ASTRO issues clinical guideline for whole breast radiation therapy

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The American Society for Radiation Oncology (ASTRO) today issued a new clinical guideline for the use of whole breast radiation therapy for breast cancer that expands the population of patients recommended to receive accelerated treatment known as hypofractionated therapy.

Breast cancer is the most common malignancy treated with radiation therapy in the United States, and whole breast irradiation (WBI) is the most frequently used type of radiation delivered for these tumors. With hypofractionated WBI, patients receive larger doses of radiation across fewer treatment sessions—typically completing treatment in three to four weeks, compared with five to seven weeks for conventional treatment.

Reflecting current evidence from clinical trials and large cohort studies, the new guideline recommends hypofractionated WBI for breast cancer patients regardless of age, tumor stage and whether they have received chemotherapy. It replaces the existing ASTRO WBI guideline published in 2011.

"Previously, accelerated treatment was recommended only for certain patients, including older patients and those with less advanced disease, but recent long-term results from several large trials strongly support the safety and efficacy of accelerated treatment for most breast cancer patients," said Benjamin Smith, MD, co-chair of the guideline task force and an associate professor of radiation oncology at the University of Texas MD Anderson Cancer Center in Houston. "Conventional therapy does not provide an incremental benefit in either tumor control or side effects compared to hypofractionated WBI."

Despite the data supporting accelerated treatment, large numbers of eligible breast cancer patients are not receiving shorter courses of radiation therapy. A 2013 *JAMA* study found an adoption rate of approximately 30 percent, and a 2017 analysis for Kaiser Health News indicated that fewer than half of patients over age 50 with early-stage disease receive the accelerated treatment.

"Hypofractionated radiation therapy offers patients a more convenient and lower cost option for their treatment without compromising the likelihood that their cancer will return or increasing their risk of side effects," said Reshma Jagsi, MD, DPhil, co-chair of the task force and a professor of radiation oncology at the University of Michigan in Ann Arbor. "A shorter course of radiation equates to more time with family, less time away from work and lower treatment costs. We hope that this guideline encourages providers to counsel their patients on options including hypofractionation."

The guideline provides clinical guidance for dosing, planning and delivering WBI with or without an additional "boost" of radiation therapy to the tumor bed. Full recommendations and supporting evidence are provided in the guideline; key recommendations are as follows:Delivery and Dosing of WBI (without irradiation of regional nodes)

- Treatment decisions, including decisions between hypofractionated and conventional approaches, should be individualized to each patient and shared between the patient and their physician(s).
- For women with invasive breast cancer receiving WBI with or without inclusion of the low axilla, the preferred dose-fractionation scheme is hypofractionated WBI to a dose of 4000 Centigray (cGy) in 15 fractions or 4250 cGy in 16 fractions.
- The decision to offer hypofractionated therapy should be independent of the following factors: tumor grade; whether the tumor is in the left or right breast; prior chemotherapy; prior or concurrent trastuzumab or endocrine therapy; and breast size, provided that homogenous

dosing can be achieved. It may be independent of the following factors: hormone receptor status; HER2 receptor status; margin status following surgical resection; and age.

For patients with DCIS, hypofractionated WBI may be used as an alternative to conventional fractionation.

Radiation Boost

- All decisions related to use and dosing of the boost should be discussed between the patient and provider(s) and consider individual patient, tumor, and treatment factors. These decisions also should be independent of whether the patient received conventional or hypofractionated WBI.
- For invasive cancer cases, a tumor bed boost is recommended for patients with a positive margin following surgical resection, patients age 50 and younger, and patients age 51 to 70 if they have a high-grade tumor. Omitting a tumor bed boost is suggested for patients with invasive cancer who are older than 70 and have low-to-intermediate-grade, hormone-positive tumors resected with widely negative margins.
- For DCIS, a boost is recommended for patients age 50 and younger, patients with high-grade tumors and/or those with positive or close margins following resection. A boost may be omitted for patients with DCIS who are older than 50; have been screen detected; have smaller, low-to-intermediate grade tumors; and have widely negative margins following surgery.
- Recommendations for boost dosing, sequencing and radiation delivery techniques are outlined in the guideline.Preferred Techniques for Treatment Planning
- Treatment plans should be individualized after consideration of many factors, including tumor characteristics, patient anatomy and comorbidities.
- Three-dimensional conformal (3-D CRT) treatment planning with a forward planned, field-in-field technique is recommended to achieve homogenous radiation dosing and full coverage of the tumor bed.
- Approaches that incorporate deep inspiration breath hold, target and organ-at-risk contouring and optimal patient positioning are recommended to minimize the radiation dose affecting nearby organs and normal tissue, including the heart, lungs and opposite breast.

The guideline was based on a systematic literature review of studies published from January 2009 through January 2016. A total of 528 abstracts were retrieved from PubMed, and the 100 articles that met inclusion criteria were evaluated by a 15-member task force of radiation oncologists who specialize in breast cancer, a medical physicist and a patient representative. The guideline was approved by ASTRO's Board of Directors following a period of public comment. The guideline has been endorsed by the Royal Australian and New Zealand College of Radiologists (RANZCR) and the Society of Surgical Oncology (SSO).

ASTRO's clinical guidelines are intended as a tool to promote appropriately individualized, shared decision-making between physicians and patients. None should be construed as strict or superseding the appropriately informed and considered judgments of individual physicians and patients.

More information: "Radiation Therapy for the Whole Breast: An American Society for Radiation Oncology (ASTRO) Evidence-Based Guideline" is available as a free access article in *Practical Radiation Oncology* , DOI: 10.1016/j.prro.2018.01.012

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