Radiation Boost Cuts Breast Cancer Recurrence

BY JANE SALODOF MacNEIL
Senior Editor

Los Angeles — A "boost" dose of radiation to the tumor bed after breast-conserving surgery and whole breast radiation cut the 10-year rate of local breast cancer recurrence by nearly half in a large European trial designed to test this common practice.

The boost so reduced the effect of close and positive margins after treatment that the only significant risk factors for local relapse were younger age and a high grade of invasive tumor or ductal carcinoma in situ (DCIS), researchers reported at the annual meeting of the American Society for Therapeutic Radiation and Oncology (ASTRO).

"You don't need the re-excision. You don't need the mastectomy," principal investigator Dr. Harry Bartelink of the Netherlands Cancer Institute in Amsterdam told reporters. If margins are found to be close or even positive after treatment, radiating the tumor bed should eliminate stray tumor cells without further surgery.

The European Organisation for Research and Treatment of Cancer sponsored the Boost–No Boost trial, which randomized 5,318 women with stage I or II breast cancer. All participants underwent lumpectomies and 50 Gy of whole breast radiation. Half received the additional 16 Gy boost to the tumor bed, while the remainder had no further radiation.

Trial investigators reported that the boost reduced cumulative local recurrence from 12% to 7% overall at a medium follow-up of 10.8 years, with the greatest reduction in absolute risk observed in women 40 years of age or less: 23.9% to 13.5%. Severe fibrosis did increase from 1.6% to 4.4% with the boost. Ten-year survival was the same, 82%, in both groups (J. Clin. Oncol. 2007;25:3259-65).

To assess the impact of margins and other risk factors, investigators conducted a subgroup analysis of 1,724 patients.

A central pathology review reported by Dr. Heather A. Jones at the ASTRO plenary session showed that 78% (1,345 women) had negative margins, 12% (207) had close margins, and 7% (120) had positive margins (remaining 3% were not classified).

The boost did not make a significant impact in patients without margin involvement, according to Dr. Jones, who did the analysis while a visiting clinician in the Netherlands and is now at the University of Pittsburgh. Radiating the tumor bed reduced the local recurrence rate from 6% to 5% if these patients had invasive disease and from 7% to 6% if they had DCIS.

Women with high-grade tumors that put them at higher risk than the other patients also derived substantial benefit from the radiation boost.

Recurrence rates were greatly reduced, however, for patients with margin involvement. They fell from 13% to 4% in women with invasive tumors, and from 15% to 6% in those with DCIS.

Women with high-grade tumors that continue to put them at higher risk than the other patients also derived substantial benefit from the boost. Dr. Jones reported local recurrence rates dropped from 19% to 7% in women with high-grade invasive disease and from 17% to 5% in women with high-grade DCIS.

Margin involvement did predict greater risk of recurrence in a univariate analysis of the data, but dropped out when the investigators did a multivariate Cox regression analysis. Dr. Jones identified two positive prognostic factors favoring freedom from recurrence: age greater than 50 years (hazard ratio 0.41) and receiving the boost (HR 0.56). Only two factors predicted increased risk of recurrence: high-grade DCIS (HR 1.51) and high-grade invasive tumor (HR 1.86).

"Age was the most striking risk factor for local recurrence," Dr. Jones said. "Having a high grade of invasive tumor seems to be a more important prognostic factor than margin involvement. The boost dose reduces the effects of margin involvement, and it substantially reduces the risk of local recurrence in our high-risk patients."

Dr. Bartelink said a new randomized trial will attempt to integrate the boost into standard treatment instead of making women come back for the additional radiation. ■