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When Cancer in Older Adults is Undermanaged: The Breast Cancer Story

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Abstract

Age is the most important risk factor for breast cancer; age is also a risk factor for undermanagement of breast cancer. We studied 1,859 women 65+ years of age with early stage breast cancer and found that undermanagement is a risk factor for recurrence and for dying of breast cancer. Although conservative treatment is likely warranted in patients with tumors having excellent prognostic characteristics and in women with very limited life expectancies, standard treatment is needed for the majority of older women if we are to reduce the disproportionate burden of breast cancer in this age group. We need better strategies for identifying those most likely to benefit from standard treatment and from systematic surveillance for recurrence. In this regard, collaboration between oncologists and primary physicians is essential for achieving high quality care and outcomes in this vulnerable group of patients.

Introduction

Age is the most important risk factor for breast cancer, with the incidence reaching its maximum among women 75–79 years of age.¹ Earlier diagnosis, improved treatment, and the overall increase in longevity in later life continue to expand the number of breast cancer survivors who are 65+ years of age, estimated to be one million (43%) of the total 2.3 million breast cancer survivors.² Gains in life expectancy mean that older women with breast cancer have, on average, longer periods of time when they are at risk for recurrences and breast cancer mortality.³

Older women are less likely to receive definitive care for a new diagnosis of breast cancer.⁴ Studies have identified factors that might explain these age-dependent treatment variations, including race and socioeconomic status, health and functional status, doctor-patient communication, and patients' and families' treatment preferences.⁵ Older women are also less likely to receive guideline surveillance for recurrence following a diagnosis of breast cancer.⁶ While studies have examined the consequences of these age-associated variations, they have included small and select samples, and have lacked comprehensive information on treatment and outcomes.⁴ To overcome these shortcomings, we undertook a 10-year study of 1,859 women with early stage breast cancer diagnosed and cared for in integrated health

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care systems participating in the Cancer Research Network (CRN),⁷ with the goal of linking variations in treatment and follow-up care to variations in outcomes.

Methods

Study Sample

We identified eligible subjects at six CRN integrated health care delivery systems. Eligible subjects were all women 65+ years of age or older, diagnosed for the first time with histologically confirmed, early stage breast cancer (stage I and II) diagnosed between January 1, 1990 and December 31, 1994. We excluded women with simultaneously diagnosed bilateral breast cancer. We included all eligible subjects from all sites except the largest, where we randomly sampled 10% of the subgroup of non-Hispanic white subjects younger than age 80 with stage I breast cancer. Including all of the patients from this site would have marginally increased statistical power at substantial cost.

Data Collection and Analytic Variables

Data were collected from medical records, tumor registries, and clinical and administrative databases and each subject was followed for 10 years, or until death or disenrollment from her health plan. We gathered each woman's date of birth, race, and ethnicity and collected information on comorbid conditions during the one year before breast cancer diagnosis and the three years after diagnosis to calculate the Charlson Comorbidity Index.⁸ Originally validated in a cohort of breast cancer patients and composed of 19 conditions,⁸ the Charlson is a weighted index that predicts mortality.⁹ We determined date of diagnosis, stage, tumor size, node evaluation, estrogen receptor and progesterone receptor expression, and histology. We also identified the type(s) of surgery received and whether surgical margins were involved. We determined the number of courses of radiation and chemotherapy and the duration of tamoxifen use. We collected the number and dates of mammograms performed in subjects without symptoms suggestive of recurrence through the first five years of follow-up. Outcomes included breast cancer recurrences or second primaries, and cause-specific mortality, that is, breast cancer versus other causes.

Analysis

We obtained descriptive statistics, conducted bivariate analyses, and used logistic regression and Cox proportional hazards modeling as appropriate.

Results

Women 75+ years of age, with more comorbidity, and those at low or intermediate risk of recurrence were more likely to receive non-standard primary therapy, particularly breast conserving surgery (BCS) without radiation therapy.⁵

BCS without radiation therapy was associated with an increased rate of recurrence and second primary breast cancer and breast cancer mortality. Among those with endocrine responsive tumors, those treated less than one year of tamoxifen had a higher rate of recurrence and second primary breast cancer and breast cancer mortality than those treated with five years or more.^{10,11}

Among women prescribed tamoxifen, 49% discontinued taking it before completing of five years of treatment. Discontinuers were more likely to be older (75+ years of age); to have had an increase in comorbidity during the three years following diagnosis; to have indeterminate estrogen receptor status; and to have received BCS without radiation therapy.¹²

Women 80+ years of age and those with comorbid conditions were less likely to have yearly mammograms. Women at high risk of recurrence (those diagnosed with stage II disease and those receiving BCS without radiation) were less likely to receive yearly mammograms. Women seen by a breast cancer surgeon or a medical oncologist were more likely to receive mammograms in comparison to those who were not. Moreover, primary care physicians ordered mammograms for less than 17% in each of four years of follow-up.¹³ Each additional surveillance mammogram was associated with a reduction in the odds of breast cancer mortality. This protective effect was strongest in those with local recurrences.¹⁴

Discussion

Older women are at risk for undermanagement of breast cancer and, in turn, for dying of breast cancer. In contrast to recent clinical trial¹⁵ and observational studies,¹⁶ we did not identify subgroups that did not benefit from standard treatment, perhaps because we studied relatively small numbers of subjects with excellent prognosis tumor characteristics. Although conservative treatment is likely warranted in such patients and in women with very limited life expectancies, standard treatment is needed for the majority of older women with breast cancer if we are to reduce the disproportionate burden of breast cancer in this age group. Moreover, our data support the beneficial role of surveillance mammography, at least through five years after diagnosis, in reducing breast cancer mortality. Women visiting cancer specialists were more likely to receive surveillance mammograms than those who did not. Systems strategies that connect oncology specialists and primary care physicians, and educational initiatives that are directed at primary care physicians and older breast cancer survivors themselves, are potential strategies for improving surveillance rates.

We need better strategies for identifying those most likely to benefit from both standard treatment and from systematic follow-up with screening for recurrence. In this regard, collaboration between oncologists and primary physicians is essential for achieving high quality care and outcomes for this vulnerable group of patients.

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References

1. Breast Cancer Facts & Figures, 2006. Atlanta: American Cancer Society; 2006.
2. Lash T, Silliman RA. Re: Prevalence of cancer. *J Natl Cancer Inst* 1998;90:399–400. [PubMed: 9498492]
3. Walter LC, Covinsky KE. Cancer screening in elderly patients: A framework for individualized decision making. *JAMA* 2001;285:2570–2556. [PubMed: 11368717]
4. Bouchardy C, Rapiti E, Blagojevic S, et al. Older female cancer patients: Importance, causes, and consequences of undertreatment. *J Clin Oncol* 2007;25:1858–1869. [PubMed: 17488984]
5. Enger SM, Thwin SS, Buist DSM, et al. Breast cancer treatment among older women in integrated health care settings. *J Clin Oncol* 2006;24:4377–4383. [PubMed: 16983106]
6. Keating NL, Landrum MB, Guadagnoli E, et al. Factors related to underuse of surveillance mammography among breast cancer survivors. *J Clin Oncol* 2006;24:85–94. [PubMed: 16382117]
7. Wagner EH, Greene SM, Hart G, et al. Building a research consortium of large health systems: The Cancer Research Network. *J Natl Cancer Inst Monogr* 2005;35:3–11. [PubMed: 16287880]

8. Charlson ME, Pompei P, Ales KL, et al. A new method of classifying prognostic comorbidity in longitudinal studies: Development and validation. *J Chron Dis* 1987;40:373–383. [PubMed: 3558716]
9. Newschaffer CJ, Bush TL, Penberthy LT. Comorbidity measurement in elderly female breast cancer patients with administrative and medical records data. *J Clin Epidemiol* 1997;50:725–733. [PubMed: 9250271]
10. Geiger AM, Thwin SS, Lash TL, et al. Recurrences and second primary breast cancers in older women with early stage disease initially. *Cancer* 2007;109:966–974. [PubMed: 17243096]
11. Ulcickas Yood M, Owusu C, Buist DSM, et al. The mortality impact of less than standard therapy in older breast cancer patients. *J Am Coll Surg* 2008;206:66–75. [PubMed: 18155570]
12. Owusu C, Buist DSM, Field TS, et al. Predictors of tamoxifen discontinuance among older women with estrogen-receptor positive breast cancer. *J Clin Oncol* 2008;26:549–555. [PubMed: 18071188]
13. Field TS, Doubeni C, Fox M, et al. Lower use of surveillance mammography among older breast cancer survivors at elevated risk of recurrence. *J Gen Intern Med* 2008;23:158–163. [PubMed: 18060463]
14. Lash TL, Fox MP, Buist DSM, et al. Mammography surveillance and mortality in older breast cancer survivors. *J Clin Oncol* 2007;25:3001–3006. [PubMed: 17548838]
15. Hughes KS, Schnaper LA, Berry D, et al. Lumpectomy plus tamoxifen with or without irradiation in women 70 years of age or older with early breast cancer. *New Engl J Med* 2004;351:971–977. [PubMed: 15342805]
16. Martelli G, Miceli R, Costa A, et al. Elderly breast cancer patients treated by conservative surgery alone plus adjuvant tamoxifen: Fifteen-year results of a prospective study. *Cancer* 2008;112:481–488. [PubMed: 18098268]