Research Article

Breast Cancer Screening in Elderly Patients: An Opportunity for Less Aggressive Treatments

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Abstract

In our area, the survival of patients over 70 years did not show changes over time (p > 0.05) and keep the same curves and survival rates than patients who were diagnosed and treated during the decades of the 1980s, 1990 and 2000. The percentage of loco-regional recurrence (12.1% vs 18.7%; p = 0.01), of multifocal and/or multi centric cases (6.8% vs 13.1%; p = 0.0001) are lower in patients with ≥ 70 years old than in those with less than < 70 years. Breast carcinomas in women ≥ 70 years over express HER-2 less frequently than younger women (< 70 years: 23.2%, between 70 and 79 years: 17.3% and ≥ 80 years 9.4%; p < 0.001). By contrast, the expression of estrogen receptor increases with age (72% for < 70 years, 78.6% between 70 and 79 years and 84.1% women ≥ 80 years; p < 0.001). With the results from this study, we can conclude that the screening for Breast Cancer in women over 70 years should be promoted. Breast carcinomas in women older than 70 years show morphological and clinical characteristics that make it susceptible to respond to tamoxifen and conservative therapies if diagnosed in early stages.

INTRODUCTION

Most of the population breast cancer (BC) screening programs were designed in the early 70s. In this time the shorter life expectancy of older women influence the designs of these screening programs. However, four decades later, life expectancy and quality of life of older women increased significantly.

A significant proportion of women with 70 years and older are in good health and can be expected to live considerably longer than 10 more years. Based on 2010 US Life Tables, approximately 50% of 80-years-old women and 25% of 85-years-old women will live at least more 10 years [1,2]. Thus, the Guideline Update From the American Cancer Society (2015) [3] recommends that women should continue to perform BC screening as long as their overall health is good and life expectancy is of 10 years or longer. We think that there is scientific evidence [4,5] to recommend screening mammography every two years and opportunistic annual clinical examination to all asymptomatic women between 70 and 84 years, which are fully independent or with a mild dependence (measured by the Katz Index). Actually, in order to make decisions about the type of treatment in older women with BC, it should take into account functional reserve, tolerance to antineoplastic therapies, competing causes of morbidity and death, and patient goals to care [6]. Future research should study the role of geriatric assessment in treatment selection and tolerance, tumor biology, and specific clinical interventions/therapeutics in a clinical trial setting.

MATERIAL AND METHODS

We designed a prospective, retrospective and longitudinal observational study that included a total of 3434 patients who were diagnosed with BC at Vigo University Hospital Complex (Spain) between 1974 and 2009, who were evaluated prospectively for over 10 years. We analyzed the macro features, histopathological, immunohistochemical and BC molecular subtypes in patients ≥70 years and its relation to prognosis and to age. We study the percentage of in situ carcinomas, multifocal and/or multicentricity, HER-2 over expression, HER-2, expression of estrogen receptor, according to age and different times of diagnosis: decade 70s, 80s or 90s. The overall survival analysis was performed using the Kaplan–Meier (log-rank test).

RESULTS

The average age of the total series of BC was 58.19 years (S.D. 13.9), with a range between 21 and 98 years old. The average age of patients with breast cancer has increased (p < 0.05) in the different periods of the study (1974-89, 1990-99 and 2000-09) (Table 1). The percentage of patients with ≥70 years Breast Cancer has been increasing: 19.4% (1974 to 1989), 23.0% (1990 to 1999), reaching 26.6% during the years 2000–2009 (p < 0.0001). In our area, for several decades BC patients under 70 years were benefiting from prevention campaigns, resulting in a clear improvement in patient survival (p < 0.0001). However, the survival of patients over 70 years, unfortunately, did not show changes over time (p > 0.05) and keep the same curves and survival rates than patients who were diagnosed and treated during the decades of the 1980s, 1990 and 2000 (Figure 1).

Patients < 70 years increased the percentage of carcinoma in situ from 2.7% (1974-1989) to 13.8% (2000-2009) but, in the patients ≥70 the percentage remains low and stable (< 5 %) during all this period (1974-2009). The survival curves of BC patients show an inverse relationship with age in relation to different life expectancy (Figure 2) (Table 2).

The pTNM was an excellent prognostic factor at all ages.

Table 1: Age at diagnosis of the total number of breast cancer cases.

<table>
<thead>
<tr>
<th>PERIOD</th>
<th>N</th>
<th>Mean Age (S.D.) at diagnosis</th>
<th>Minimum Age</th>
<th>Maximum Age</th>
<th>% BC ≥ 70 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974-1989</td>
<td>985</td>
<td>56.52 (13.59)</td>
<td>21</td>
<td>96</td>
<td>19.4%</td>
</tr>
<tr>
<td>1990-1999</td>
<td>1059</td>
<td>58.28 (13.76)</td>
<td>26</td>
<td>96</td>
<td>23.0%</td>
</tr>
<tr>
<td>2000-2009</td>
<td>1390</td>
<td>59.31 (14.12)</td>
<td>27</td>
<td>98</td>
<td>26.6%</td>
</tr>
<tr>
<td>Total</td>
<td>3434</td>
<td>58.19 (13.90)</td>
<td>21</td>
<td>98</td>
<td>p &lt; 0001</td>
</tr>
</tbody>
</table>

Figure 1 Overall Survival of Breast Cancer in patients with BC in age groups and in the different periods of the study (1974-89, 1990-99 and 2000-09) (p < 0.0001).

Figure 2 Overall Survival of Breast Cancer by age group: < 70, 70-79 and > 80 years.
Mean tumor size was 2.6 cm in patients < 70 years versus 3.06 cm in patients ≥ 70 years (p < 0.001). Axillary involvement (pN) behaved as an excellent prognostic factor, however the percentage of patients with breast cancer where the breast could not be assessed for different reasons increased significantly (p < 0.001): 6.2% those under 70 years, 15.6% in the patients 70 to 79 years and to 44.6% in women ≥ 80 years. The Nottingham Prognostic Index was a good prognostic factor to 79 years old (Figure 3). In women older than 80 years the low percentage of lymphadenectomy underestimates the NPI. The percentage of loco-regional recurrence (12.1% vs 18.7%; p = 0.01), of multifocal and/or multi centric cases (6.8% vs 13.1%; p = 0.0001) were lower in patients with ≥ 70 years old than in those with less than 70 years. Breast carcinomas in women is ≥ 70 years over express HER-2 less frequently than younger women (< 70 years: 23.2%, between 70 and 79 years: 17.3% and ≥ 80 years: 9.4%; p < 0.001). By contrast, the expression of estrogen receptor increases with age (72% for < 70 years, 78.6% between 70 and 79 years and 84.1% women ≥ 80 years; p < 0.001) (Table 3).

**DISCUSSION**

Over the past century, the world has seen unprecedented declines in mortality rates, leading to an accelerated increase in the world population. This century will realize falling fertility rates alongside ageing populations. The 20th century was the century of population growth; the 21st century will be remembered as the century of ageing.

<table>
<thead>
<tr>
<th>PERIOD</th>
<th>&lt; 70 years</th>
<th>≥ 70 years</th>
<th>Total series</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1974-1989</strong></td>
<td>2.7 %</td>
<td>0.6 %</td>
<td>2.3 %</td>
</tr>
<tr>
<td><strong>1990-1999</strong></td>
<td>10.0 %</td>
<td>4.6 %</td>
<td>8.7 %</td>
</tr>
<tr>
<td><strong>2000-2009</strong></td>
<td>13.8 %</td>
<td>3.8 %</td>
<td>11.2 %</td>
</tr>
</tbody>
</table>


With the aging of the American population, older women are being diagnosed with breast cancer. With the possible exception of women under 40 years of age, there is no clear evidence of a biologic or clinical difference between breast cancer in younger and older aged groups. Breast cancer is diagnosed at a more advanced stage in older women. Elderly women with breast cancer frequently are treated with less than standard therapy and are less often included in clinical trials. With the exception of specific comorbid conditions that preclude anesthesia and surgery, older women tolerate breast surgery as well as younger women. The results of good surgical and adjuvant therapy for elderly women are as good as those for younger women. Older women with breast cancer deserve the most effective screening, diagnosis, and surgical treatment available [7]. The major risk factor for cancer is progressive age [8]. In our series, the percentage of patients BC over 70 years has been increasing during different decades of the study: 19.4% (80s), 23.0% (90s), reaching 26.6% during the years 2000-2009 (p < 0.0001). One of the most intriguing aspects of ageing is how different the ageing process is from person to person; the basis for this variation is largely unknown. Population-based studies and longitudinal surveys have shown that comorbidity and physical and mental functioning are important risk factors; thus, a meaningful assessment of comorbidity and disability should be implemented in clinical practice [9]. There are inadequate numbers of older women enrolled in breast cancer clinical trials. Both physicians and patients should explore and define the barriers to clinical trial
Table 3: Multifocal and/or multicentric carcinoma cases or, over expressing of HER-2 and estrogen receptor status by age groups.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Multifocal and/or Multicentric</th>
<th>HER-2 over expressing</th>
<th>ER Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 70 years</td>
<td>13.1%</td>
<td>23.2%</td>
<td>72.0%</td>
</tr>
<tr>
<td>≥ 70 years</td>
<td>6.8%</td>
<td>14.8%</td>
<td>80.3%</td>
</tr>
<tr>
<td>p</td>
<td>&lt; 0.0001</td>
<td>&lt; 0.001</td>
<td>&lt; 0.001</td>
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Breast cancer is a heterogeneous disease and there is a continual drive to identify markers that will aid in predicting prognosis and response to therapy. To date, relatively few markers have established prognostic power. Oestrogen receptor (ER) is probably the most powerful predictive marker in breast cancer management, both in determining prognosis and in predicting response to hormone therapies. Progestrone receptor (PR) is also a widely used marker, although its value is less well established [16]. Infiltrating ductal carcinoma remains the most common histological subtype of breast cancer diagnosed in older patients and this type of carcinoma exhibits an overall more favorable biological profile, with a higher percentage of ER-positive tumors that increases with age to 91% in patients aged ≥70 years [17]. In our series, the expression of hormone receptor positive estrogen increases with age: 72% for < 70 years, 78.6% between 70 and 79 years and 84.1% women ≥70 years (p < 0.001). Therefore, probably adjuvant tamoxifen therapy should be considered systemic treatment of early breast cancer in older women, and get better benefits. With the results from this study, we can conclude that the screening for Breast Cancer in women over 70 years should be promoted. Breast carcinomas in women older than 70 years show morphological and clinical characteristics that make it susceptible to respond to tamoxifen and conservative therapies if diagnosed in early stages.

REFERENCES