

Breast Cancer Epidemiology in Lebanon



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Introduction

Breast cancer is the most commonly diagnosed cancer among women in Western countries and in some Middle Eastern countries including Cyprus, Egypt, Jordan, and Israel [1-5]. This epidemiological profile also applies to Lebanon [6-8]. Based on data extracted from the Lebanese National Cancer Registry for the year 2004, breast cancer represented 38.2% of all cancer cases and was the leading cancer among Lebanese females [9]. It was projected to remain the most commonly reported cancer site in 2018 based on published data from the Lebanese National Cancer Registry database between the years 2003 and 2008 [8]. Data from the 2017 American University of Beirut Medical Center (AUBMC) tumor registry seems to be compatible with such a projection as it reveals that breast cancer continues to be the most common cancer type, representing around 41.3% of all cancer cases among females and around 22.0% of all cancer cases in males and females [10].

Incidence

Based on published data from the Lebanese National Cancer Registry database for the period between 2003 and 2008, the most notable change in women was the rise in breast cancer age-standardized incidence rates (ASR) from 78.3 cases per 100,000 in 2003 to 95.7 cases per 100,000 in 2008 [8]. Worldwide crude and ASR per 100,000 for the year 2004 were estimated at 64.1 and 71.0, respectively [6]. These rates continued to increase reaching 84.2 cases per 100,000 and 104.4 cases per 100,000, respectively as

per the 2015 Lebanese Ministry of Public Health National Cancer Registry [11]. As such, the incidence of breast cancer among Lebanese women is generally increasing and is projected to continue to cause the highest morbidity burden compared to other cancers.

Increasing Incidence Explanation

The high incidence rates of breast cancer in Lebanon compared to other Arab countries may, in part, stem from the better awareness of breast cancer and the wide implementation of screening programs in Lebanon [9]. Since 2002, the Lebanese Ministry of Public Health has been launching annual awareness campaigns for breast cancer screening to facilitate access to mammography at reduced fees in different locations in Lebanon among women aged 40 years and above. Such awareness campaigns play an essential role in both, increasing women's motivation to make use of the available diagnostic services and sensitizing physicians to suspect and diagnose signs and symptoms of potential breast tumors [12]. The lack of awareness campaigns and the rare practice of population screening in Egypt, Tunisia, Saudi Arabia, Syria, and Palestine might explain why advanced disease remains very common in such countries [12-17].

The rising incidence of breast cancer in Lebanon can also be explained by certain reproductive factors that characterize the Lebanese population [9]. Significant changes in marriage and fertility trends, with higher ages of marriage and fewer desired children, are likely to contribute to the increase in breast cancer incidence in the country [18]. For instance, the mean age at marriage of Lebanese women has increased from 23.2 years in 1970 to 27.5 in 1996, compared to 21.7 years in 1997 in Occupied Palestine, 25.3 years in 1994 in Jordan, 22.3 years in 1996 in Egypt, and 25.2 years in 1996 in Kuwait [13, 19, 20]. In addition, the fact that the age at menarche is getting younger and that of menopause older compared to the last decades of the past century are also likely to increase the incidence [20]. Of note, the extent of use of Hormonal Replacement Therapy among Lebanese women, another risk factor mentioned in the literature, is not well known and requires further investigation [21].

Large Western studies have shown that obesity increases the risk for developing breast cancer among postmenopausal women [22]. Obesity was also found to be a risk factor for breast cancer in Jordan [1]. Since a national population-based study in Lebanon has shown high prevalence rates of overweight and obesity comparable with those observed in developed countries such as the United States [23], this might also contribute to the increasing incidence in Lebanon. As such, some of the cited protective factors in the literature are ones that contribute to weight control, such as following the traditional Mediterranean diet that is rich in fruits and olive oil [1, 24-26].

Since tobacco smoking is a possible risk factor for breast cancer, its rising incidence in Lebanon can also be partly associated with the rise in active and passive tobacco smoking in the country [27-30]. Unfortunately, water pipe smoking, which is of more harm than cigarette smoking, is currently on the rise in Lebanon since it is more culturally accepted than the latter method [31, 32].

Age

The peak incidences of breast cancer among females occur at younger ages in Lebanon and in the Middle East compared to Western countries and to Jews in Israel [12-15]. Data from 1998 reveals that the age pattern at diagnosis of female breast cancer in Lebanon is characterized by an increase in the rates up to the 5th decade, around menopause, and a decrease thereafter which is typical of that in low-risk countries such as Mexico [6, 33].

Based on Lebanese reports, around 40% and 43% of female breast cancer cases presented before the age of 50 in 2004 and 1998, respectively [9]. Similarly, the AUBMC tumor registry report for the year 2017 reveals that around 36.8% of breast cancer cases presented at the age of 50 or before [10]. These percentages are almost equal to those observed in Latin American countries (45.5% in Mexico; 47.7% in Venezuela) and Japan (46.5%), and higher than those observed in Western countries (19.0%, 21.0% and 24.0%, in England, Canada and USA respectively) [4, 33, 34]. In addition, between 57% and 68% of all breast cancers in the Arab populations of Egypt, Saudi Arabia, Jordan, and Israel were diagnosed before the age of 55 compared to 64% being diagnosed before the age of 61 in 2017 in Lebanon as per the 2017 report [1, 10, 34].

Median age at diagnosis was 52 and 52.5 years in 1998 and 2004, respectively, compared with an almost similar median age in Mexico (51 in 1993-1996), Jordan (53.5 in 2005), and Palestine [13, 33, 34]. It is reported to be even

lower in other Arab populations such as Saudi Arabia (47.0 in 2004), Kuwait (45.0 in 1993-1998), and Egypt (46.0 in 2001), and to be higher in developed countries such as the United States of America (61 years in 2001-2005) and Western Europe (63 years) [13, 15, 33-35]. The 2017 AUBMC tumor registry report reveals that the median age became 54 years in 2017 [10].

In addition to relatively younger median ages at diagnosis, breast cancer in women in Lebanon features also some of the highest age-specific incidence rates worldwide for the age group 35-39, 40-44, and 45-49 years [9]. This is an important finding that confirms the new Ministry of Public Health recommendations to start breast cancer screening with mammography at 40 years of age in Lebanon.

Explaining Younger Age at Diagnosis

The relatively younger median ages at diagnosis in Lebanon and other Arab and Asian countries compared to Western ones reflect differences in the age distribution, which is skewed towards younger ages in the former group. This might explain why the load of cases is more prominent in younger women in developing nations versus older women in the developed nations.

Another contributor for the younger age at diagnosis in Lebanon is the fact that age-specific incidence rates are higher in younger age groups compared to international figures. This may be associated with specific genetic traits in the Lebanese and some other specific populations. For instance, mutations in the BRCA genes were found to be highly prevalent in the Jewish population, but not among the Arab population in Jordan, Egypt, and Saudi Arabia [1]. When it comes to the Lebanese population, however, there are no published data yet about the genomic profile of Lebanese cancer cases, although this issue is currently under investigation in several centers.

Conclusion

This article shows that breast cancer is still the most common type of cancer among Lebanese females and that the incidence occurs in younger age groups than in Western countries. The increase in breast cancer incidence in Lebanon seems to be inevitable, and there is a need for further investigation of avoidable risk factors and desirable protective factors.

Despite the improvements in the Lebanese tumor registries (eg. Lebanese National Cancer Registry) in terms of case counting during the last couple of years, the information about the collected cases remains to be incomplete. In fact,

tumor location in the breasts, TNM staging, hormonal receptors, treatment plan, and mortality and survival rates are examples of incompletely studied data. This requires further efforts for the realization of a more comprehensive and full database [9].

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