Breast Cancer Survival in Mongolian Women

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Abstract

Cancer is becoming an important cause of mortality in developing country year by year. During last 10 years 5% of all cancer cases in Mongolian women were accounted for breast cancer. The aim of our study was to determine survival in women with breast cancer in Mongolia. The data of morbidity and mortality on breast cancer were collected retrospectively and were used to analyze stages of the cancer and survival from the time of diagnosis to death depending on stages. During 2003-2012 years totally 1008 cases with breast cancer were registered in National Cancer Centre. The breast cancers had been coded and classified according to International Classification of diseases, 10th Revision (ICD 10). The frequency distribution of cancer patients was evaluated by age, place of residence and stage of diagnosis. In Mongolia in 2003-2012, there were 1008 cases of breast cancer diagnosed and 41 (4.1%), 212 (21%), 553 (54.9%) and 200 (19.8%) of them were diagnosed in Stage I, II, II and IV of the disease respectively. Among patients who died from the cancer there were 4 (2.9%), 17 (12.3%), 71 (51.4%) and 46 (33.3%) who died in Stage I, II, III and IV of the cancer respectively. Among all participants of the study some 3% of women with the breast cancer died within the first year of detection of the cancer and the rest 97% of them survived the first year. In the second year after detection of the cancer 34% of women died and 96% survived. But all women with breast cancer had died by the ninth year after detection of the cancer. In Mongolia only one quarter of breast cancer are diagnosed in the earlier stages (25.1%) of the disease. Therefore, there is a need for improving services for detection of breast cancer in earlier stages.

Keywords

1. Introduction

In accordance with the data of the World Health Organization and International Agency for Cancer Research

there were 14.1 million new cases of breast cancer diagnosed and 8.2 million people died from the disease in 2012. Breast cancer is the second most common cancer in the world and, by far, the most frequent cancer among women within estimated 1.67 million new cancer cases diagnosed in 2012 (25% of all cancers). It is the most common cancer in women both in more and less developed regions with slightly more cases in less developed (883,000 cases) and in more developed (794,000 cases) regions. Incidence rates very nearly four-fold across the world regions, with rates ranging from 27 per 100,000 in Middle Africa and Eastern Asia to 96 in Western Europe [1]. Breast cancer pathogenesis may be driven by the activation of steroid hormones, such as estrogen and progesterone, which bind to their receptors in breast epithelial cells to promote cell growth, differentiation and survival [2]. According to the American Cancer Society, swelling of all part of breast, skin irritation or dimpling, breast pain, nipple pain or the nipple turning inward, redness, scariness or thickening of the nipple, nipple discharge other than breast milk and lump in the underarm area can be a symptom of breast cancer.

Breast cancer survival rates vary greatly worldwide, ranging from 80% or over in North America, Sweden and Japan to around 60% in middle-income countries and below 40% in low-income countries [3].

According to the statistical data from the National Cancer Centre of Mongolia, 5% of all cancer cases in women were accounted for breast cancer in 2000-2008 [4]. 66.7% of all new diagnosed cases of breast cancer were in Stage III, which means that there is insufficient level of early detection of the disease. Moreover, during 2000-2008 morbidity rates from breast cancer rose from 2.5% to 3.6% and mortality rates rose from 0.8% to 1.3% per 100,000 women [5].

2. Objectives

To determine survival in women with breast cancer in Mongolia.

3. Methods and Materials

The study was retrospective descriptive study. Morbidity and mortality data on breast cancer was collected from National Cancer Center from 2003-2012. All secondary data used to analyze stages of the cancer and survival from the time of diagnosis to death depending on stages. The validity and reliability on all cancers type registration is not studied in our country yet. SSPS 17 was used for data analysis. Kaplan-Meyer statistical test was used to determine stages of the cancer and survival rate.

4. Results

During 2003-2012 years totally 1008 breast cancer incidence were registered in National Cancer Centre of Mongolia. The mean age of women was 48 years. Some 65% (CI 0.07 - 0.18) of women diagnosed with breast cancer in 2003 had five years of survival. Estimated survival time of women diagnosed with breast cancer is shown in Table 1.

Among all participants of the study some 3% of women with the breast cancer died within the first year of detection the cancer and the rest 97% of them survived the first year. In the second year after detection of the cancer 34% of women died and 96% survived. In the eighth year of detection 40% of women with breast cancer died and 60% survived. But all women with breast cancer had died by the ninth year after detection of the cancer.

Table 2 describes survival rate by stages o the breast cancer during 2003-2012 among Mongolian women. In Mongolia in 2003-2012, there were 1008 cases of breast cancer diagnosed and 41 (4.1%), 212 (21%), 553 (54.9%) and 200 (19.8%) of them were diagnosed in Stage I, II, II and IV of the disease respectively. Among patients who died from the cancer there were 4 (2.9%), 17 (12.3%), 71 (51.4%) and 46 (33.3%) who died in Stage I, II, III and IV of the cancer respectively. Out of all deaths high portion was diagnosed in Stage III and in Stage I was diagnosed minor part.

Figure 1 shows the survival time of women with the first stage of breast cancer. There were 138 deaths from breast cancer. In Stage I of the cancer there were 4 deaths and the average survival time of women diagnosed with Stage I of breast cancer was 3.2 (CI 1.2 - 5.2) years. Some 75% of women with Stage I breast cancer survived first year and 50% of women survived five years. None survived the sixth year after detection of the cancer.
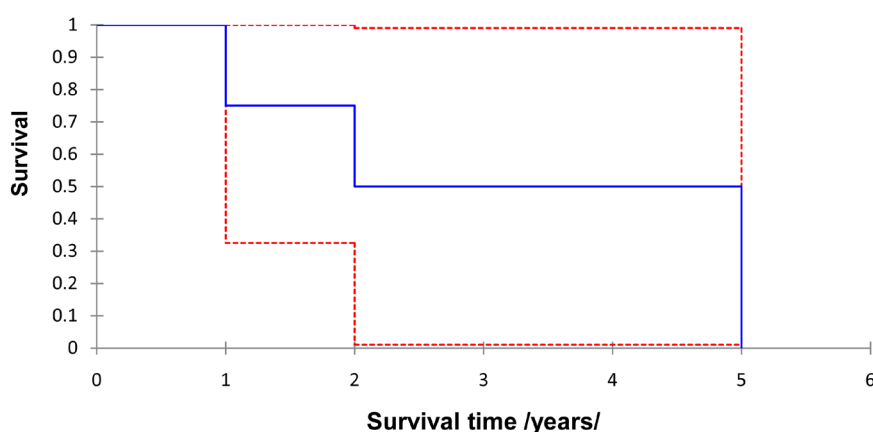
Figure 2 describes a summary of results of survival time of women with breast cancer in Stage 2. The average survival time of women diagnosed with breast cancer Stage II was 2.8 (CI 2.0 - 3.7) years. Some 82% (CI

Table 1. Survival of women diagnosed with breast cancer (Kaplan-Meyer).

Year	Number of women died	Excluded cases	Percentage of cases died the same year	Percentage of cases survived the same year	Survival	SE	CI 95%	
							Lower limit	Upper limit
0	138	4	0.03	0.97	0.97	0.01	0.94	1
1	134	45	0.34	0.66	0.64	0.04	0.56	0.72
2	89	26	0.30	0.70	0.45	0.04	0.37	0.54
3	63	19	0.31	0.69	0.31	0.04	0.24	0.39
4	44	18	0.40	0.60	0.19	0.03	0.12	0.26
5	26	9	0.35	0.65	0.12	0.03	0.07	0.18
6	17	7	0.41	0.59	0.07	0.02	0.03	0.12
7	10	5	0.50	0.50	0.04	0.02	0.01	0.07
8	5	2	0.40	0.60	0.02	0.01	0.00	0.05
9	3	3	1	0	0	0	0	0

Table 2. Survival by the stages of the breast cancer 2003-2012.

Stages	Whether survived or not						Total
	Died		Survived		Indefinite		
	N	%	N	%	N	%	
I stage	4	2.9	37	4.5			41
II stage	17	12.3	188	22.7	7	17.0	212
III stage	71	51.4	452	54.5	30	73.2	553
IV stage	46	33.3	150	18.1	4	9.8	200
T is			2	0.2			2
Total	138	100	829	100	41	100	1008

Figure 1. Survival time of women with breast cancer Stage I.

0.6 - 1.0) of women with Stage II breast cancer survived first year whereas 42% (CI 0.23 - 0.70), 50% (CI 0.03 - 0.43), 75% (CI 0.0 - 0.35) and 66% (CI 0.0 - 0.27) of women had two, three, four and five years of survival respectively.

The detailed results of survival time of women diagnosed with breast cancer in Stage 3 are given in **Figure 3**. The average survival time of died women diagnosed with breast cancer Stage III was 3.1 (CI 2.6 - 3.7) years. Some 98% (CI 0.9 - 1.0) of women with Stage III breast cancer survived first year whereas 67% (CI 0.23 - 0.77), and 70% (CI 0.08 - 0.25) of women had one and five years of survival respectively. By the fifth year 75% (CI 0.0 - 0.089) of them survived. None survived by the 10 years after detection.

Figure 4 shows survival time of women with breast cancer Stage IV. The average survival time of women diagnosed with breast cancer Stage IV and died was 2.1 (CI 1.6 - 2.6) years. Some 57% (CI 0.38 - 0.67) of women with Stage IV breast cancer survived first year whereas 54% (CI 0.15 - 0.42), 76% (CI 0.03 - 0.43), 40% (CI 0.04 - 0.06) and 75% (CI 0.0 - 0.14) of women had two, three, four and five years of survival respectively. None survived by the ninth year.
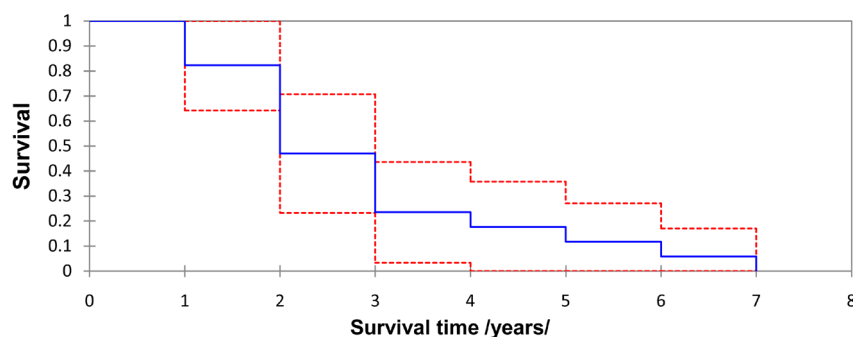

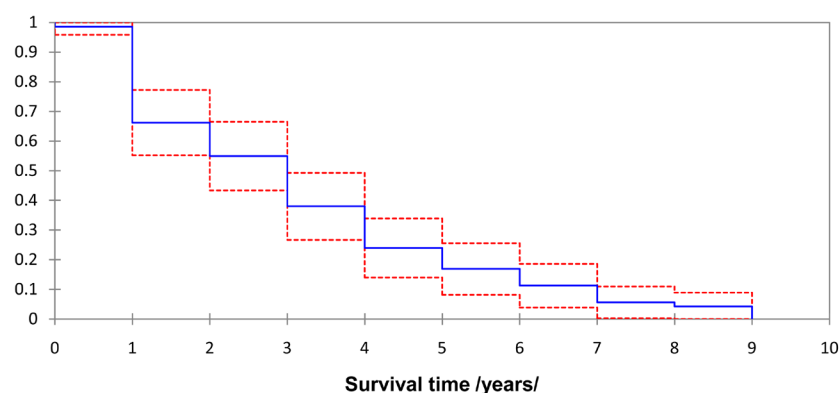**Figure 2.** Survival time of women with breast cancer Stage II.

Figure 3. Survival time of women with breast cancer Stage III.
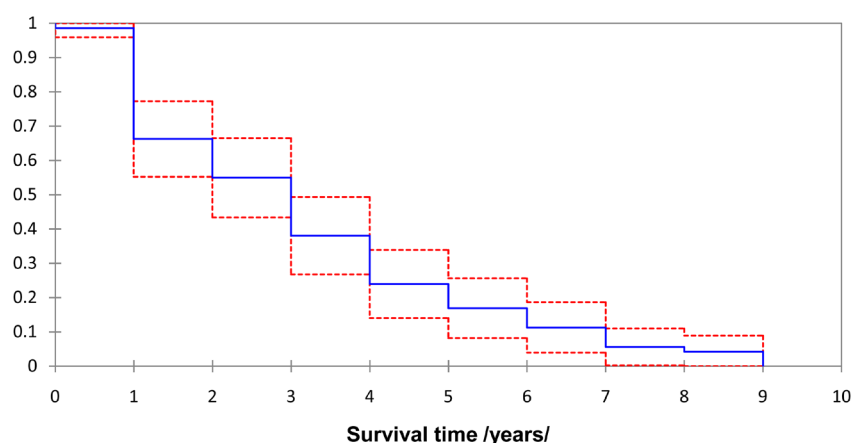

Figure 4. Survival time of women with breast cancer Stage IV.

Some 4.5% of women with Stage I, 22.7% of women with Stage II, 54.5% women with Stage III and 18.1% women with Stage IV survived. The average survival time of all participants was 2.8 years.

In Mongolia 88.7% of women diagnosed with breast cancer died within the first five years. 11.7% of women diagnosed with early stages of breast cancer (Stage I and II), 16.9% of women with breast cancer Stage III and 6.6% with breast cancer Stage IV had more than five years of survival respectively.

During ten years period (2003-2012) 4.1%, 21%, 54.9% and 19.8% of women were diagnosed with breast cancer Stage I, Stage II, Stage II and Stage IV respectively. The average survival time of women with Stage I, Stage II, Stage III and Stage IV was 3.2 (CI 1.2 - 5.2), 2.8 (CI 2.0 - 3.7), 3.1 (CI 2.6 - 3.7) and 2.1 (CI 1.6 - 2.6) respectively. These results show importance of early detection and diagnosis of the cancer.

5. Discussion

The global variation in breast cancer survival is very wide. In North America, Australia, Japan and in Europe the 5 years relative survival was generally higher, and lower in Brazil and Algeria whereas in Mongolian women survival was 3.2. According to the present study, breast cancer is diagnosing mostly on Stage III (1, 3). A concentrated program is needed for early diagnosis and treatment which is a main key measure in reducing mortality. Furthermore we should calculate age—standardized relative survival to have adjusted results.

6. Conclusions

1) In Mongolia only one quarter of breast cancer are diagnosed in the earlier stages (25.1%) of the disease.

2) In Mongolia, the average survival time for Stages I, II, III and IV was 3.2 (CI 1.23 - 5.27), 2.8 (CI 2.06 - 3.70), 3.1 (CI 2.66 - 3.73) and 2.1 (CI 1.67 - 2.66) years respectively. The average survival time for all women who died was 2.8 (CI 0.17 - 2.47) years.

References

[1] WHO (2012) International Agency for Cancer Research. Geneva.

[2] Taneja, P., Maglic, D., Kai, F., *et al.* (2010) Classical and Novel Prognostic Markers for Breast Cancer and Their Clinical Significance. *Clinical Medicine Insights*: *Oncology*, **4**, 15-34.

[3] Coleman, M.P., *et al.* (2008) Cancer Survival in Five Continents: A Worldwide Population-Based Study (CONCORD). *Lancet Oncology*, **9**, 730-756. http://dx.doi.org/10.1016/S1470-2045(08)70179-7

[4] Ministry of Health of Mongolia, Health Development Center, Health Indicators—2000-2008. Ulaanbaatar.

[5] Tuvshingerel, S., *et al.* (2011) Cancer Mobidity and Mortality among Mongolian Population in 2003-2007 Years. *Journal of Cancer*, **1**, 75.