



Female breast cancer in Armenia (1980-2000)

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Breast cancer (BC) incidence in women in Armenia was analyzed in the period from 1980 to 2000. During 20 years BC incidence was substantially increased along with mortality. The incidence increased up to 73%, and mortality increased up to 143%. Our data suggest that female BC in Armenia is significantly lower than in the most developed and some developing countries, but comparative mortality of patients with BC is much higher than in other countries.

KEY WORDS: Breast Neoplasms; Women; Incidence; Mortality; Armenia

INTRODUCTION

Breast cancer (BC) has an enormous impact on the health of women (1). Now, BC accounts for approximately 30% of all incident cancers in the USA, and it is the second leading cause of cancer death among Americans after lung cancer. However, it is a leading cause of deaths among women aged from 40 to 55 years in the USA. Almost the same situation was observed in the most developed countries of the European Union where BC represents 26% of cancer incidence in women (1,2).

The risk to develop BC varies around the world, and it depends on the ethnicity and environment. Consequently, the BC incidence is substantially different in the cohorts of migrants and native country inhabitants (3,4).

Recently, for the first time we presented data of cancer incidence in Armenia for the period from 1970 to 1998 (5). They showed that breast cancer was the most frequent malignant disease among women. In 1980 and 1985, Armenia was on the 8th place among the USSR Republics (after Estonia, Latvia, Lithuania, Ukraine, Georgia, Russia, Belarus) concerning the female BC incidence (6,7). The data published in the Journal of National Cancer Institute showed significant impact of socioeconomic status on cancer incidence (8). After the collapse of the USSR in 1990 the living standards in Armenia substantially declined, and now Armenia is among the poorest countries in the world. It would be

of interest to study the incidence of female BC in Armenia during 20 years if only because of change of living standards.

MATERIALS AND METHODS

The data presented in our communication are based on the official data from the cancer registries of Cancer Research Center, Oncologic Dispensary, and Department of Information of the Ministry of Health, Yerevan, Armenia. As it was indicated in our previous article, it is impossible to standardize the data concerning cancer incidence, because the data of the last general census of the population in Armenia, which was carried out in 2001, have not been made publicly known yet (5). Hence, we operate only with crude rates. The previous census was in 1979 when Armenia was the part of the USSR, and was among the republics with comparatively high life standards (compared to standards of other the USSR Republics). Moreover, the population of Armenia according to official data is about 3.8 million inhabitants, but in reality, because of emigration to the USA, Russia, France and some other countries, and according to the data of UN experts it is about 3 millions (5,9). In addition, male: female ratio is also not certain. So in our communication, we used the approximate data about population. The advantage of BC incidence research in Armenia is that it is practically a mono-ethnic republic.

RESULTS AND DISCUSSION

As mentioned above, in 1980 and 1985 Armenia was on the 8th place among the USSR Republics concerning BC incidence (25.1 per 100,000 women) (6). The incidence increased up to 27.2 in 1985 according to official population data, in 1990 it was almost the same (27.1), and approximately 34.1 according to real data. In 1995 crude incidence rate was 40.6 (32.3 according to official

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data), and 43.5 in 2000 (38.4 - official data). The study of tendency of BC incidence shows a permanent increase in all countries, except Cuba (4,10). The comparison with former USSR republics (Estonia, Latvia and Belarus) shows a substantially low BC incidence in Armenia than in mentioned countries, even if corrected data are used. During 20 years BC incidence in Armenia increased up to 53% (official data), but when corrected data are used, it increased up to 73.3%. In Estonia the increase was 53% for the same time period (11).

The literature data showed that high BC incidence was observed in the USA, some regions of France and UK, Malta, the Netherlands, Iceland, some regions of Switzerland, the UK and northern Italy (1,4,12). The lowest BC incidence rates were observed in the countries of eastern Europe (Poland, Belarus, Latvia, Estonia, Croatia) and France. Overall, the range of variation for BC incidence in Europe was over factor 3 (12). If Belarus, Estonia and Latvia data are low in comparison with most western countries, the data concerning Armenia are approximately 2-fold lower than Estonian ones, and hence, we can suggest that female BC incidence in Armenia is lower than in regions with comparatively low incidence rates, and it is close to that observed in Japan and Cuba (4,11).

In Armenia as well as in almost all countries, cancer incidence rates increase every year, but in whole overall cancer (including BC) incidence is low. In 2000 BC represented 18% of cancer incidence in women in Armenia vs. 26% in the European Union and 30% in the USA (1,2,4).

During mentioned period 3,447 BC patients were cured at Cancer Research Center, Yerevan, Armenia. Age of patients ranged between 20 and 85 years. Analysis of age distribution showed the following: patients from 20 to 30 years - 2.9%; from 31 to 40 years - 16.1%; from 41 to 50 years - 30.1%; from 51 to 60 years - 31.0%; and patients 60 years and older - 19.9% (14). Among white and African-American female population the most vulnerable to BC are women aged from 70 to 79 years (14). In Japan, women aged from 45 to 64 years are at the highest risk for BC, and the overall BC incidence is 10-fold lower than in white American female population (13). Among Armenian women the most vulnerable age for BC is between 40 and 60 years. The most frequent histological type of tumors was invasive ductal carcinoma - 53.4% of all tumors (14). The vulnerable age and histological type of tumors in Armenian female population are like in Japan.

The breast cancer risk factors in Armenia are: low reproductive function, short lactation period (both factors changed dramatically during last 10-13 years), genetically determined early age at menarche and late age at menopause, high level of induced abortions. The protective factors are: frequent use of vegetables and

fruits, low intake of fat of animal origin, especially during last 10 years (13).

Along with increasing BC incidence the mortality rate increased, too. It was 12.3 in 1985, 17.8 in 1990, 21.8 in 1995, and 29.4 in 2000. Hence, when BC incidence increased up to 73%, mortality increased up to 143.1%. The reasons could be found in patients' negligence and their seeing doctor when it is late to cure the disease, and in low living standards.

The ratio incidence: mortality was 1.48 in 2000, 1.86 in 1995, 2.05 in 1990 and 2.1 in 1985. In developed countries mentioned ratio is much higher than in Armenia. For example, it is about 4 in the USA, 2.8 in European Union, 2.6 in Bulgaria, Denmark and Spain, and 2.4 in Ireland. High ratio shows quality of BC treatment (4,13). The analysis of our data shows that the ratio was the highest when Armenia was a part of the USSR, and declines after the collapse of the USSR. The cause of it may be the advanced stage of tumor found at the first medical checkup and insufficient treatment of patients.

Hence, our approximate data suggest that female BC in Armenia is significantly lower than in the most developed and some developing countries, but it increases every year. However, comparative mortality of patients with BC is much higher than in developed and some developing countries, which should be a real task for the Ministry of Health of Armenia to deal with. Based on the presented data, it would be interesting to analyze BC incidence among the Armenian female emigrants in Los Angeles, who now live in another socioeconomic conditions.

Table 1. Female breast cancer incidence in some countries (crude rates)

Country	1980	1985	1990	1995	2000
Armenia	25.1	27.2	27.1 (official) 34.1 (corrected)	32.3 (official) 40.6 (corrected)	38.4 (official) 43.5 (corrected)
Belarus	26.9 ¹	30.8 ²	38.5 ³	-	-
Estonia	46.6 ¹	50.4 ²	52.9 ³	-	71.4 ⁴
Latvia	41.2 ¹	45.6 ²	49.1 ³	-	-

- = Data are not available; ¹ = Data from (7); ² = Data from (6); ³ = Data from (12); ⁴ = Data from (11)

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