Potential Survival Benefit With Lumpectomy for Patients With Early-Stage Breast Cancer

A recent study found that in women with stage I or II breast cancer, breast-conserving therapy (BCT) was associated with improved disease-specific survival compared with mastectomy (Cancer. 2013;119:1402-1411). It has been believed for years that these 2 approaches to the locoregional treatment of early breast cancer are equivalent, and thus the percentage of women choosing BCT has increased.

However, for unclear reasons, mastectomy is being chosen more often among certain groups of patients such as younger women, those with in situ cancer, and those living in more affluent areas (J Clin Oncol. 2010;28:e155-e157). Researchers set out to investigate whether the similar survival rates of BCT and mastectomy noted in randomized trials hold true for the general population, and to determine whether there is a subgroup that benefits from one approach versus the other.

“In this observational study of over 112,000 women treated with early-stage breast cancer, women undergoing lumpectomy and radiation had equivalent, and in some subgroups superior, breast cancer-specific survival compared to women undergoing mastectomy,” says E. Shelley Hwang, MD, MPH, chief of breast surgery at Duke University Medical Center in Durham, North Carolina.

Study Details
Dr. Hwang and her colleagues identified cases of stage I or II breast cancer from the California Cancer Registry for patients diagnosed between 1990 and 2004. Women who were treated with either a lumpectomy followed by radiation therapy or mastectomy were eligible; women who had undergone a lumpectomy without radiation or a mastectomy with radiation were excluded. Overall, a total of 112,154 eligible women were found: 55% underwent BCT and 45% underwent mastectomy. The median follow-up was close to 10 years. BCT rates increased from 37% between 1990 and 1992 to 62% between 2002 and 2004.

The 5-year overall survival (OS) rate of the entire cohort was 89.3%, and the disease-specific survival (DSS) rate was 94.4%. Cox multivariate analysis was performed to compare survival between 4 groups: 1) those aged 50 years or older with hormone receptor (HR)-negative disease; 2) those aged 50 years or older with HR-positive disease; 3) those aged younger than 50 years with HR-negative disease; and 4) those aged younger than 50 years with HR-positive disease. Human epidermal growth factor receptor 2 (HER2) status was not considered, as it was not widely available during the study period. In all the groups, BCT was associated with improved OS compared with mastectomy. The largest benefit was observed in the group of women aged older than 50 years who had HR-positive disease (hazard ratio, 0.81). The DSS benefit was also
most prominent in this group, with a hazard ratio of 0.87. The smallest benefit for BCT was noted in the women aged younger than 50 years with HR-positive tumors (hazard ratio, 0.93).

After adjusting for tumor grade, percentage of positive lymph nodes, race, socioeconomic status, tumor size, age at diagnosis, and year of diagnosis, the women treated with BCT still had significantly higher OS and DSS rates.

Analysis was performed to examine whether comorbidities had an effect on surgical choice and outcomes. Heart disease, chronic respiratory disease, and cerebrovascular disease were considered. BCT was associated with significantly lower 3-year mortality rates from all causes, except for breast cancer.

Kaplan-Meier survival estimates demonstrated statistically significantly increased OS and DSS for BCT versus mastectomy. In this analysis, the increased survival advantage of BCT was again found to be greatest among women aged 50 years and older with HR-positive disease. When examining the tumor size and surgical approach used, the survival benefit was larger among patients with T1 tumors compared with those with T2 tumors in all groups, but OS was still better in the BCT group among women with T2 tumors.

Dr. Hwang and her colleagues state that the strengths of this study include a large, diverse population-based data set representing the state of California; a lengthy follow-up period; excellent reliability of data; and a more modern cohort than the randomized controlled trials comparing lumpectomy and mastectomy that were conducted over 30 years ago. However, the study was observational, and therefore the groups were not randomized. Researchers tried to control for all major factors known to impact breast cancer-specific survival, but there could be some unmeasured confounders associated with the choice of mastectomy that were not accounted for in the analysis and thus not controlled for in the study. In addition, the authors caution that as an observational study, causality could not be inferred.

“This study by Hwang and colleagues shows there is no benefit of mastectomy measured in risk of local recurrence or survival,” says Stephen Edge MD, chief of breast surgery at Roswell Park Cancer Institute in Buffalo, New York. “Their findings that survival is better with BCT must be interpreted with caution as this was not a randomized trial. My review suggests that decisions they made in defining the study population and other methodologic issues could have biased the results towards a benefit from BCT where that benefit may or may not exist, a significant problem using population data. However, they clearly showed no worse outcome with BCT, thereby reaffirming the unequivocal findings from randomized controlled clinical trials with mature follow-up.”

Implications for Practice

Since there are no data, including this study, that show mastectomy to be superior to BCT, it is interesting that there has been a recently reported trend showing an increased uptake of mastectomy over BCT by women with early-stage breast cancer.

“The reasons underlying this trend are doubtless multifactorial; these include better breast reconstruction techniques, increased use of MRI, and increased awareness of breast cancer and its consequences. However, the trend is particularly fascinating because the segment of the population opting for more surgery—not only mastectomy, but bilateral mastectomy—are generally younger, more educated women with better access to health care and smaller, earlier cancers. This indicates that greater overall health literacy is associated with more surgery, despite the lack of evidence that supports better outcome with more surgery,” says Dr. Hwang.

Dr. Edge agrees that for unknown reasons some women are asking for, and their surgeons are performing, more mastectomies. “Contributing factors include misinformation leading to fear. This is an area where thoughtful patient support is needed. Surgery is not a good treatment for unfounded fears,” he says.

Future research could include examining the relationship between HER2 status and surgery and outcomes. Because these data have been recorded in the California Cancer Registry since 2006, this analysis should be possible.

“This study points to the importance of large data sets and how they can be used to look at questions for which further randomized studies are not appropriate,” says Dr. Hwang. “Of course, there will always be cases in which a mastectomy is a better option, but for most women who have the choice, doing less may be more.”

doi: 10.1002/caac.21188