Available online at www.sciencedirect.com

ScienceDirect

EJSO 41 (2015) 625–634

EJSO the Journal of Cancer Surgery

www.ejso.com

Treatment patterns of elderly breast cancer patients at two Canadian cancer centres

F.A. Angarita [a], T. Chesney [a], C. Elser [b], A.M. Mulligan [c], D.R. McCready [a,d], J. Escallon [a,d,e,*]

[a] Division of General Surgery, Department of Surgery, University of Toronto, Toronto, ON M5N 3M5, Canada
[b] Department of Medical Oncology, Mount Sinai Hospital, Toronto, ON M5G 1X5, Canada
[c] Laboratory Medicine Program, Toronto General Hospital, University Health Network, Toronto, ON M5G 2C4, Canada
[d] Department of Surgical Oncology, Princess Margaret Cancer Centre, University Health Network, Toronto, ON M5T 2M9, Canada
[e] Marvelle Koffler Breast Centre, Mount Sinai Hospital, Toronto, ON M5G 1X5, Canada

Accepted 11 January 2015
Available online 7 February 2015

Abstract

Background: Treatment of breast cancer in elderly women is limited by declining functional status and life expectancy. The impact of providing less aggressive treatment remains controversial. This study assessed the treatment patterns of elderly breast cancer patients.
Methods: Retrospective chart review of women ≥70 y with breast cancer treated between 2004 and 2011 at two large Canadian cancer centres. Tumour and treatment characteristics were collected across three subgroups: 70–74 y (n = 314), 75–79 y (n = 233), and ≥80 y (n = 219). Comparisons were made using Chi-squared test, Fisher-Freeman-Halton exact test, or ANOVA. Disease free (DFS) and overall (OS) survival were estimated by Kaplan–Meier analysis and compared by log-rank test.
Results: Women ≥80 y had larger tumours that were better differentiated, hormone receptor-positive, HER2-negative, and lymph node (LN)-positive relative to younger women ($p < 0.05$). Women ≥80 y more frequently underwent mastectomy than breast conserving surgery and lacked LN staging ($p < 0.05$). Chemotherapy was provided in few patients, especially ≥80 y. Radiation therapy was provided less often in women ≥80 y despite indications. Hormone therapy was more frequently provided in women ≥80 y. Women ≥80 y had a significantly lower DFS (17.5 m) relative to women 70–74 y (31 m, $p = 0.02$) and 75–79 y (35 m, $p = 0.006$). Women ≥80 y had the lowest median OS (53 m) relative to 70–74 y (79 m, $p = 0.001$) and 75–79 y (75 m, $p = 0.003$) women.
Conclusions: Women ≥80 y received less aggressive treatment than younger women and had less favourable DFS and OS. Until age-specific recommendations are available physicians must use clinical judgement and assess the tumour biology with the patient's comorbidities to make the best choice.

Keywords: Breast neoplasm; Aged; Neoadjuvant therapy; Adjuvant therapy; Treatment outcomes

Introduction

Ageing increases the risk of developing breast cancer.[1] In fact the incidence rate increases from 1 in 200 for women <40 years (y) to 1 in 14 for those ≥70 y.[1] Currently >40% of breast cancers are diagnosed in women ≥65 y, 20% of which are diagnosed in women >75 y.[2] As life expectancy increases worldwide, the absolute number of elderly women with breast cancer is expected to grow thereby shifting a large proportion of healthcare to this

* Corresponding author. Marvelle Koffler Breast Centre, Mount Sinai Hospital, Rm 1266, 600 University Avenue, Toronto, ON M5G 1X5, Canada. Tel.: +1 416 856 5163; fax: +1 416 586 8847.
E-mail addresses: fernando.angarita@mail.utoronto.ca (F.A. Angarita), tyler.chesney@gmail.com (T. Chesney), Christine.Elser@uhn.ca (C. Elser), AnnaMarie.Mulligan@uhn.ca (A.M. Mulligan), David.McCready@uhn.ca (D.R. McCready), JEscallon@mtsinai.on.ca (J. Escallon).

http://dx.doi.org/10.1016/j.ejso.2015.01.028
0748-7983/

age group.[3,4] By 2025 almost three-quarters of breast cancers are expected to be diagnosed in elderly women.[5]

Despite this disease burden the most appropriate management of breast cancer in elderly women remains unclear. Elderly patients are typically underrepresented in clinical trials, particularly those for chemotherapeutics,[6] and therefore safety, effectiveness, and necessity of therapeutic modalities in these women is unknown. Clinical decisions can be made using standard treatment guidelines, but they have unclear applicability in older patients.[7,8] Age, amongst other clinical factors, is an independent determinant for not receiving cancer treatment.[9–11] Reasons for refraining from aggressive cancer treatment include extensive comorbidities, patient preference, lack of social support, declining functional and mental status, reduced estimated life expectancy, and physician preference.[12–16]

The impact of providing less aggressive treatment in the elderly remains controversial as studies show contradicting effects on disease free survival (DFS) and overall survival (OS).[9,17–19] For example, one study found that recurrence rates did not increase when women >70 y were treated less aggressively relative to women who were conventionally treated.[17] In contrast, other authors have reported that excluding elderly women from aggressive breast cancer treatment is associated with worse DFS and OS.[9,18,19] Additionally, mortality rates for elderly breast cancer patients in recent decades have shown less improvement compared to younger patients suggesting an adverse effect on DFS and OS in elderly women in whom care is compromised.[20]

In order to optimize quality of care it is important to understand how elderly breast cancer patients are currently being treated. This study aimed to assess the treatment patterns of elderly breast cancer patients managed at two provincial cancer centres in Toronto, Ontario (ON), Canada.

Material and methods

Study design

After ethics board approval, a retrospective chart review was conducted on female breast cancer patients ≥70 y treated at two large adult provincial cancer centres: Mount Sinai Hospital (MSH) and Princess Margaret Cancer Centre (PM), Toronto, ON, Canada. Inclusion criteria were first time diagnosis of stage 0–III breast cancer and date of first visit to MSH or PM between 01/01/2004 and 12/31/2010. Exclusion criteria included stage IV tumours, recurrent tumours, or final pathology confirming non-breast primary tumours, lobular carcinoma in situ, phyllodes tumour, lymphoma, sarcoma, and Paget's disease.

Data collection

Data were obtained from the eClinical Breast Database which prospectively collects clinical information from breast cancer patients treated at MSH and PM. Extracted data included (1) patient and tumour characteristics such as age, clinical size, laterality, clinical lymph node (LN) status, biopsy histology, and clinical staging; (2) surgical treatment including type of primary surgery and LN staging procedure; (3) surgical pathology, including histology, extent of disease, dimensions, pathology stage, grade, hormone receptor and HER-2 status, invasive and ductal carcinoma in situ (DCIS) margin status, lymphovascular invasion status, and number of LN excised and pathologic status; (4) non-surgical treatment, specifically type of radiation (RT), chemo- (CT), and hormone therapy (HT); and (5) surveillance information including date of last visit to clinic at MSH or PM (surgical, medical, or radiation oncology), type of recurrence, date of recurrence, and status. When patients had mixed invasive tumours, the ductal component features were recorded. Clinical notes were reviewed for missing information. Date of diagnosis was defined as date of biopsy-proven disease.

Tumour histopathology

Tumours were processed in accordance with the College of American Pathologists (CAP) recommendations and histologically classified according to the World Health Organization (WHO) tumour classification. Staging was according to the American Joint Committee on Cancer (AJCC) edition available at the time of diagnosis: 6th edition for 2003–2009 and 7th edition after 2010. Invasive tumours were assigned a Nottingham combined histologic grade (Elston-Ellis modification of Scarff-Bloom-Richardson grading system).

The definition of oestrogen/progesterone receptor (ER/PR) positivity varied according to the centre and the year at diagnosis: at MSH, throughout the data collection period, and at PM from May 2009 ER/PR were defined as positive when at least 1% of tumour cells showed nuclear staining. At PM prior to May 2009 ER/PR positivity was defined as staining in ≥ 5% of tumour cell nuclei. The different definitions of ER positivity were not considered to significantly impact our findings as it has been shown that ER is almost always diffusely positive or completely negative, that is, it shows a bimodal staining pattern with few cases falling between these extremes.[21] Given the small number of tumours likely to fall into the 1 to <5% of cells staining category, the impact of the varying cut-off on our results would be limited. HER2/neu was considered positive with immunohistochemistry staining of 3+, negative with staining of 0 or 1+, and equivocal with staining of 2+, in which case reflex fluorescence in situ hybridization (FISH) testing was performed to assess for HER2/neu gene amplification.

Assessment of treatment patterns

To assess age-related differences in treatment patterns, patients were divided into three subgroups according to