Breast cancer in the North of Jordan with special emphasis on descriptive epidemiology

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ABSTRACT

Objectives: To study the epidemiology of breast cancer in Jordan (as a model for Middle East countries) and compare it with western figures. This may clarify the effect of environmental factors on the incidence, age distribution, and to a lesser extent the etiology of breast cancer.

Methods: One hundred and nineteen female patients treated for breast cancer at Princess Basma Teaching Hospital between 1992 and 1997 were reviewed retrospectively regarding pertinent epidemiological and clinical features.

Results: Incidence was 11/100,000/year. Mean age at presentation was 49 years. In the population as a whole the mean age at first birth was 22.3 years. Stages III and IV constituted 34% of the cases. The ratio of axillary nodal involvement was 60%. The mean duration of symptoms was 8.3 months.

Conclusion: In Jordan (like other Middle East countries) breast cancer is rare, affecting women at a remarkably young age. This is mostly a reflection of the high percentage of young people in these communities. This high portion of young people may also explain the low incidence since the incidence of breast cancer is known to increase with age. Tendency toward having the first child at a young age, Arabian dietary habits with a high vitamin C and B-carotene content, and to a lesser extent abstinement from alcohol and smoking are other factors which may be responsible for reducing breast cancer risk in the area. The percentage of late breast cancer is high, reflecting the need for active screening and education programs.

Keywords: Breast, neoplasms, epidemiology, incidence.


Epidemiology of breast cancer has been widely studied in developed countries. However, such information is still lacking in many developing countries. Comparison between the 2 may throw some light on the etiology of breast cancer and direct the screening policies and the treatment modalities in the developing world. This study aims at the assessment of epidemiology of breast cancer in Jordan as a model for Middle East countries since the demographic, racial, and social features of these populations are similar. Our findings are compared to western figures whenever possible.

Methods. This study reviews 119 female patients with the histological diagnosis of breast cancer whom were treated at Princess Basma Teaching Hospital during the period 1992 till 1997. This is the major referral tertiary center for the north of Jordan serving a population of around 372,887 out of which 180,255 are females (1994 census). All cancer cases in the region are referred to this hospital. Data was collected from the hospital medical records and the single pathology center serving the area. Most patients were followed at a dedicated breast clinic and family members were

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contacted when necessary. Data was obtained regarding the following points: age at presentation, symptomatology, site and side of the tumor, practice of breast feeding, age at first birth, parity, age at menarche, age at menopause, and presence or absence of family history of breast cancer in a first or 2nd degree relative. Pathology reports were reviewed for tumor size, histological type of the tumor, angiolymphatic invasion, and ipsilateral axillary lymph node status. Mean duration of follow up was 27 months with a range of 3 to 70 months. The 1992 American Joint Committee on Cancer system criteria was used to stage patients. Three patients with the diagnosis of phyllloides tumor, one patient with the diagnosis of breast angiosarcoma and 2 male patients with diagnosis of breast cancer were not included in the study. In order to estimate the average age of menarche, menopause, age at first birth, and practice of breast feeding in the population as a whole, a random survey of 2,000 ladies in the north of Jordan was carried out.

Results. Tables 1 and 2 list the significant clinical, epidemiological, and pathological characteristics of our patients. The incidence of breast cancer in north of Jordan was found to be 11/100,000 female population/year. The mean age at presentation was 49 years (standard deviation 13 years) with 30 patients (25%) developing the cancer before the age of 40. The mean duration of symptoms was 8.3 months (standard deviation 11 months) with a range from 0.5 to 84 months. Our surveillance of the female population in the north of Jordan revealed a mean age of menarche of 13.9, age of menopause of 50.2, and age at first birth of 22.3 years. The mean number of children per one family was 6.3. Presenting symptoms included breast mass, skin changes (ulceration and peau d'orange), nipple manifestations (bleeding, ulceration and retraction), and clinically obvious distant metastases in 100%, 19.3%, 17.6% and 6%. The tumor affected the right side in 61 cases (51%). Vascular invasion occurred in 44% while lymphatic invasion occurred in 56% of patients. The mass was localized to the upper lateral quadrant in 58%, upper medial quadrant in 15%, lower lateral quadrant in 11%, lower medial quadrant in 5%, subaerolar region in 10%, and the axillary tail in 1%. Stages at presentation were: stage I in 21 patients (18%), stage II in 49 patients (41%), stage III in 31 patients (26%), stage IV in 10 patients (8%), and stage X in 8 patients (7%).

Discussion. The incidence of breast cancer varies widely being highest in North America and Northern Europe, intermediate in Southern Europe and Latin America, and lowest in Asia and Africa. The incidence of breast cancer in our study was 11/100,000 women/year. This figure may actually reflect the incidence in the country as a whole since the demographic features of the Jordanian population are homogenous. Table 3 compares selected incidences in different areas. This remarkably low incidence in Jordan is part of a generalized trend toward a lower incidence of breast cancer in our region as indicated by reports coming from Egypt, Kuwait, Saudi Arabia, Libya, and Iran. The low incidence in the region is mostly a result of environmental differences rather than a purely different genetic susceptibility. The idea that the wide difference in incidence of breast cancer among different nations depends to a large extent on
environmental factors is supported by the fact that the incidence of breast cancer in the offspring of black Africans and Japanese migrants to the United States parallels that of white Americans rather than the lower incidence in their native countries. In keeping with this, migrants from Egypt to New South Wales in Australia were reported to have an increased incidence of breast cancer. As will be shown below, we suggest that the low incidence in Jordan and the Arab countries is due to the different pyramidal age distribution in these countries as well as different social and dietary habits. In our study the mean age of patients was 49 years, which is higher than the previously reported 44.5 years in Jordan in 1985, but is still much lower than the mean age in the west, which is around 60 years. This is largely due to the fact that 50% of the Jordanian people are below the age of 16 years (1994 census). Breast cancer in young women (defined as breast cancer occurring below the age of 40 years) accounts for less than 7.5% of breast cancers in the United States, while 25% of our patients were under the age of 40 years. A younger mean age at presentation is a significant finding in most of the reports coming from the region. Breast cancer in young women tends to be associated with a poorer prognosis and a more advanced stage at presentation. The latter finding in addition to problems related to child care, future child bearing, emotional instabilities, and insurance policies will constitute an understandable burden to developing countries like Jordan with a high fraction of young women. On the other hand, the low incidence of breast cancer in these communities may be to a large extent a result of this high fraction of young people, since the incidence of breast cancer is known to increase with age. Our patients presented late as evidenced by a high percentage of nodal metastasis among patients who underwent axillary surgery (60%), compared to around 40% in western series. Stages III and IV cancers constituted 34% of our patients compared to the lower corresponding figure in the west which is around 20%. The mean duration of symptoms (8.3 months) is unacceptably high when compared to about 4.5 months in other western series. Although the ratio of node positivity is considerably high in our group of patients, it is encouraging when compared to the even higher ratio previously reported in Jordan in 1985 which was 75%. Among our group of patients the histological subtypes and their percentages were almost similar to western series. A brief comparison is given in Table 2. This probably indicates similar tumor biology. However, the only difference in our study was the absence of preinvasive carcinoma which is a reflection of the late presentation. Like other series, the commonest symptom was a mass localized to the upper outer quadrant of the breast. However, due to the late presentation among our patients, skin symptoms, nipple changes, and clinically obvious distant metastases were more prevalent when compared to other western series. The ratio of tumors in the right side to those on the left was 1.05. Among other series almost all investigators have reported that tumors occurred more frequently on the left side than on the right with a ratio of 1.05. This left-sided excess is mainly a phenomenon that has been reported in postmenopausal cancers, and since the majority of our patients were premenopausal it should not be concluded that our tumors are different regarding side predilection. Approximately 5 to 10% of all breast cancers are inherited by an autosomal dominant mutation, and inherited factors are thought to contribute to (25-35%) of cases diagnosed before the age of 30 years. Only 5% of our patients gave a positive family history of breast cancer. This may be an underestimation since in our society family history of breast cancer is considered a social stigma and people tend to deny it. Consanguineous marriage is a common practice in Jordan, which supports our suggestion that the role of inheritance should be more than the possibly underestimated figure of 5%. In a report coming from Palestine 20% of Arab ladies with the diagnosis of breast cancer gave a positive family history of breast cancer. We believe that this figure is more realistic. The preponderance of evidence indicates that younger age at first birth is associated with a reduced risk of breast cancer and actually lactation and parity do not alter the risk of breast cancer when adjustment is made for age at first birth. In our study the average age of having the first birth in Jordan was 22.3 years. Early marriage and consequent early age at having the first child, is a social tradition in the Arab world and seems to be associated with a reduced risk of breast cancer. Early menopause and late menarche were found to be associated with a reduced risk of breast cancer. In the west the mean age of menopause is 51 years, which is similar to that of Jordanian ladies (50.3 years). However a
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contradictory observation in our study was that 78% of the postmenopausal patients had their menopause before the age of 51 years with a mean of 48 years which may indicate that early menopause is not a risk lowering factor among Jordanian ladies. Only 67% of our patients could recall their menarcheal age at a mean of 13.6 years which is rather similar to the mean age of menarche in Jordanian ladies found in our surveillance which is 13.6 years, but is slightly higher than the average age of menarche in the west which is 12.9 years.35 Since 33% of our patients could not recall their menarcheal age no conclusions could be reached in this regard. Although not universally proven, many reports indicate that smoking, alcohol consumption, and a high animal protein diet seem to be associated with a higher risk of breast cancer, while a high vitamin C and B-carotene intake seems to be associated with a reduced risk.34,36 Only a minority of Jordanian ladies smoke or drink alcohol and fresh food constitutes a major part of their diet. Such a lifestyle in Jordan may be associated with a lower risk of breast cancer and is to be encouraged in the face of rapid westernization taking place in the country.

In conclusion, breast cancer in Jordan and the Arab World tends to affect a younger age group reflecting the higher fraction of young people in these populations. This higher fraction of young people also seems to be responsible for the low incidence of breast cancer. Other risk-lowering factors may include the social tendency toward having the first child at a remarkably young age, low animal protein diet, a high vitamin C and B-carotene intake (fresh fruits), and abstinence from alcohol and smoking. The percentage of late breast cancer is relatively high reflecting the need for active screening and education programs.

References