

Magnets Draw Chemotherapy Drugs To Cancer

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In a preliminary trial, doctors reported they can use magnets to draw cancer-fighting drugs out of the bloodstream and into tumors, increasing the chance of killing the malignancy.

Researchers said the chemotherapy agent doxorubicin is mixed with microscopic particles of iron and carbon and then are infused into the blood supply of the cancer. Powerful magnets, the size of a soup can, are placed over the body to hold the drugs in place until the agent can migrate through the walls of the blood vessel into the tumor.

"It's very preliminary, but our early results make us hopeful that this will improve response rates, while at the same time reducing complications," said Dr. Scott Goodwin, chief of vascular and interventional radiology at the University of California, Los Angeles, Medical Center.

"We can get a significant amount of toxic cancer-killing drugs to remain in the tumor, rather than spreading throughout the body, thereby significantly reducing side effects such as nausea and hair loss," Goodwin said.

In the procedure, doctors make an incision in the femoral artery in the groin and insert a catheter. The catheter is advanced under guidance of X-rays to the hepatic artery -- the blood vessel that sends blood to the liver, and also the artery that most frequently nourishes tumors, Goodwin said. Then the iron-laced doxorubicin is infused into the artery while the magnet is poised above the tumor. It takes about 15 minutes for the particles to leave the bloodstream and enter tumor tissues.

"This is the first time doctors have shown they can use magnets to draw drugs to specific sites in fighting cancer," said Dr. Robert Vogelzang, professor of radiology at Northwestern University School of Medicine. "In this first application the researchers have shown some definite results."

In a presentation at the annual meeting of the Society of Cardiovascular and Interventional Radiology in San Diego, Goodwin reported on his first 14 patients, all of whom were suffering from primary liver cancer, a result of chronic infections caused mainly by Hepatitis B and Hepatitis C. He said, "We saw one partial reduction in size in one patient -- a decrease of more than 50 percent of the size of the cancer. Two other patients had minor responses -- the tumors shrank 25 to 50 percent; 5 patients had stable disease; in six patients the disease continued to progress." Goodwin said that the initial results lead him to believe that further studies are warranted. He said two patients suffered side effects -- some pain and a fever.

The compound is being developed by a biotechnology company FerX, based in San Diego. Vogelzang said the use of the iron-carbon particles could have far-reaching possibilities. He said the same technology might be able to attach the iron particles to monoclonal antibodies that would also seek malignancies.

"That would potentially be an application," Vogelzang said. "The sky is the limit. It has a lot of intriguing potential applications." Goodwin said further studies would try to see if the drugs were useful against metastases to the liver and possibly in lung cancer as well.

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