MedicalXpress

Common virus may serve as target for vaccine in fight against deadly brain tumors

May 16 2008

By targeting a common virus, doctors may be able to extend the lives of patients diagnosed with the most prevalent and deadly type of brain tumor, according to a study led by researchers in Duke's Preston Robert Tisch Brain Tumor Center.

A type of herpes virus called human cytomegalovirus (CMV) is found in up to 80 percent of Americans, though the virus normally produces very few clinical symptoms, is dormant, and usually undetectable in most people. However, more than 80 percent of patients newly diagnosed with the brain cancer glioblastoma multiforme (GBM) exhibit detectable CMV in their blood as well as in their tumors. The Duke team thought this might provide an opportunity to target brain tumors by going after the virus.

"Previous work has demonstrated the activation of this virus in patients with GBMs, so we took it one step further and tested a vaccine, in a small group of patients, that seems to show some efficacy in stalling the recurrence of these deadly tumors," said Duane Mitchell, M.D., Ph.D., a Duke researcher and lead investigator on the study. "We knew there was a connection between this virus and the brain cancer, and we were hoping to take advantage of that connection to treat one by treating the other."

The researchers presented their findings in a poster session at the annual American Society of Clinical Oncology meeting in Chicago, on Sunday, June 1. The study was funded by the National Institutes of Health, The

Brain Tumor Society and Accelerate Brain Cancer Cure Foundation.

There were 21 patients enrolled in the trial, and the vaccine appears to have delayed the re-growth of tumors from a typical six to seven months after surgery to more than 12 months. Early results also show a lengthened overall survival among GBM patients, from about 14 months with standard treatment to greater than 20 months.

“These results are preliminary and we’re comparing survival data to what we know about average survival with standard treatment for this patient population," Mitchell said. "But we are encouraged that we may have found a very plausible target for a new and complementary treatment for this deadly disease.”

Patients on the study received the vaccine in conjunction with the chemotherapy drug temozolomide.

“We believe that use of temozolomide can further stimulate immune response to the vaccine because it initially depletes the infection-fighting immune cells," Mitchell said. "We find that their function is re-invigorated as they build back up during recovery. It’s the perfect time to introduce a vaccine, which works by stimulating an immune response.”

Sandra Hillburn, a GBM patient, has been receiving monthly doses of this vaccine for almost two years, after being diagnosed in April 2006.

“It’s a pleasure to be able to worry about the little things in life again, like the weather,” Hillburn said. She travels to Duke each month from her home in New Jersey to get her injections.

Researchers are encouraged by these results and larger-scale clinical trials are expected to ensue, Mitchell said.

Source: Duke University

Citation: Common virus may serve as target for vaccine in fight against deadly brain tumors (2008, May 16) retrieved 5 May 2024 from https://medicalxpress.com/news/2008-05-common-virus-vaccine-deadly-brain.html

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