Diagnosis, treatment characteristics, and survival of women with breast cancer aged 65 and above: a hospital-based study

Abstract

Background: Breast cancer incidence in women increases with aging, while survival rates decrease. Studies interpret this result with higher comorbidity, diagnosis at later stages of the disease, and less effective treatment in the elderly. The aim of this study is to evaluate the diagnosis and treatment characteristics and their effect on the survival of women aged 65 and above.

Methods: The data within the files of 1120 women with breast cancer, who were followed-up in Dokuz Eylul University Medical Faculty Hospital between 2000 and 2006, were reviewed retrospectively. The survival probabilities at years 1, 5 and 10 were calculated by life table analysis. Kaplan-Meier test was used in calculating mean survival time, and the differences between groups were evaluated by log-rank test. Backward elimination method was used in multivariate analysis, and -2 log-likelihood ratio was used in comparison of different models.

Results: Of the patients, 25.0% were aged 65 and above at the time of the diagnosis. They had more comorbidities, were more likely to be diagnosed at advanced stages compared to younger ages. Additionally, they had lower rates of surgical treatment, chemotherapy or radiotherapy. One and 5-year survival probabilities among age groups were 96.4% and 85.4% for <65 years, 93.8% and 85.5% for 65-69, 98.8% and 83.4% for 70-74, and 85.7% and 60.1% for 75 years and above, respectively. In multivariate model; age, clinical stage, and comorbidity were found negatively associated with the survival rate.
Conclusions: The survival of women with breast cancer aged 65 and above was affected negatively by age at the diagnosis, clinical stage, and the presence of comorbidity. Early diagnosis also is very important for the elderly women. Additionally, due to higher comorbidity, their evaluation and treatment should be planned by an interdisciplinary team.

Key words: Aged; Women; Breast Neoplasms; Survival.
Background

It is known that breast cancer incidence is rather low before the age of 30 (25 in one hundred thousand) and demonstrates a linear increase through the age of 80 and reaches a plateau (around 500 in one hundred thousand). Age is the most important risk factor in breast cancer occurrence after gender. It is observed that the relative risk for breast cancer increases by 5.8 times in women aged 65 and above with the aging (1). It was shown in projections of the United Nations that breast cancer incidence is increasing rather rapidly among women aged 50 and above (2). In Turkey, the predictions of breast cancer based on records on women vary between 21.4 and 45.6 in one hundred thousand and it is placed on the top in terms of frequency (3). It was seen that among 11,208 women with breast cancer registered to 13 breast centres in 8 provinces, 40.7% is between 51 and 70 years of age and 8.2% is aged 70 and above (4).

It is known that the survival of women with breast cancer diagnosed at later ages is worse than the young. In relation to this, cardiovascular diseases, pre-existing cancer, diabetes mellitus and dementia are mentioned among those diseases that most frequently accompany breast cancer in the elderly. It is also pointed out that these diseases bring about the risk of death (5-7). The reasons why survival is lower in the elderly while breast cancer in this age group displays less aggressive tumour characteristics compared to the young have been examined. Among the reported reasons are that the diagnosis occurs in later stages, the elderly receive less surgical treatment, and that they are insufficiently treated and they receive less radiotherapy following breast conserving surgery and chemotherapy (7-11). The fact that patients from older age groups do not take place especially in many randomized
controlled studies that assess the effectiveness of chemotherapies results in that the most appropriate treatment for the elderly is still being discussed (12).

When the survival probabilities of women in terms of their age were assessed, it was seen that all of the women aged 65 years and above who were diagnosed in stage 0 and 1 survived at the end of 5 years, while their survival was between 83.9 and 87.8% in stage 2, 41.5 and 57.8% in stage 3, and 14.8 and 20.3% in stage 4 (13). Among the factors that influence the survival of patients with breast cancer, histological grade and the presence of lymphovascular invasion (LVI) particularly for those with negative lymph node are significant apart from clinical staging (14-17).

Under the light of studies in the literature, the aim of this study is to determine certain diagnostic and treatment characteristics of women with breast cancer aged 65 and above and their total survival durations as from the first diagnosis, their survival probabilities and factors that might influence their survival.

Methods

The study includes 1120 female patients who were followed up with breast cancer diagnosis and/or treatment in Dokuz Eylul University Medical Faculty Hospital between January 1st, 2000 and December 31st, 2006. The data on the patients were obtained by examining the patient files and hospital information systems retrospectively. The study was completed after the final monitoring status of the patients was determined on December 31st, 2011. Approval was obtained from Dokuz Eylul University Medical Faculty Hospital Ethics Committee.

The duration from diagnosis to death was accepted as overall survival time. Age, comorbidity, clinical stage, histological grade, lymphovascular invasion, recurrence and
metastasis in the follow up are variables examined, which might influence the survival rate. The ages of the patients were given as <65, 65-69, 70-74, 75-79 and ≥80 for descriptive purposes while 75-79 and ≥80 combined to be a group for statistical analysis.

Statistical Analysis

Categorical variables were presented with frequency and percentage distributions, while continuous variables were given with mean and standard deviation values.

The 5 year survival probabilities were calculated by life table analysis. The mean survival times were calculated with Kaplan-Meier test, and the differences between groups were evaluated by log-rank test. The prognostic values of all related variables were first assessed in univariate analyses. Then the variables that had significant association with the outcome were included in multivariate Cox proportional hazard model with backward elimination method, and -2 log-likelihood ratio values were taken into consideration in comparison of different models.

The data were analysed with SPSS 15.0 package program. All reported p values are two-tailed and p<0.05 was accepted as statistically significant.

Results

The mean follow up period was 75.1±39.4 months with a median of 78 months. Certain characteristics of the women included in the study are given in Table 1. Of the patients 25.0% were aged ≥65 years and their mean age was 71.9±5.4 at the time of the diagnosis.

The distribution of some characteristics of the patients in terms of age is summarized in Table 2. Women aged >65 years have more accompanying diseases than the younger ones (p<0.001). The clinical stages in which the women were diagnosed in terms of their ages
were found significantly different \(p=0.037\) while 27.8\% of those \(\geq 80\) years were at clinical stage 4 at diagnosis. No significant difference was found between age groups in terms of LVI status in tumour \(p=0.135\).

Patients aged \(<65\) years received more surgical treatment \((97.5\%)\), chemotherapy \((80.2\%)\) and radiotherapy \((96.9\%)\) than the older ones. No significant difference was found in receiving hormonal therapy between age groups \(p=0.139\). In the follow up period of the patients there were no significant differences in terms of recurrence \(p=0.216\) and metastasis \(p=0.751\) development between age groups.

The mean survival times for age groups are 122.2 months for \(<65\) years of age group, 120.2 months for 65-69 years of age group, 121.5 months for 70-74 years of age group, and 85.6 months for \(\geq 75\) years of age group \((\text{Log rank chi-square}=18.489; p<0.001)\). The survival probabilities of patients for 5 years in terms of age groups are 85.4\% for age \(<65\) years, 85.5\% for age 65-69 years, 83.4\% for age 70-74 years, and 60.1\% for age \(\geq 75\) years, respectively. The survival probabilities in terms of their age groups and clinical stages are given in Table 3.

Besides age and clinical stage, in the whole model, in which the accompanying disease, histological grade, surgical treatment, chemotherapy and radiotherapy were included, which are shown to influence survival and which have significant difference among groups, and in which all these variables were corrected in relation to one another but no variables were eliminated, only clinical stage was found to be statistically significant \((p<0.001)\), while age and the presence of an accompanying disease also influence survival along with clinical stage in the last model (Table 4). When the survival curves of the last model are evaluated, it can be seen that the survival probabilities of 65-69 and 70-74 age
groups distinctly differ from women aged <65 years and that the age of 75 is a breaking point (Figure 1).

Discussion

The number of women with breast cancer increases with increase in life span and increase in elderly population, which in turn results in a higher increase in the number of elderly women with cancer. Breast cancer particularly affects the elderly women in developed countries (9). A multicentre study including 11,208 breast cancer patients since June 2005 till February 2008 showed that 8.2% of them were those aged above 70 years while in this study, patients aged above 65 years constituted 25.0% of all the patients (4). Their mean age was 71.9 years while another single-centred study including breast cancer patients aged above 65 years found it as 72.7 years (18).

The diseases accompanying breast cancer occur more frequently in the elderly patients. It is known that in the elderly without any accompanying diseases, the disease displays a relatively good prognosis whereas those with accompanying diseases it has rather a poor one. It was found in one study that accompanying disease increases the hazard ratio by 1.3 times independent of age, stage and treatment (6,8). In our study, 34.2-44.4% of women aged ≥65 years have at least one disease accompanying breast cancer while only 12.7% of those aged ≤65 years have at least one accompanying disease. In the multivariate analysis, accompanying disease was found to increase the hazard ratio by 2.3 times independently of age, clinical stage and histological grade.

Impairments in organ functions, which occur as a result of increased age as well as accompanying diseases in the elderly, might prevent the formulation of management plan so that optimum treatment can be achieved. As a consequence, the elderly patients cannot be
treated in an aggressive way though they are diagnosed at later stages than the young (9,19,20). When assessed from the point of surgical treatment, it is reported that a more limited surgical treatment is administered in the elderly and this situation is much more apparent especially in patients aged ≥80 years. It has been shown that breast conserving surgery is performed less often and this situation continues even after the recovery of the accompanying disease is achieved (6-8). The situation is similar with radiotherapy and chemotherapy. While in various studies patients aged ≥70 and ≥80 years are emphasized, the consensus is that the patients in this age group receive less chemotherapy and radiotherapy but more hormonal therapy (6,7,19,20).

Even though it is known that patients are diagnosed later with advanced age, it is shown that this situation is also valid for patients over 70. While the patients diagnosed at stage 4 constitute 3.7% of people aged <65 years, they constitute 8.5% of the age group 80-84 (20,21). Similarly with the literature, we have also found in our study that women aged ≥80 years could not benefit from improved staging methods and therapies. They were diagnosed at later stages and they received less surgical treatment, chemotherapy and radiotherapy compared to the other age groups. This might result in that the clinicians are caught between the short-term damages of special interventions in breast cancer and the death of patients due to other reasons. Moreover, some studies indicate that breast cancer progresses more positively in the elderly and thus usual treatment approaches are not required. However, the knowledge on this issue is limited and further research is needed (9,18).

In the study of EUROCARE-3, the survival probabilities of women at 5 years are 76% for the ages 65-74 years and 69% for the ages above 75 years (22). In SEER records, on the
other hand, survival at 5 years was found as 89.2% for women aged ≤65 years, 90.4% for the ages 65-74 and 86.8% for the ages above 75 years (23). In a study conducted in our country, survival at 5 years for women aged ≥65 years is 62%. In the same study, stage and lymph node involvement are reported to be the most important factors affecting survival (18). In this study, it was observed that survival probabilities at 5 years decreases with increased age and it decreases to 60.1 for the ages above 75 years. When age and clinical stage, which affect the survival rate of patients with breast cancer, are evaluated together, similar survival rates and mean survival times can be identified for clinical stages 0 and 1 until the age of 75 while the age of 75 is found to be a breaking point. Similar results can be seen in all clinical stages.

In studies which assess the effect of the increasing inadequacies and deficiencies in treatment due to age on patient survival, different results were obtained; nevertheless, it was shown that radiotherapy increased the total and disease-free survival while this influence could not be confirmed for surgical treatment, radiotherapy and chemotherapy (7,10). In the modelling made for the study, it can also be seen that the presence of accompanying disease in addition to age and clinical stage influence total survival significantly whereas surgical treatment, radiotherapy and chemotherapy do not have any significant influence on overall survival.

The most important limitation of our study is that the data are collected retrospectively from the existing patient files and this brings the limitation of recorded information of the patients. This might include certain shortcomings and possible mistakes.

Consequently, women aged ≥65 years are diagnosed with later stages of breast cancer. The accompanying diseases of these patients might limit the doctors’ choices of
treatment. The increased age, clinical stage and accompanying diseases of patients have negative impact on their survival. It is pointed out that early diagnosis of breast cancer is as important for the elderly as for the young and it will be essential to reevaluate the upper age limit defined in national breast cancer screening programs. Furthermore, it is considered that planning the post-diagnosis assessment and treatment of functional losses and accompanying diseases occurring with aging with an interdisciplinary team is important for the survival of patients.
References


Table 1 – Descriptive characteristic of women with breast cancer

Table 2 – Some characteristics of women with breast cancer according to their age at the time of diagnosis

Table 3 The survival rates of women with breast cancer according to their age and stage at the time of diagnosis

Table 4. Cox-regression models showing factors effecting the survival of women with breast cancer

Figure 1. The survival curves of women with breast cancer according to their age at the time of diagnosis
Figure 1
Additional files provided with this submission:

Additional file 1: tables (14.03.2013).docx, 40K
http://www.biomedcentral.com/imedia/8411971209443940/supp1.docx