

Risk factors of breast cancer among Iraqi women

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Objective This study aimed to identify the risk factors of Breast Cancer among Iraqi women.

Methods A retrospective case control study, done on 147 breast cancer cases compared with 161 non-malignant cases selected randomly from women health center in Al-Alwiya Maternity Teaching Hospital.

Results Increased risk for breast cancer significantly associated with increased age especially ≥ 60 years, widow or divorced women [Odds ratio (OR) 3.7, confidence interval (CI) 1.5–8.5], menopause [OR 6.43, CI(3.58–11.9)], age at menarche < 12 years [OR 1.99, CI(1.04–3.8)], and use of contraceptive pills for ≥ 1 year [OR 1.99, CI(1.01–3.95)].

Conclusion Positive risk factor for breast cancer was old age ≥ 60 years, widow or divorced women, menopause, age at menarche < 12 years, and use of contraceptive pills for ≥ 1 year. Family history, second degree relative, not associated with breast cancer. There are some discrepancies between our findings and other studies in the literature need further studies.

Keywords breast cancer, risk factors, iraqi women

Introduction

Cancer is anticipated to rise by 70% in the coming 25 years in the developing countries. Breast cancer is known to represent the main part that increase.¹ Breast cancer has ranked the first malignancy among the Iraqi population in general and the leading cause of death among women following cardiovascular diseases.^{2,3}

Iraqi breast cancer rates were generally constant between 2000 and 2009, but newer statistics from the Iraqi Cancer Registry detect increasing rates since 2009 with females over 50s causing the main contribution to the increase.⁴

Breast cancer arises from a multifactorial process. Recently, attention was focused on genetic predisposition, and on its association with the modern life style, including diet, alcohol consumption.⁵ Oral contraceptive pills was proved to increase risk of breast cancer, which decrease after stopping it.⁶ These risks are associated with more recent formulations of oral contraceptives.⁷

In Iraq with a huge variation in life style modes, cultural, geographical, diets and habits, there are considerably limited information's sources of on cancer risk factors. Actually, the factors for differences in breast cancer incidence in women are not fully understood, which are likely to be explained by reproductive and lifestyle factors such as literacy, diet, age at menarche and menopause, age at first delivery, abortion, family history of breast cancer.⁸⁻¹⁰

The importance of knowledge of breast cancer risk factors is that it helps in detecting risk group women, and then to use it in the building of breast cancer screening programs and cancer prevention programs. As the risk factors is unique for each community, the study of breast cancer risk factors for Iraqi women will be an important step in planning screening and prevention programs. This study attempts to find out some of the various risk factors of breast cancer among Iraqi women.

Patients and Methods

A retrospective case control study done on patients attended the women health center, in Al-Alwiya Maternity Teaching

Hospital, during the period from January 1, 2018 to October 30, 2018. The study sample consists of 147 females proved to have breast cancer by histopathological examination, and 161 patients proved not to have breast cancer by radiological, histopathological, and cytological investigations and considered as a control group.

Data collected through standardized questionnaire to gain information about the personal, demographic characteristics, risk factors for breast cancer (e.g. reproductive, hormonal and genetic). The diagnosis of cases and controls done by consultant medical staff, using a Triple Assessment Technique (i.e. physical breast examination, ultrasonography, with or without mammography and fine needle aspiration cytology) according to the patient state.

The risk factors are as follows: early age at menarche, late age at menopause, early age at first pregnancy, and family history, was categorized according to the Centers for Disease Control and Prevention.¹¹

The Statistical Package for Social Sciences, version 18 was used for data entry and analysis. Pearson Chi-square (χ^2) test was used to compare proportions of different factors among different groups of study sample. Odds ratio (OR), and binary univariate logistic regression using Enter method were used to find the associations of risk factors. *P*-value of ≤ 0.05 was regarded as statistically significant.

Results

The age distribution show that most of cancer cases were 40–50 years (45, 30.6%), and 50–60 years (45, 30.6%), versus < 30 years (78, 48.4%) among control group, at the same period, this relation was statistically significant as shown in Table 1. The mean age among cases 50.6 ± 11.3 , was significantly higher than controls 34.7 ± 12.3 . The breast cancer starts at the age of 28 years.

Most of the breast cancer cases and controls were from middle socioeconomic state as follows; 104 (70.7%) and 119 (73.9%) respectively. Estimating the risk using odds ratio

Table 1 Age distribution of study groups

	Cases No (%)	Controls No (%)	Total No (%)	OR (95%CI)	P
<30 years	6 (4.10)	78 (48.40)	84 (27.30)	1	
30–40 years	26 (17.70)	27 (16.80)	53 (17.20)	12.519	<0.05
40–50 years	45 (30.60)	40 (24.80)	85 (27.60)	14.625	<0.05
50–60years	45 (30.60)	15 (9.30)	60 (19.50)	39.000	<0.05
>60 years	25 (17.60)	1(0.60)	26 (8.4)	325.000	<0.05
Mean	50.6±11.3	34.7±12.3			

$\chi^2 = 98.7, P < 0.05$.

demonstrate that socioeconomic state, occupation, and education, were non-significantly associated with breast cancer. However, regarding marital status, when comparing the widow/divorced women to married show [OR 3.7(1.1.5–8.5)], this relation was statistically significant, as shown in Table 2.

The Odds ratio of the menopause was 6.43, age at menarche 1.99, hormonal contraception use for ≥ 1 year 1.99, and menstrual irregularity 1.56 was significantly associated with breast cancer, while age at menopause ≥ 55 year was non-significantly associated with breast cancer as shown in Table 3.

The odds ratio for family history of breast cancer was non-significantly associated with breast cancer: family history of breast cancer 0.804, firstdegree relative 1.036, firstand seconddegree relative 1.036, only seconddegree relative 0.56, one relative 0.82, two or more relatives 0.73, as shown in Table 6.

Discussion

Breast cancer was reported among females in 20s, which is the same to what reported in previous literatures in Iraq,^{4,12,13} and neighbor countries¹⁴ but lower than in Cameron 35 years.¹⁵ This may be due to same environmental exposure.

About 52.4% of cases aged <50 years this figure goes with what reported previously in Iraq,^{4,12,13} and differ from what is known globally that, 75% of new cases occurs in women aged older than 50 years,^{16,17} this difference indicate presence of an environmental factors.

The early onset of cancer is accompanied by OR increment with increasing age, indicating that factors other than age may affect the breast cancer development.¹⁵

Most of cases and controls were from middle socioeconomic state 104(70.7%), 119 (73.9%), respectively, this is similar to previous Iraqi studies,¹⁸ as most of the Iraqi women were from middle income families and those with high socioeconomic state usually seek the private health care services, that we cannot catch them.

Women are at higher risk of breast cancer with high socio-economic status of 2.5-fold than those from lower socioeconomic level, which is similar to Nkondjock et al., and this may be due to the fact that they tend to carry fewer pregnancies or have children at an older age.¹⁹

Employed women had higher risk of breast cancer of 1.7 than housewives, which agree with Ghiasvand et al.¹⁴ This may be related to exposure to other risk factors, e.g. carcinogens and stress, as well as they were more educated and had higher socio-economic status, which by itself risk factors for breast cancer.

Most of the patients were of low educational level, this agree with previous Iraqi studies.^{13,18,20} High educational level had higher Odds ratio than low educational level, this goes with Ghiasvand et al.¹⁴ Those patients were more health education to seek medical counseling.

Menopause had 6.43-fold risk for having breast cancer than menstruating women, goes with what was found in India 1.6-fold,²¹ which was higher than what was found in Iran 0.95-fold,²² and Cameron 0.37-fold.¹⁵ This may be due to effect of aging as the menopausal women are already old, or to the high postmenopausal blood estrogen levels which is established as risk factors.²³ Sahan et al.²⁴ in Iraq documented an increased serum estradiol and prolactin among the pre- and post-menopausal breast cancer women, and recommends emphasizing the necessity of co-operation between the Ministry of Health and the Ministry of Commerce and protecting them from dangerous behavior by providing them with sufficient support and guidance to stay away from the hormonal products and focusing on the extension programs in the protection of the community through educating them with the guidance.

Late menopause increases the risk of breast cancer. Risk increases by almost 3% for each year older at menopause, so that a women who has the menopause at 55 years rather than 45 years, has approximately 30% higher risk.²⁵ This study revealed that menopause at the age of 55 years increases the risk of breast cancer by twofold than those their age of menopause <55 years. This is consistent with studies in Morocco (1.36-fold),²⁶ (1.7-fold)²⁷ and lower than found by Al Ramahi²⁸ menopause above 50 years had 9.5-fold risk than under 45 years.

This discrepancy may be explained by that most women (especially old age) have difficulties in recalling past events such as age at menarche; therefore, recall bias was unavoidable.¹³

Age at menarche of <12 years had twofold risk than at age ≥ 12 years, this agree with Alaha (3.05).¹⁸ This result differs from Iranian studies,^{22,29} which revealed 1.5-fold of risk in women with age at menarche of <13 years was fourfold.

Use of hormonal contraceptive pills for 1 year or more, increase the risk by twofold than non-hormonal contraceptive drugs user, this was supported by the following studies: in China (1992), Norway and Sweden (2002) and Malaysia (2005).^{30–32} However, an African study show negative association.³³

Menstrual irregularity was associated with increased risk of breast cancer by 1.6-fold than women with regular menstruation, this finding is consistent with Terry³⁴ that irregular menstruation associated with 1.12-fold risk for breast cancer, and other previous studies.^{35,36}

While opposed by most of the studies which found inverse effect on breast cancer risk.^{37–41} This increase may be due to use

Table 2. The socio demographic variables among breast cancer cases and women without breast cancer

	Cases No (%)	Controls No (%)	Total No (%)	OR (95% CI)	P
Socioeconomic					
Low	37 (25.2)	30(18.60)	67 (21.80)	1	>0.05
Middle	104 (70.7)	119(73.90)	223 (72.40)	1.4 (0.8–2.5)	>0.05
High	6 (4.1)	12(7.50)	18 (5.80)	2.5 (0.8–7.5)	>0.05
Marital status					
Married	108 (73.5)	127(78.90)	235 (76.30)	1.00	
Unmarried	14 (9.50)	26(16.10)	40 (13.00)	0.63 (0.3–1.5)	>0.05
Widow/divorced	25 (18.8)	8(5.9)	33 (12.3)	3.7 (1.15–8.5)	<0.05
Occupation					
Housewife	114 (77.60)	137(85.10)	251 (81.50)	1.00	
Employed	33 (22.4)	24(14.9)	57 (18.5)	1.7 (0.9–2.9)	>0.05
Education					
Illiterate	44 (29.9)	37 (23)	81 (26.30)	1.00	>0.05
Primary	49 (33.3)	61(37.9)	110 (35.70)	1.5 (0.8–2.6)	>0.05
Intermediate	24 (16.3)	30 (18.60)	54 (17.50)	1.5 (0.7–2.9)	>0.05
Secondary	12 (8.20)	8 (5.00)	20 (6.50)	0.8 (0.3–2.1)	>0.05
University	18 (12.2)	25 (15.50)	43 (14.00)	1.7 (0.08–3.5)	>0.05
Total	147 (100)	161 (100)	308 (100)		

Table 3 The hormonal risk factors among breast cancer cases and women without breast cancer

Hormonal risk factor		Cases (%)	Controls (%)	Total (%)	OR (95% CI)	P
Menopause	Yes	61 (41.5)	16 (9.90%)	77 (25.00%)	6.43 (3.58–11.9)	<0.05
	No	86 (58.50)	145 (90.10%)	231 (75.00%)		
Age at menarche	<12	28 (19.00)	17 (10.60)	45 (14.60)	1.99 (1.04–3.8)	<0.05
	≥12	119 (81.00)	144 (89.40)	263 (85.40)		
Age of meno-pause	<55 years	42 (68.90)	13 (81.30)	55 (71.40)	1.96 (0.5–7.96)	>0.05
	≥55 years	19 (31.10)	3 (18.80)	22 (28.60)		
Contraceptive	<1 year	122 (83)	146 (90.7)	268 (87)	1.99 (1.01–3.95)	<0.05
	≥1 year	25 (17.00)	15 (9.30)	40 (13.00)		
Regularity	Irregular	22 (26.20)	27 (18.50)	49 (21.30)	1.56 (0.8–2.96)	>0.05
	Regular	62 (73.80)	119 (81.50)	181 (78.70)		

Table 6. The genetic risk factors among breast cancer cases and women without breast cancer

Genetic risk factors		Cases (%)	Controls (%)	Total (%)	OR (95%CI)	P
Family history of breast cancer	Yes	35 (23.80)	45(28.00)	80(26.00)	0.8(0.48–1.34)	
	No	112 (76.20)	116 (72.00)	228 (74.00)	1	>0.05
	No relative	112 (76.20)	116 (72.00)	228 (74.00)	1	
Relative degree	First degree relative	17 (11.60)	17 (10.60)	34 (11.00)	1.04 (0.5–2.1)	>0.05
	Second degree relative	12 (8.20)	22 (13.70)	34 (11.00)	0.56 (0.26–1.2)	>0.05
	First and second degree	6 (4.10)	6 (3.70)	12 (3.90)	1.036 (0.3–3.3)	>0.05
No. of relatives	0	112 (76.20)	116 (72.00)	228 (74.00)	1	
	1	28 (19.00)	35 (21.70)	63 (20.50)	0.83 (0.47–1.5)	>0.05
	≥2	7 (4.80)	10 (6.30)	16 (5.20)	0.73 (0.3–1.97)	>0.05

of hormonal therapy for regulation as it was found by Titus-Ernstoff et al.⁴¹ that the apparent inverse association with irregular menstrual cycles was stronger among women who did not use hormonal replacement therapy.

Positive family history was not significantly associated with increase breast cancer risk (0.8), while many studies reported the strong association between family history and breast cancer,⁴² in Moroccan two to threefold increased risk,²⁶ and in Southern Iran 9.07,^{22,14}

Family history of the first degree relative show increased risk by 1.036-fold than women without family history of breast cancer, this agree with a study in Iraq 2.1-fold increase,²⁸ and in Cameroon 1.3.¹⁵

Patient with one or more relatives with breast cancer was non-significantly associated with increased risk of breast cancer, this opposition what found by Brewer et al.⁴³ in large data base study, a cohort of over 113,000 women from the general UK population, found that one relative with breast cancer history increase the risk by 1.7 times and two or more increase the risk by 2.5 times. And the effect of family history was more prominent in women aged <45 years (2.47-fold), while among those aged >45 years the risk was 1.63-fold. The majority of multiple-case families that segregate both breast

and ovarian cancer in a dominant fashion are due to mutations in the *BRCA1* gene on chromosome 17q.⁴⁴

This difference may be explained by the presence of other factors that affect both the cases and control groups, in which its effect appear even on the age distribution also, or may be due to having a relative with breast cancer is promoting for seeking health services, which affect our results.

From the results of this study, a need for further investigating the environmental factors that may have direct or indirect effect, on breast cancer, particularly among younger women.

Conclusion and recommendation

Positive risk factor for breast cancer was ≥ 60 years of age, widow or divorced women, menopause, age at menarche <12 years, and use of contraceptive pills for ≥ 1 year, family history, second degree relative, not associated with breast cancer. There are some discrepancies between our findings and other studies in the literature which necessity need further studies.

Conflicts of Interest

None. ■

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