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Advantages and motivations uncertain behind use of brachytherapy for breast cancer radiotherapy

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Accelerated partial breast irradiation using brachytherapy (APBIb) for the treatment of breast cancer has been rapidly increasing over the last several years in the U.S. as an alternative to standard whole-breast irradiation (WBI), according to a study published December 16th in the *Journal of the National Cancer Institute*.

Various types of APBI recurrence (external beam radiation, intraoperative radiotherapy, brachytherapy using multiple interstitial catheters, or intracavitary brachytherapy using a balloon catheter) deliver radiation to breast tissue at the highest risk of recurrence. Advantages of these techniques include decreased treatment time and less radiation to uninvolved portions of the breast and normal tissues. Disadvantages of APBI include the possibility that tumor cells in a different part of the breast will remain untreated, which could lead to increased local recurrence. Because of the potential limitations of APBI, in 2009 the American Society for Radiation Oncology (ASTRO) convened a task force of breast cancer experts to develop criteria for use of APBI off-protocol. They proposed three groups of APBI appropriateness: suitable, cautionary and unsuitable, based on patient characteristics and clinical factors.

Because of the growing popularity of APBIb in particular, Jona Hattangadi, M.D., of the Department of Radiation Oncology at the Brigham and Women's Hospital and Harvard Medical School in Boston,

and colleagues performed a retrospective analysis of data from the Surveillance, Epidemiology, and End Results (SEER) database of women who had received either APBIb or WBI between 2000 and 2007. In line with ASTRO guidelines, the researchers classified the 138,815 women as "suitable", "cautionary", or "unsuitable" for APBIb.

The researchers found that 3,576 of the 138,815 patients had received APBIb: 32% of whom would have been considered suitable, 29.6% cautionary, and 36.2% unsuitable. The overall use of APBIb increased from 0.4% in 2000 to 6.6% in 2007. There was a wide range of utilization patterns across the United States with specific geographic regions having higher APBIb use despite other patient and clinical factors. There were also substantial racial and ethnic disparities with respect to APBIb use. White women were more likely to get this treatment than black women among "cautionary" or "unsuitable" patients; and or women living in cities were more likely to get it than those in rural areas even though it would potentially provide greater convenience for the rural women. The authors conclude "the wide disparity in use of APBIb suggests that unwarranted variation—practice variation not explained by illness, patient preference, or evidence-based medicine—may be present. Future studies of APBIb use will help elucidate whether patterns change as [the ASTRO guidelines] diffuse into practice and whether the regional and temporal changes in APBIb cost, reimbursement, and insurance coverage affect utilization."

In an accompanying editorial Simona F. Shaitelman, M.D., at the Department of Radiation Oncology at the University of Texas M.D. Anderson Cancer Center, notes that it is reassuring that the authors found the fastest increase in utilization among patients classified as "suitable," even if the majority of patients undergoing APBIb in their study were not classified as suitable. Shaitelman also comments on the authors' suggestion that financial interests that might be driving usage and notes that reimbursement was decreased for the procedure after the

end of the period of the study. She writes, "Moving forward, it will be useful to analyze more recent trends in the use of APBI and to document whether such changes in financial remuneration are indeed associated with the delivery of APBI." Shaitelman also concludes that more studies of the effectiveness of APBI are needed. "Although population based studies allow us to reflect on changes in patterns of practice, we are still left eagerly awaiting the results of large randomized trials that compare patients outcomes with WBI vs APBI."

Provided by Journal of the National Cancer Institute

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