New brain vaccine aims to turn fatal disease into chronic illness

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When U.S. Sen. Edward Kennedy was diagnosed with a glioblastoma of the brain in May 2009, doctors understood there was little chance he could survive it. He died that August.

"That's a malignant tumor. The current five-year survival rate is 1 percent," says Ricardo Komotar, a neurooncologist at Sylvester Comprehensive Cancer Center.

But cancer specialists from the University of Miami Medical School and nine other U.S. institutions are well into clinical experiments aimed at ending the tumor's fatal reputation.

"We're not going to cure it," says Komotar, who is also director of surgical neurooncology at University of Miami Hospital. "Our goal is to convert it into a chronic condition like high blood pressure or diabetes that you can live the rest of your life with and live a very normal life."

Their weapon: a brain cancer vaccine. It's not a preventive vaccine like a flu or polio shot, given to ward off disease. Instead, it's a "therapeutic" vaccine given after the patient already has the tumor. It's still called a vaccine because, unlike most cancer medicines, it doesn't attack the disease directly. Instead, it marshals the body's own immune system to attack it.

"This is the future of cancer therapy," Komotar says. "Radiation and chemotherapy fight the cancer but they also kill normal cells, and they're

toxic. This kills the cancer without harming normal tissue."

Sheryl Shetsky, president of the Florida Brain Tumor Association, said the research is important because "glioblastomas are 30 percent of all brain tumors, and they're the most devastating tumor. You're still going to want radiation and chemo for other cells you can't see. But this can buy the patient a lot more time."

The new vaccine is given quickly after a patient's glioblastoma is diagnosed, Komotar says,Â because doctors need to use the excised tumor to make the vaccine.

In the treatment, surgeons remove the malignant tumor, then isolate and concentrate essential proteins from it and inject them back into the patient's arm six to eight weeks later. The patient's immune system recognizes the proteins as invaders, and produces billions of T-cells, its natural attack system, to fight it.Â

"It really sparks the immune system; it gives it a target," Komotar says. "Lots of work remains to be done, but it is a step in the right direction."

Developed about five years ago at the University of California at San Francisco, the vaccine did so well in Phase I clinical trials for safety that it now has U.S Food and Drug Administration approval to begin Phase II trials for efficacy.

Even in the Phase I trials, it greatly extended the life expectancy of volunteers, Komotar says.

Phase II is a multicenter trial with hundreds of patients at 10 institutions including the University of Miami, University of California at San Francisco, Mayo Clinic, Columbia University, University of Pennsylvania, Northwestern, Yale and Case Western.

If this phase is successful, Phase III would involve many more patients and could result in final FDA approval in three or four years, Komotar says.

More information: The University of Miami has begun recruiting volunteers for the study. A patient must have been diagnosed by MRI with a glioblastoma, but must not have started surgery, chemotherapy or radiation. That's because study surgeons must remove an intact tumor to use in creating the vaccine. To volunteer, call Komotar at 305-689-2427 or 917-617-2140 or at rkomotar med.miami.edu.