Effectiveness of Radiation for Prevention of Mastectomy in Older Breast Cancer Patients Treated with Breast Conserving Surgery

J. M. Albert, I. Pan, Y. Shih, T. A. Buchholz, S. H. Giordano, B. D. Smith

MD Anderson Cancer Center, Houston, TX

Purpose/Objective(s): For older women with invasive breast cancer undergoing breast conserving surgery (BCS), the primary purpose of radiation therapy (RT) is to increase the likelihood of breast preservation by preventing a local recurrence which would require mastectomy. However, recent clinical trials have suggested that the risk of local recurrence in highly selected older women is sufficiently low that RT does not yield a clinically meaningful reduction in the risk of mastectomy. Nevertheless, this finding has yet to be validated and nearly 90% of older women in the United States continue to receive RT following BCS. We used population-based data to determine whether receipt of RT is associated with a decreased risk of mastectomy in older women and to stratify patients into groups most and least likely to benefit from RT.

Materials/Methods: Using the SEER-Medicare data spanning 1992 – 2002, we identified women ages 66 to 79 treated with BCS for invasive breast cancer. Claims were used to determine treatment with RTand receipt of mastectomy after RT. Cumulative risk of mastectomy at 10 years was estimated using the Kaplan-Meier method and differences across strata were compared using the log-rank test. Cox multivariate analysis was used to determine the effect of radiation adjusted for demographic and treatment factors. Clinicopathologic factors derived from literature review and bivariate analysis were used to stratify patients into free groups based on their risk for mastectomy: low-risk (T1 N0, ER+, and age 70-79, excluding lobular histology), high-risk (node-positive or tumor size .2 cm), and intermediate-risk (all other patients).

Results: Of 19,907 patients, 88% received RT (median follow-up 7.1 years). The risk of mastectomy was 4.0% for patients who received RT vs. 9.5% for patients who did not ($p<0.001$). In adjusted analysis, RT was associated with a lower risk of mastectomy (HR = 0.34; 95% CI, 0.28 – 0.41; $p<0.001$). The absolute benefit of RT varied across risk strata, with an absolute risk reduction conferred by RT of 1.7% for low-risk, 5.5% for intermediate-risk, and 9.0% for high-risk patients.

Conclusions: Radiation therapy is of marginal benefit for women aged 70 – 79 with T1 N0 ER+ invasive ductal cancer, but remains of substantial benefit for other patients, particularly women aged 66 – 79 with node-positive or T2 N0 disease. RT should be used selectively for older women based on disease characteristics.