotypic changes including altered morphology, increase in cell proliferation relative to the control, anchorage-independent growth and invasive capability before becoming tumorigenic in nude mice[15,16]..

In the last decades, our country and especially our district exposed to a lot of environmental changes such as exposure to the radiation and chemical materials from the wars, nutritional changes that followed the economic block and the psychosocial stress that followed these events, all might contributed and predisposed to the development of the breast cancer[17-19].

In conclusion

1- The environmental circumstances changes that occurred in our country alter to some extent the epi-demiological pattern of the breast cancer disease.

2- Psychosocial factors which altered adversely in our country due to the past and the current events needs descriptive evaluation by a fully equipped serial studies, because they probably play a major role in the development of the disease.

3- Nutritional changes that happened during the years of the economic block, might had an additional role in the development of the disease

that should be described in a special sophisticated study in the future.

Recommendations

1- Establishment of a breast clinic in every hospital in our district which should be fully equipped with all facilities and requirements, because the clinic can play a fundamental role in the early detection of the disease, with subsequent substantial decrease in the morbidity and mortality and it can play an important role in the regular follow up of the patients.

2- Because most risk factors are not readily a menable to primary prevention, and early diagnosis is a powerful prognostic determinant, so we have to establish a real and efficient screening program, especially for those at risk for the development of the disease, using for example: breast-self examination, clinical breast examination, mammography …. etc, for early detection of the disease and should include all population subgroup equally.

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