

World's first delivery of intra-arterial Avastin directly into brain tumor

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Neurosurgeons from NewYork-Presbyterian Hospital/Weill Cornell Medical Center performed the world's first intra-arterial cerebral infusion of Avastin (bevacizumab) directly into a patient's malignant brain tumor. This novel intra-arterial (IA) technique may expose the cancer to higher doses of the drug therapy, while possibly sparing the patient common side effects of receiving the drug intravenously (IV) or throughout their body.

The investigative procedure -- called super selective intra-arterial cerebral infusion of [Avastin](#) -- has been successfully performed on five patients with promising results. Details of the first case are scheduled for publication in the next issue of *Journal of [Experimental Therapeutics and Oncology](#)*.

The researchers are currently enrolling patients for the Phase I study, which will test the safety and tolerability of this new method of drug delivery. If proven successful, NewYork-Presbyterian/Weill Cornell physician-scientists believe that this promising method may one day offer patients a new and better therapy for glioblastoma multiforme (GBM), a common type of brain cancer that has not responded well to currently available therapies. In addition, the authors believe that this technique may herald the birth of a new field of "interventional neuro-oncology."

"We believe that infusing Avastin directly via the cerebral arteries deep into the site of the brain tumor may help to kill off the cancer cells

hiding within the tumor and adjacent brain tissue," explains co-author and study co-principal investigator (PI) Dr. John A. Boockvar, associate professor of neurological surgery at Weill Cornell Medical College and director of the brain tumor research laboratory at NewYork-Presbyterian Hospital/Weill Cornell Medical Center.

"We are combining the latest in drug treatment with a revolutionary delivery technique, which could potentially be more effective than currently available treatments," says co-author and co-PI, Dr. Howard Riina, co-director of interventional neuroradiology at NewYork-Presbyterian Hospital/Weill Cornell Medical Center and associate professor of neurological surgery, neurology and radiology at Weill Cornell Medical College.

Because of the blood-brain barrier (BBB), which prevents many IV-administered drugs from penetrating the blood vessel walls sufficiently in order to get into the brain, no one knows for sure if current drugs actually get into the brain after IV infusion.

"This new technique may be a way to get through that barrier and deliver higher doses of drug to the tumor with less toxicity to the patient," says Dr. Boockvar.

To deliver the drug, neurosurgeons direct a hair-thin microcatheter through blood vessels in the body, via the carotid artery running up the neck, and then into the smaller arteries deep in the brain. Upon arriving at the tumor site, a drug to open the blood-brain barrier is injected. After the BBB is temporarily opened -- a window of time lasting approximately five minutes -- the chemotherapeutic agent Avastin is injected directly into the malignant tumor.

Participants in the trial will be given varying doses of the drug in order to test which dose is best tolerated. Following this Phase I trial, the

researchers plan to immediately begin a Phase II trial to test the technique's efficacy.

"This potential new drug delivery system demonstrates translational research from the Brain and Spine Center of NewYork-Presbyterian Hospital/Weill Cornell Medical Center at its best," says Dr. Philip E. Stieg, chairman of neurological surgery at Weill Cornell Medical College and neurosurgeon-in-chief at NewYork-Presbyterian/Weill Cornell. "If proven successful, it is a promising move forward for patients dealing with resistant brain tumors."

The current standard of care is to give patients with GBM the drug bevacizumab (Avastin) intravenously (IV) -- delivering the drug directly into a vein. The drug works by slowing the growth of new blood vessels within tumors, cutting off the life-giving blood and then causing the cancer cells to die. In May 2009, the FDA approved Avastin for the treatment of GBM.

Source: New York- Presbyterian Hospital ([news](#) : [web](#))

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