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Vaccine may double survival in patients with deadly brain tumors

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A vaccine aimed at inducing immunity to the most common and deadly type of brain tumor may stave off recurrence and more than double survival in patients, according to a new study led by researchers in Duke's Preston Robert Tisch Brain Tumor Center.

"This vaccine represents a very promising therapy for a cancer that comes out of the blue and robs people of something most of us take for granted -- time," said John Sampson, M.D., Ph.D., a neurosurgeon at Duke and lead investigator on this study. "The possibility of doubling expected survival -- with few if any side effects -- would represent a big step and a lot of hope for this group of patients."

Sampson presented the results of this Phase II study during an oral presentation at the annual American Society of Clinical Oncology meeting in Chicago on June 2, 2008. The study was funded by the National Institutes of Health and Celldex Therapeutics, a subsidiary of Avant Immunotherapeutics, which has licensed the rights to the vaccine and provided vaccine for use in the study.

The vaccine targets a protein expressed on about half of all glioblastoma multiforme (GBM) tumors. The protein, known as epithelial growth factor receptor variant III (EGFRvIII), is not expressed in normal tissues but is prevalent in GBMs, which makes it an attractive target for a vaccine, Sampson said.

The vaccine targets the protein and enhances immune response to it,

killing tumor cells that express the protein and preventing the re-growth of brain tumors in patients who have already been diagnosed and treated with standard regimens including surgery, chemotherapy and radiation.

This study included 23 patients, treated at Duke and at M.D. Anderson Cancer Center. Patients had all been diagnosed with GBMs, and had been treated with standard therapy. Patients in the trial received vaccine injections monthly and were given a chemotherapeutic agent called temozolomide in conjunction with the vaccine treatments. The temozolomide is thought to enhance the immune response to the EGFRvIII, Sampson said.

“This reflected something of a surprising conclusion, because it stands to reason that chemotherapy, which suppresses the body’s immune system, would make the vaccine less effective,” Sampson said. “What we found was that the opposite is true. While the body is recovering from chemotherapy, immune response is actually stronger as the immune system overcompensates in order to right itself. It’s the perfect time to introduce a vaccine.”

Patients in the study survived without re-growth of their tumors for a median of 16.6 months, which more than doubles the usual 6.4-month expected progression-free survival in these patients.

Study patients lived for an average of 33.1 months; patients who are diagnosed with GBMs and treated with standard therapy typically live an average of 14.3 months.

“We’re more than doubling survival time in this group, and we have some patients who are four, five or six years out from diagnosis, which is virtually unheard of in these people,” Sampson said.

The vaccine has caused virtually no side effects; swelling at the injection

site is often a patient's only complaint. A Phase III trial is now open at more than 20 sites nationwide.

Source: Duke University