

Y-90 radioembolization offers promise for late-stage liver cancer

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The latest weapon against inoperable liver cancer is so tiny that it takes millions of them per treatment, but according to interventional radiologists at the Indiana University School of Medicine, those microscopic spheres really pack a therapeutic punch.

The glass spheres contain a radioactive element, yttrium-90, more commonly known as Y-90, which emits radiation for a very limited distance so that healthy tissue around the tumor remains unaffected. (2.5mm or less than 1/16th inch in soft tissue).

Y-90 microsphere radioembolization is an FDA-approved procedure first used in the United States in 2002. The outpatient procedure has gained favor with interventional radiologists for treating a type of cancer that is becoming more prevalent due to an increase in the cases of hepatitis and obesity, which along with alcoholism are the three primary causes of [liver cancer](#).

Daniel E. Wertman Jr., M.D., co-director of vascular and interventional radiology and assistant professor of clinical radiology at the Indiana University School of Medicine, said more than 300 patients have been treated with Y-90 radioembolization since the program was initiated at Indiana University Hospital and the Indiana University Melvin and Bren Simon Cancer Center more than 3 years ago.

"I'm really excited about the treatment," said Dr. Wertman. "I think it's probably the best thing that has happened in our specialty."

His colleague, Matthew S. Johnson, M.D., professor of radiology and surgery at IU, reports very positive results with critically ill patients undergoing the treatment. Forty percent of his patients treated with radioembolization had tumors shrink or remain stable at three months. This is exceptional news since patients with advanced liver cancer have few options, he explained.

"I am not aiming for a cure, I'm aiming to extend their lives and make them feel better," said Dr. Johnson.

Physicians agree that liver cancer is a very complex disease. "With the Y-90 radioembolization, the disease can be address with a minimally invasive treatment and through a little band-aid sized incision we can solve very complicated problems," said Dr. Wertman.

A catheter is inserted through a tiny incision in the groin and threaded through the arteries until it reaches the hepatic artery, one of two blood vessels feeding the liver.

The physiology of the liver makes it an ideal organ for this type of treatment. The hepatic artery is the one that most commonly supplies blood to the cancerous tumors.

When the catheter is in the proper place, millions of the microscopic beads containing Y-90 are released. The microspheres lodge in the smaller vessels that directly feed the tumor, stopping blood flow and emitting radiation to kill the tumor cells.

Patients need not be isolated after treatment with Y-90 and usually are released about three hours after the treatment.

What Y-90 offers, Dr. Johnson said, is optimism. "Hope is a magical thing."

Provided by Indiana University School of Medicine

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