

Evaluation of 2 and 5 year survival rate of metastatic breast cancer patients referred to radiotherapy ward of Ahvaz Golestan Hospital in 2001-2007

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Abstract

Background: Cancers are in to accounted as chronic diseases that in many countries for recent decades have high rates of mortality. One of the most common cancers is breast cancer which is the second leading cause of cancer death in women after lung cancer. This study was performed to examine the 2-year and 5-year survival rate in patients with metastatic breast cancer referring to Ahvaz Golestan Hospital Radiotherapy and oncology Department for the period of 2001-2007.

Materials and methods: This study was a retrospective investigation and the studied population was the patients who had been hospitalized with breast cancer in Ahvaz Golestan Hospital Radiotherapy and oncology Department. The duration of patients' survival rate was evaluated by obtaining the data from the archives, records and tele- phone calls.

Results: In this study, a total number of 352 patients were studied for breast cancer. The most patients were in the age range of 40-49 years with the prevalence percentage of 38.6. The less than 2 year survival rate was 47%, 2-year survival rate of 41.5% and 5-year survival rate of 11.5%, respectively. The frequency percentage of bone metastasis only was 40.3% however; the 59.7% was recorded for visceral metastasis.

Conclusion: Given the study results the survival rate of patients with over time was fewer so that, with 2-fold time, the survival rate was decreased to about one third to one quarter. In addition, the incidence of bone metastasis was associated with a better prognosis.

Keywords: Survival Rate; Metastasis; Breast Cancer

Background

Cancers are chronic diseases, which may have many causes and in recent decades in many countries accounted for a high rate of deaths. Currently, the cancers are important as one of the leading health problems in the world (1). In Iran cancer disease is the third cause of mortality in patients after cardiovascular diseases and accidents (2). One of the most common types of cancer, breast cancer (the uninhibited growth of abnormal cells that can be in various areas such as the breast ducts that carrying milk, the milk-producing tissue and the non-glandular tissue) (3) which is a huge threat to women's health and after non melanoma skin cancer is the most common cancer in women (4). The breast cancer is the second main leading cause of cancer death in women after lung cancer (5) and consisted of 32% of cases in women (4). According to the World Health Organization, the incidence of this disease is 1.8 to 2% annually and this statistic is increasing (6). About 1.3 million new cases and 465,000 deaths happened due to breast cancer in 2007. The incidence of deaths from breast cancer in North America and Northern Europe's is highest and for South America and southern Europe in the average limit while it has

been reported in lowest rate in Asian and African countries. The reasons for it can be named as genetic factors and environmental and social screening methods (5). According to the country general statistics in Iran breast cancer is also the most common cancer among women and each year about 6160 new cases are being found which a total number of 1,063 of these patients have died due to the disease (7). Breast cancer according to tumor size, lymph node involvement and distant metastasis is divided into different stages (5). Metastases is defined as the distribution of primary tumor cells and subsequent establishment of a second tumor, followed by tumors in other tissues

(8) and the most common site of metastasis are to bone, lung, liver, lymph nodes, chest and brain which is as the case in any other organ.

About 10% of new cases of breast cancer in America referred with metastases that this is depending on the screening program (5). When breast cancer is only limited to confined tissue, the survival rate is high, however when the cells spread occurs to other tissues the survival rate reduced significantly (90% versus of 20% survival of 20-year) (9).

Since, breast cancer is one of the most common cancers with high mortality rates and in addition, imposed high costs on the society and followed by the breakdown of the family due to the mother's pain and misery, with regards to the above told subjects this study aimed to determine the patients' 2-year and 5-year survival rates with metastatic breast cancer referred to the radiotherapy center to answer the patients for lots of questions besides, in order to escalate the patients and physicians' knowledge, as well as to be a basis for other studies.

Materials and Methods

This study was a retrospective study for patients with breast cancer who were hospitalized in Ah-vaz Golestan Hospital Radiotherapy and oncology Department. The data were collected through the over several consecutive periods referred to medical records and the information of patients admitted to the Ahvaz Golestan Hospital Radiotherapy and oncology Department which were recorded in the course of 2001-2007. And then based on the phone numbers existed in the patients' files through phone calls the patients' current status was searched for. In case of death, time of death was verified and the age of metastasis onset were determined based on the bone scan positive results, CT scan of lungs, abdomen and pelvis as well as the MRI of brain and ultrasound of abdomen and pelvis.

Results

Data were collected for a total number of 352 patients with metastatic breast cancer who were referred to Ahvaz Golestan Hospital Radiotherapy and oncology Department for the duration of 2001-2007. A total number of 136 patients (38.6%) in the age range of 40-49 years, 100 (28.4%) for 50-59 years, 66 patients (18.8%) in the age range of 15-39 years, 36 patients (10.2%) 60-69 years, 12 (3.4%) in the age range 79-70 years and 2 patients (0.6%) were aged for 80-89 years. A number of 87 patients with metastatic breast cancer had survival rate of less than 2 years, 165 patients a 2-year and 46 patients had a 5-year survival rate (table 1). The frequency percentage of patients with 2-year survival was 41.5 and 11.5% for 5-year survival. It is necessary to note that the 2-year survival has obtained from the total patients with 2-5 and over 5 years survival that this explains the reason for not equality for the sum of the minor with the total.

Table 1. Frequency percentage of two and five years survival of patient with metastatic breast cancer patient.

Survival	Number of patient	Survival rate%
2 year survival	165	41.5
5 year survival	46	11.5

In total, there were 210 metastatic breast cancer patients with visceral metastases and 142 patients with bone only metastases. Frequency percentage

of patients with visceral metastases was 59.7 and bone only metastases 40.3% (table 2).

Table 2. Frequency percentage of patient with metastasis

Type of metastasis	Number of patient	frequency percent- age of patient
Bone metastasis	142	40.3%
Visceral metastasis	210	59.7%
total	352	100%

The amount of 56.4% 2-year survival rate of patients was verified with bone metastases only and 43.6% of them had visceral metastases (table 3). However, in patients with 5-year survival 67.4% had bone metastasis only and 32.6% were recorded for visceral metastases (table 4).

Table 3. Two years survival rate in metastatic breast cancer

Type of metastasis	Number of patient	2 years Survival rate
Bone metastasis only	93	56.4%
Visceral metastasis	72	43.6%
total	165	100%

Table 4. five years survival rate in metastatic breast cancer patient

Type of metastasis	Number of patient	5 years survival
Bone metastasis only	31	67.4%
Visceral metastasis	15	32.6%
Total	46	100%

Discussion

In this study, a total number of 352 patients with metastatic breast cancer, all of whom were women were examined in terms of 2-year and 5-year survival status in the duration of 2001-2007. In general, the 2-year survival rate in patients was 41.5% while for 5-year survival it was documented for 11.5%. Buzdar and colleagues in a study on 56,864 patients with breast cancer in the years of 1944-2004 documented a 10-year survival rate in patients with metastatic breast cancer with 3.3 in 100 which was about one-third of the 5-year survival rate in the current study and roughly had a relatively consistent with the pattern of the decline survival rate in our study. In fact, in the study ahead, roughly with doubling time (from 2 years to 5 years) survival rate has fallen to about one-third to one-fourth. If such a trend is existed it is expected that with a doubling time of 10 years, the survival rate would reach about 3 to 4% that in the study of Buzdar *et al.* it was estimated in this limit (10).

In a study by Geiger, *et al.* in 2011 on 232 patients with metastatic breast cancer for the duration of 2000-2005, the overall survival rate of 44 months (5.3 years) of patients were reported at 50%, which was more than the 2-year survival rate of our study. This difference could be due to differences in sample size of the both studies.

Another reason for the difference may be due to differences in treatment regimens and different chemotherapy protocols between the two studies (11). In the current study, 59.7% of patients had visceral metastases (210/352) and 40.3% of patients were diagnosed with bone metastases (142/352). This appears to be that 2-year survival rate for patients with bone metastases only (56.4%) was higher than the patients with visceral metastases (43.6%). This pattern was also observed in the 5-year survival rate (67.4 versus 32.6). This pattern suggests that the risk of bone metastases in breast cancer was associated with a better prognosis than the kind of visceral metastases.

In the cross-sectional study of Ziaei in Tehran in 2012, the overall survival rate after occurrence of bone metastases (42 months) was lower ($P: 0.002$) which was consistent with our results. Thus, bone metastases compared with non-bone metastases was associated with a better prognosis that these findings were compatible with the present study (12).

In the current study, the 2-year and 5-year survival rates at both ends of the age spectrum (Extreme ages) (older than 60 years and below 30 years) was looked less than the middle-aged group. Thus, the 2-year survival rates in the age range of 15-39 years and 60-69 years were 18.8 and 6.1 percent, respectively, that it seems were less than the middle-aged group (40-59 years) (35-36 percent). Such a pattern was evident in the case of 5-year survival rates.

In Koenders *et al.* (1992) study in the Netherlands to assess the survival rate following the first occurrence of metastasis in breast cancer, the 2-year overall survival rate of patients with metastatic breast cancer estimated about 50% that was virtually more than the present study. In the above study to determine the factors affecting the length of survival rate of patients a multiple instances of patients were evaluate such as; age, estrogen receptor status, tumor size, number of lymph nodes involved, the type of metastases (bone, viscera), which ultimately the tumor size and patient age were not identified as factors influencing survival rate. In our study, the survival rate at both ends of the age spectrum was lower which could be due to a weak immune system at both ends of the age spectrum than the middle age as well as other associated diseases in the elderly patients. The reason of differences observed in the study ahead and the earlier study could be due to differences in the type of analyze of the two studies and the lack of statistical modeling in our study (13).

A study in 2014 by Tjokrowidjaja and colleagues on 6640 women with breast cancer indicated that 395 patients were diagnosed with non-metastatic breast cancer and were under 40 years of age. The above study aimed to determine the prognostic factors for breast cancer and the effect of age (young versus old) on the survival rate. Finally, it was concluded that young women (under 40

years) with non-metastatic breast cancer compared with older women in the same situation within 5 years of the establishment of the disease were more likely for having higher risk of metastasis (24% compared with 9%). However, the 5-year survival rate of young women (under 40) with metastatic breast cancer was similar to the older women with breast cancer metastasis (14).

Akbari and colleagues conducted a study in Tehran in 2006 on 154 patients with non-metastatic breast cancer for the duration of 1996-1998 in terms of the 5-year survival rate. Overall, the 5 years survival rate was concluded at 76.5%, that this number was declined with the lymph node involvement so that, this statistic in the group with lymph node involvement was significantly low (72.9 vs. 88.9%) ($p = 0.034$). Tumor size and age were not proposed as effective factors on the survival rate. The 5-year survival rate in the mentioned study was higher than our study which was due to the headed non-metastatic patients (15).

Conclusion

In this study, 2 and 5-year survival rates of the patients with metastatic breast cancer were evaluated. During this study the 2-year overall survival rate was documented at 41.5% and for the 5-year survival was 11.5% and 47% of total patients die before two years. Type of metastasis, visceral or bone only metastasis had influenced the survival rate as the 2 years survival in bone only metastasis was 56.4% and verified for visceral metastasis 43.6% of total patient. And only bone metastasis included 67.4% and visceral metastasis included of 32.6% of patient with 5 years survival.

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Conflict of Interest

There is no conflict of interest to be declared.

Authors' contributions

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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