

Interventional Radiology Y-90 Liver Cancer-busting Treatment: Safe, Fast, Extends Life

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Interventional radiologists have been the leaders in the use of intra-arterial yttrium-90 radioembolization, since its introduction in 2000, to treat liver cancer. Now, new results from a large multi-institutional study show that treating liver tumors with higher doses of Y-90 than previously tried is safe, provides results when chemotherapies have failed, preserves the patient's quality of life—and can be done on an outpatient basis. This study, presented by researchers at the Society of Interventional Radiology's 36th Annual Scientific Meeting in Chicago, Ill., further validates previous findings on the safety and efficacy of liver cancer treatments using Y-90.

"We knew that this unique interventional radiology treatment, done on an outpatient basis, which combines the radioactive isotope Y-90 into microspheres (small beads about the width of five red blood cells) that deliver radiation directly to a tumor, was one of the best ways to give patients a treatment that doesn't harm healthy cells," explained Riad Salem, M.D., MBA, FSIR, professor of radiology, medicine and surgery, and director, interventional oncology, division of interventional radiology, department of radiology at Northwestern University in Chicago, Ill. "Now we know that patients can actually tolerate much higher doses of radiation than previously thought, which provides results in patients progressing on standard chemotherapy," noted Salem. "While patients aren't cured, their lives are being extended with less down time and their quality of life is improving," he emphasized.

The four-year prospective study looked at 151 patients (the group was 55

percent male, with an average age of 64 years) with liver metastases from colorectal, neuroendocrine and other cancers. In the United States, 20,000 cases of primary liver cancer are diagnosed each year. For metastatic colon cancer, that number is 150,000 per year. "The surgical removal of [liver tumors](#) offers the best chance for a cure," explained Salem. "For many reasons, a majority of patients are not candidates for surgical resection. Liver tumors are often inoperable because the tumors may be too large or numerous or have grown into major blood vessels or other vital structures. Historically, chemotherapy drugs become less effective as the disease progresses," he added.

Radioembolization is a palliative, not a curative, treatment—but patients benefit by having their lives extended and experiencing fewer side effects (such as the fatigue that can last for seven to 10 days after standard cancer therapy). In this study, several subgroups showed high rates of progression-free survival, such as 186 days for neuroendocrine patients compared to 95 days for colorectal cancer patients. "These rates are an excellent indicator of the treatment's effectiveness," said Salem.

For example, a 60-year-old woman with advanced liver cancer that had metasized from neuroendocrine tumors had lesions that were progressing as she continued standard chemotherapy treatments. Salem noted, "At the study's higher dose, we were able to reverse the progression and achieve shrinkage of the tumors without any adverse events." He said that more research is planned, including combining Y-90 treatments with chemotherapy, increasing and fractioning the dose.

With the Y-90 radioembolization treatment, the microspheres are injected through a catheter from the groin into the liver artery supplying the tumor. The beads become lodged within the tumor vessels where they exert their local radiation that causes cell death. This technique allows for a higher, local dose of radiation to be used, with no danger from radiation to the healthy tissue in the body, said Salem. And, he

says, since Y-90 radiates from within and, since it is administered in the hepatic artery, it can be viewed as "internal" radiation.

In treating cancer patients, interventional radiologists can attack the cancer tumor from inside the body without medicating or affecting other parts of the body. Y-90 treatment adds to interventional radiology's nonsurgical advances for [liver cancer](#), such as delivering chemotherapy directly to the affected organ (chemoembolization), killing the tumor with heat (radiofrequency ablation) or freezing the tumor (cryoablation) to treat cancer locally. Interventional radiologists are at the forefront of patient need as they discover more ways to alleviate patient fears and provide reassurance on the safety and efficacy of these kinds of targeted, minimally invasive treatments.

"This study, at several very skilled and high profile centers, including Northwestern University, the Mayo Clinic, Johns Hopkins, Albany Medical Center and the Medical College of Wisconsin in Milwaukee, is one of the initial steps prior to other international multicenter studies," said Salem.

Provided by Society of Interventional Radiology

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