Association of Risk Factors with Breast Cancer in Libyan Women

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Abstract: Breast cancer (BC) is the most common cancer among Libyan females. There are many important risk factors for BC in different populations as suggested by epidemiological studies. BC is an etiologically complex disease affected by genetic and other environmental factors, which include gender, age, previous breast cancer, body mass index, menopausal status, postmenopausal hormonal therapy, reproductive factor, alcohol consumption, smoking and breastfeeding. The aim of this study was to investigate if there is an association between risk factors and breast cancer among Libyan females. Data were collected by using questioners for 38 cases with breast cancer from Tripoli Medical Center and 100 controls from March 2016 to February 2017. The results showed that risk of breast cancer was associated with age, the mean ages ($\pm$ SD) of the case and control groups were 46.7 ± 15.6 and 38.8 ± 19.1 respectively, age at the first birth (P=0.036), family history with first-degree relative percentage of the cases and control groups were 21% and 4% and second-degree relatives were 10.5% and 13% respectively with statistical difference (P=0.042) and menopausal status (P=0.002). The risk decreased with breastfeeding (P=0.033). No association was observed between passive smoking (P=0.363) and the number of pregnancies and births (P=0.402). Data from this study indicated that there were some factors associated with breast cancer among Libyan females including age, age at the first pregnancy, family history and menopausal status.

Keywords: Breast cancer, Risk factors, Libyan female.

INTRODUCTION

Breast cancer is the most common type of cancers among women; it is caused by a combination of genetic and environmental factors (Zhai et al., 2006). In Libya, breast cancer is also considered the most common cancer among females accounting for 26% of all female cancers (El Mistiri et al., 2007). It also accounts for 41.5% in 2012 (Bodalal et al., 2014). As well, two studies that were published recently in the western region of Libya, have stated that breast cancer in females was the most common cancer, representing 23.7 % (Elzouki et al., 2018) and 20.6 % (of cancer cases Elzouki et al., 2018). Worldwide, breast cancer comprises 22.9 % of all cancers in women (Oldenburg et al., 2007), and more than 1.6 million new cases of BC worldwide have been reported in 2010(Forouzanfar et al., 2011). Most breast cancers were reported to occur in women 100 times more likely than in men (Richie & Swanson, 2003).

Epidemiological studies have suggested that there is an association between some risk factors with BC including genetic and other factors, such as gender, body mass index, post-menopausal, hormonal therapy, reproductive factor, alcohol consumption, smoking and breastfeeding (Lyytinen et al., 2010; MacMahon, 2006; Richie & Swanson, 2003; Seitz et al., 2012; Singletary, 2003; Van den

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Brandt et al., 2000). BC risk factors are not well reported in Libya. For this reason, this paper, aimed to study association between BC and risk factors in Libyan women.

MATERIALS AND METHODS

Study subjects: The study was carried out from March 2016 to February 2017. BC patients participated from Tripoli Medical Center and control subjects were from different cities of Libya. The study cases included 38 women aged 16 to 77 years with confirmed diagnosis of BC, while 100 women aged 16 to 75 years free of BC were considered as a control group. All subjects completed an in-person interview that used well-structured an Arabic form questionnaire, taking an account the name, age, age of discovering the disease BC, if they have relatives with breast cancer, family history, smoking, if the patient is premenopausal or postmenopausal, marital status, number of births, age at first pregnancy, breastfeeding and routine doing self-examination or not.

Statistical analysis: Comparisons between groups and risk factors have been evaluated using Pearson chi-square test (P= 0.05). We estimated the association between different factors and the risk of BC using logistic regression analysis. All statistical analyses have been implemented in SPSS version 19.0 (SPSS, Chicago, IL).

RESULTS

A total of 138 Libyan women were enrolled in this study, among them 38 were inffected with BC (cases) and 100 were free of BC (controls). All study subjects completed an in-person interview that used an Arabic form questionnaire to assess and observe risk factors of BC in both groups. The distribution of suspected risk factors of BC has also been investigated in case and control groups.

The mean ages of case and control groups were 46.7 and 38.8 respectively with a significant difference (P=0.0023) between them. BC in case group according to Age is summarised

in figure 1. Ages varied between 16 and 77 years, the most of BC cases about 90% appeared between 30 to 50 years old, while the highest incidence of BC appeared between the ages 35 and 45 years old.
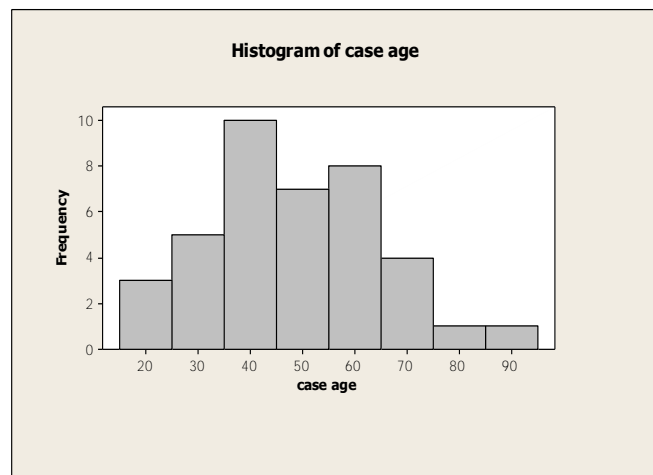

Figure: (1). Histogram of ages of breast cancer cases

Breastfeeding and family history results showed differences between cases and controls. The frequency of breastfeeding in cases was 52.63% while it was 53% in the controls (P= 0.033) as illustrated in table 1. In addition, difference (P= 0.042) between BC incidence and family history of BC was found between cases 31.5% and controls 17% as shown in table 2.

Table 1: Analysis of breastfeeding in BC cases and control groups

Frequency of breast feeding	Cases n (%)	Controls n (%)	P value
Yes	20 (52.6%)	53 (53%)	0.033
No	18 (47.4%)	47 (47%)	

Table 2: Analysis of family history in BC case and control groups

Frequency of family history	Cases n (%)	Controls n (%)	P value
Yes	12 (31.6%)	17 (17%)	0.042
No	26 (68.4%)	83 (83%)	

The number of women that delivered at their first birth in BC cases was 28 and in controls was 55. Age of women at their first delivery showed statistical difference between the cases and controls with (P= 0.036) as illustrated in table 3, these results suggested that there was an association between breastfeeding, family history and the ages of women at their first pregnancy and the occurrence of BC in Libyan women. The results demonstrated a significant difference with (P=0.002) between BC incidence and menopausal status of BC between cases and controls as seen in table 4. All remaining factors showed no significant difference between cases and controls as summarized in tables 5 and 6, passive smoking (P= 0.363), number of pregnancy and births, (P= 0.402).

Table 3: Analysis of ages of BC cases and controls at their first birth

Frequency of ages at first birth	Cases n (%)	Controls n (%)	P value
15-20	9 (32.1%)	28 (50.9%)	0.036
21-25	14 (50%)	16 (29.0%)	
26-30	2 (7.1%)	7 (12.7%)	
31-35	3 (10.7%)	4 (7.3%)	

Table 4: Analysis of menopausal status in BC case and control groups

Menopausal status	Cases n (%)	Controls n (%)	P value
Yes	20 (52.6%)	25 (25%)	0.002
No	18 (47.4%)	75 (75%)	

Table 5: Analysis of passive smoking in BC case and control groups

Frequency of family history	Cases n (%)	Controls n (%)	P value
Yes	12(31.5%)	17(17%)	0.042
No	26 (68.4%)	83 (83%)	

Table 6: Analysis of number of pregnancy and births in BC case and control groups

Frequency of number of pregnancy and births	Cases n (%)	Controls n (%)	P value
1-6	23 (82.1%)	33 (60%)	0.402
7-12	5 (17.9%)	22 (40%)	

The study highlights the importance of early detection and self-examination among Libyan women, as results showed that 34.2% of cases, discovered the disease by self-examination whereas 65.7% of patients did not, however, 76% of control cases did not carry out self-examination and results showed no significant differences (P= 0.160) as illustrated in table 7.

Table 7: Analysis of self-examination in BC cases and control groups

Frequency of self examination	Cases n (%)	Controls n (%)
Yes	13 (34.2%)	24 (24%)
No	25 (65.8%)	76 (76%)

DISCUSSION

The present study has examined the association between the risk factors and BC in Libyan women. Breastfeeding frequencies were significantly different between cases and controls (P=0.033), suggesting the protective effect of breastfeeding against BC in Libyan women. Similar results were reported from Nigeria (Okobia et al., 2005), USA (Stuebe et al., 2009) and Sri Lanka (De Silva et al., 2010). In addition, Helewa suggested that such a protective association might be due to the reduction of endogenous and exogenous carcinogens present in the breast epithelial cells during lactation (Helewa et al., 2002). The current work illustrates that there is an association between BC and family history in case and control groups (P=0.042), these findings suggests a positive genetic impact of family history on BC

risk in Libyan females. This result is in agreement with previous studies (Phipps et al., 2010; Singletary, 2003).

The results showed differences (P=0.036) in relation to age at first pregnancy between case and control groups. This outcome is consistent with other epidemiological studies that showed a protective role for the early full-term pregnancy against BC in developed and industrial countries (Phipps et al., 2010; Soerjomataram et al., 2007).

The findings of the present research work demonstrated that the mean age of patient was 46.7 years and the hieghest percentage was between 35 and 45 age, which implies that risk of BC increases as age increased. These data are in agreement with earlier report (Ermiah et al., 2012), which revealled that the average age of women affected with BC was 45.4 years as well as other study (Phipps et al., 2010) which indicated that the average age of BC patient was 48 years in Arab world.

The current study indicated no association (P= 0.363) between BC and passive smoking. Furthermore, several studies were reviewed (Terry & Rohan, 2002) and showed an association between smoking and BC, whereas others showed a lack of such association. However, number of smokers amongst Libyan cases and controls were relatively small to be considered for association study.Similarly, the lack of association between number of pregnancies and births among Libyan patients and controls (P= 0.402) was in agreement with other studies in USA (Dietz et al., 1995) and Iran (Mahouri et al., 2007).

The present study has demonstarted that Libyan women who made self-examination were noticeably less than those who did not, since 65.7% of cases and 76% of control cases did not carry out the procedure as a prevention measurement. The results indicated lack of public awareness about the importance of early detection among Libyan women. Therefore we argue for immediate effective awareness programs to reduce breast cancer mortality among Libyan women.

The current findings supports the hypothesis that there is association between important risk factors and BC among the Libyan women and it would be useful to know and understand them to contribute to disease control and prevention. However, the present study faced several limitations including, small number of patients included in comparison to breast cancer percentage among Libyan women. In future studies, we recommend that he sample size should be larger to obtain significant answer about the association between risk factors and breast cancer. Moreover, we encourage assessing other important factors such as genetic factors and considering analysis of DNA mutations from study tissues and blood samples from BC cases. Genetic studies are very valuable to discover the genetic role in breast cancer of the Libyan population.

CONCLUSION

In conclusion, the present study has indicated that there is an association between the risk of breast cancer and several factors including age, age at the first pregnancy, family history and menopausal status.

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علاقة عوامل خطر الإصابة بسرطان الثدي لدى النساء الليبيات

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المستخلص : يعتبر سرطان الثدي من أكثر أنواع السرطانات شيوعا بين النساء في ليبيا، وقد أثبتت عدة دراسات سابقة وجود عوامل وراثية وبيئية مرتبطة بالإصابة بسرطان الثدي لدى الإناث مثل نوع الجنس، والعمر، والسمنة، والرضاعة، وسن اليأس، والعلاج الهرموني، والتدخين، وتناول الكحول. تهدف هذه الدراسة إلى معرفة أهم عوامل خطر الإصابة بسرطان الثدي لدى النساء الليبيات، حيث تمت دراسة هذه العوامل على 138 مشاركة، 100 منهن غير مصابة بسرطان الثدي (المجموعة الضابطة) و38 منهن مصابة بسرطان الثدي لمعرفة ارتباط هذه العوامل مع الإصابة بسرطان الثدي لدى النساء الليبيات وذلك باستخدام استبيان يضم مجموعة من الأسئلة حول أهم عوامل خطر الإصابة تضمنت العمر، العمر عند اكتشاف المرض، التاريخ العائلي للمرض، التدخين السلبي، سن اليأس، الحالة الاجتماعية، عدد مرات الحمل، العمر عند أول حمل، الرضاعة، الفحص الذاتي. وتم توزيع الاستبيان على المشاركات، و تحليل البيانات عن طريق البرنامج الإحصائي SPSS. أظهرت النتائج بأن خطر الإصابة بسرطان الثدي مرتبط بالعمر حيث كان متوسط العمر في كل من مجموعة المرضى (15.6 ± 46.7) والمجموعة الضابطة (38,8 ± 19.1)، العمر عند أول إنجاب (P=0.036)، التاريخ العائلي للمرض (P=0.042)، سن اليأس (P=0.002). أوضحت الدراسة أن معدل خطر الإصابة بسرطان الثدي ينخفض لدى النساء المرضعات (P=0.033)، لم تثبت الدراسة وجود علاقة بين سرطان الثدي وكل من التدخين السلبي (P=0.363) وعدد مناسبات الحمل والولادة (P=0.402)، علاوة على ذلك، وجد أن النساء الليبيات تحتاج إلى زيادة في حملات التوعية بأهمية الفحص الذاتي والكشف المبكر وذلك لزيادة فرص النجاة من هذا المرض. نستنتج من خلال نتائج هذه الدراسة أن هناك عوامل مرتبطة بالإصابة بسرطان الثدي لدى النساء الليبيات وتشمل كل من العمر، و التاريخ العائلي، والسن عند أول إنجاب، وسن اليأس.

الكلمات المفتاحية : سرطان الثدي، عوامل الخطر، الإناث الليبيات.

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