Adopting New Breast Cancer Staging: The Impact of Stage Migration


Study Overview

Objective. To assess the impact of revised staging criteria on reporting stage-specific outcomes in breast cancer.

Design. Retrospective analysis.

Setting and participants. Records of 1501 patients with breast cancer treated with mastectomy and adjuvant therapies in 5 clinical trials at the M.D. Anderson Cancer Center from 1975 to 1994 were reviewed. Each patient was assigned a 1988 and a 2003 disease stage based on pathology.

Main outcome measures. 10- and 15-year actuarial overall stage-specific survival with comparison among the groups.

Main results. The 2003 staging system shifted higher-risk patients from the stage II group into the stage III group. 1087 patients had stage II disease according to 1988 staging criteria; however, 482 of these patients had stage III disease under the 2003 revised staging system. The number of patients with stage III disease increased from 207 in 1988 to 701 in 2003. 258 patients were classified as having stage IIIC disease—a stage not recognized in 1988. The patient numbers for stage I disease (node-negative) did not change. The 10-year overall survival for patients with stage II disease was significantly improved using the 2003 staging system (65% [1988] versus 76% [2003]; P < 0.001). For patients with stage III disease, there was a trend in improvement in 10-year overall survival to 45% in 1988 from 50% in 2003 (P = 0.077).

Conclusion. Stage reclassification using new breast cancer staging criteria results in significant changes in outcome reported by stage.

Commentary

Staging systems are important in caring for patients with cancer. Classifying a patient’s stage of disease is fundamental to an informed discussion about prognosis and treatment recommendations. As well, cancer staging provides a common framework to group patients for use in cancer research and registry reporting worldwide. The American Joint Committee on Cancer (AJCC) and Tumor Node Metastasis Committee of the International Union Against Cancer are charged with developing a compendium of cancer staging (ie, the AJCC cancer staging manual). Periodically, the AJCC revises staging criteria for certain cancers because of advances in diagnosis and treatment.

In 2003, the AJCC adopted revised staging criteria for breast cancer [1]. This revision was based in large part on limitations of nodal evaluation and classification in the earlier system. Specifically, advances in sentinel nodal biopsies and pathologic specimen processing have led to the identification of a subset of women who have clinically negative but microscopically positive nodal involvement. The revised staging system accounts for micrometastases and nodal number in greater detail than before [2].

An important issue with any staging revision is how patients diagnosed under the new system compare with similarly staged patients in the previous system. Woodward and colleagues sought to address this issue in a rather simple and clever retrospective analysis using over 1000 women accrued in 5 different adjuvant trials over a 20-year span at M.D. Anderson. In short, the authors found that under the revised staging criteria, higher-risk patients are staged higher than previously. In fact, 44% of stage II patients in 1988 were classified as stage III in 2003. This translated into a 10-year survival improvement for patients with stage II disease in 2003.

This effect is termed “stage migration” (also called the Will Rogers phenomenon) and is not limited to breast cancer. Survival appears to improve for patients with earlier disease, when in fact the sickest patients have simply been “shifted” to more advanced stages. This also has been observed with the introduction of positron emission tomography in lung cancer and routine liver imaging in colorectal cancer. Technologic advances such as these, or in nodal sampling, allow us to now find disease at more distant sites, identifying patients with higher-risk disease.

This study can be faulted for its retrospective design and inclusion of highly selected patients. Still, it is an important analysis reminding us to be cautious in any stage comparisons with studies using the older staging system and informed in our conversations with patients.

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Applications for Clinical Practice

The 2003 revised AJCC breast cancer staging system reclassifies higher-risk patients from stage II disease according to the previous staging system to stage III. The resulting effect of improved survival for patients with stage II disease should be considered in future analyses.

–Review by David R. Spigel, MD

References