Medical Xpress

Clinical guideline on external beam radiation therapy for primary liver cancers released

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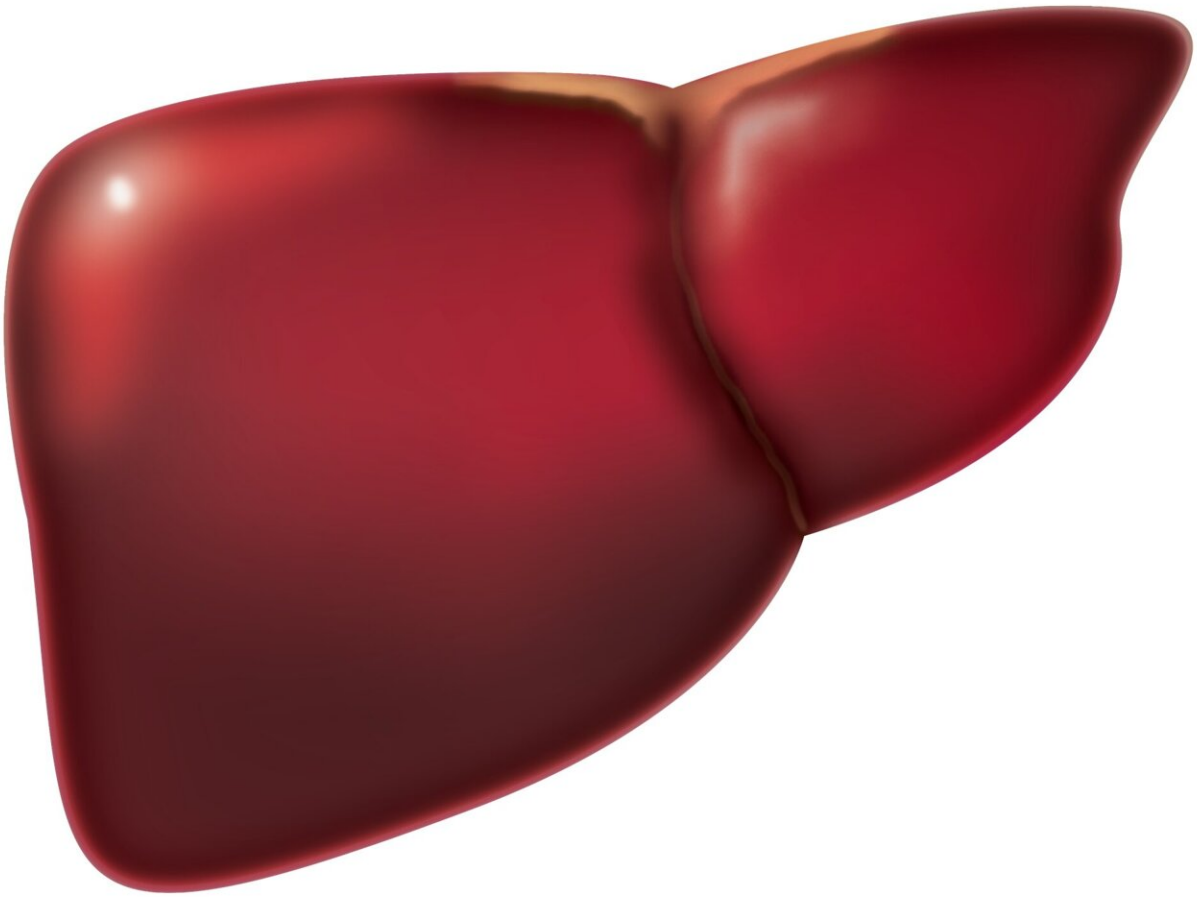

A new clinical guideline from the American Society for Radiation Oncology (ASTRO) provides guidance on the use of radiation therapy to treat adult patients with primary liver cancers using external beam radiation therapy (EBRT). Evidence-based recommendations outline indications and optimal EBRT dosing, techniques and treatment planning for patients with hepatocellular carcinoma (HCC) and intrahepatic cholangiocarcinoma (IHC), with a strong emphasis on multidisciplinary care. The guideline, ASTRO's first for primary liver cancers, is published in *Practical Radiation Oncology*.

Primary liver cancers are among the most commonly diagnosed types of cancer and the fourth leading cause of cancer death worldwide. Incidence rates in the United States have more than tripled since 1980, rising approximately 2% each year in the last two decades; an estimated 42,230 new cases were diagnosed last year. Mortality rates from HCC and IHC also continue to rise despite the growing availability of screening for HCC and improved prevention and treatment of diseases that lead to liver cancer (i.e., hepatitis B, hepatitis C, nonalcoholic fatty liver disease).

Multidisciplinary involvement is particularly important for primary liver cancer treatment, due to complexities in diagnosis and staging, the availability of a wide range of treatment options and a need to consider medical comorbidities such as underlying cirrhosis, which is present in roughly 90% of patients with HCC.

Common treatment options for primary HCC include liver transplantation, surgical removal of the tumor, thermal ablation and catheter-based therapies for patients whose disease is confined to the

liver, and systemic therapy (targeted therapy and/or immunotherapy) for those whose disease is more advanced. For IHC, standard treatment includes a combination of surgery and chemotherapy, with or without radiation. EBRT, which aims high doses of targeted radiation at tumor sites from outside the body with non-invasive techniques, has historically been used less frequently than other approaches; for example, a recent study found that just 4% of eligible patients received EBRT as a bridging therapy before liver transplant.

"Historically, low utilization rates for external beam radiation were due to technological limitations that made it challenging to avoid healthy liver tissue. However, with significant advances in imaging and radiation treatment delivery over the past 15 years and improved understanding of how the liver responds to radiation, we now have an increasing amount of clinical data on the role that EBRT can play for patients with these diseases," said Higinia Cardenes, MD, Ph.D., chair of the guideline task force and a professor of clinical radiation oncology at Weill Cornell Medicine in New York.

"Patients diagnosed with liver cancer often have a number of treatment options available to them, and they should be presented with each of them before a treatment course is decided. The different disciplines—hepatology, surgical oncology, interventional radiology and radiation oncology—should all be involved in multidisciplinary treatment discussions to determine what might be best for each patient," said Smith Apisarnthanarax, MD, vice chair of the guideline task force, medical director of the Seattle Cancer Care Alliance and professor of radiation oncology at the University of Washington in Seattle. "We feel that this guideline is an important milestone in the management of primary liver cancers, as we hope to provide practitioners and the public with a systematic and evidence-based foundation of where EBRT might fit into the overall complex picture of treating these challenging cases."

Recommendations in the guideline address patient selection, as well as planning and delivery techniques for EBRT in a range of clinical situations, including definitive/non-transplant, consolidative, salvage, pre-operative (including bridge-to-transplant), post-operative and palliative treatment settings. With an emphasis on multidisciplinary discussion and planning, key recommendations are as follows:

- EBRT is strongly recommended (a) as a potential first-line treatment for patients with HCC confined to the liver who are not candidates for curative therapy; (b) as a consolidative therapy for patients with incomplete responses to other liver-directed treatments; and (c) as a salvage therapy option for patients with local recurrences after other treatment.

- EBRT is conditionally recommended for (a) patients with multifocal or unresectable HCC confined to the liver, or (b) patients with macrovascular invasion, when sequenced with systemic or catheter-based therapies. The guideline includes treatment algorithms for the management of HCC that is confined to the liver and HCC with macrovascular invasion.

- EBRT is conditionally recommended in the palliative setting for symptomatic primary HCC and/or HCC that has invaded a blood vessel. It also is conditionally recommended as a bridging therapy prior to liver transplant or before surgery in carefully selected patients.

- For patients with unresectable IHC, EBRT with or without chemotherapy should be considered, typically after systemic therapy. For patients with resected IHC and high-risk features, adjuvant EBRT is conditionally recommended. The guideline includes treatment algorithms for unresectable and resectable IHC.

- The guideline also addresses optimal dosing, fractionation, treatment planning and delivery techniques for EBRT, emphasizing that therapy should be based on individual factors including the extent and location of the cancer, underlying liver function and available treatment technologies.

About the Guideline

The guideline was based on a systematic literature review of articles published from January 2000 through February 2020. The multidisciplinary task force included radiation, medical and surgical oncologists, medical physicists, a hepatologist, a transplant surgeon and a radiation oncology resident. The guideline was developed in collaboration with the American Society of Clinical Oncology, American Society of Transplant Surgeons and the Society of Surgical Oncology. Dr. Cardenes and Dr. Apisarnthanarax also recorded a podcast about the recommendations for *Practical Radiation Oncology*.

ASTRO's clinical guidelines are intended as tools 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: Smith Apisarnthanarax et al, External Beam Radiation Therapy for Primary Liver Cancers: An ASTRO Clinical Practice Guideline, *Practical Radiation Oncology* (2021). DOI: 10.1016/j.prro.2021.09.004

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