

Cedars-Sinai Medical Center opens patient trial of virus that attacks brain cancer cells

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A common, naturally occurring virus that attacks cancer cells but appears to be harmless to normal cells is being studied as a possible treatment for malignant, highly aggressive and deadly brain tumors called gliomas. Researchers at Cedars-Sinai Medical Center are among a few in the United States evaluating this experimental therapy.

Over the course of a lifetime, most adults will be exposed to the virus in its natural state. It commonly infects the lungs and intestines but – unlike most viruses – causes few if any symptoms and is usually eliminated by the body within two weeks. But while the reovirus (respiratory enteric orphan virus) may be harmless to normal cells, it can specifically kill certain cancer cells.

Vulnerable cancer cells have a defect in a signaling pathway (the Ras pathway) that controls key cell functions. The reovirus is able to infect and kill cancer cells that have an “activated” Ras pathway, but the virus does not normally come into contact with cancer cells. Researchers at Oncolytics Biotech Inc., of Calgary, Canada, developed a therapeutic drug, REOLYSIN®, from the reovirus and are conducting multicenter clinical trials for a variety of cancers. Cedars-Sinai is participating only in the study on recurrent gliomas, the most common and deadly brain cancers.

Based on the fact that many types of cancer cells have an activated Ras pathway, the company estimates that up to two thirds of all human cancers are susceptible to reovirus induced cell death .

“Although not every glioma cell line has an activated Ras pathway, Ras activation is very common in these malignant brain cancers. In lab tests and animal studies, the reovirus appears to target Ras-activated tumor cells and leave normal cells alone,” said neurosurgeon John S. Yu, M.D., director of Surgical Neuro-oncology at Cedars-Sinai’s Department of Neurosurgery. Yu is principal investigator of the REOLYSIN® clinical trial at Cedars-Sinai.

According to the protocol of this open-label Phase I and II trial, patients will receive a single treatment of REOLYSIN®, infused over 72 hours and directed into the tumor under sophisticated guidance. Expected length of hospital stay is about five days, and patients’ progress will be followed for at least 12 weeks.

Oncolytics published results of preclinical studies in the June 20, 2001 issue of the Journal of the National Cancer Institute. In an animal study, mice with gliomas that were treated with a single injection of reovirus survived significantly longer than untreated mice. Complete tumor regression was found in 20 of 23 mice treated with the virus.

In laboratory studies, widespread cell killing was seen in 19 of 24 established human glioma cell lines tested. Reovirus also infected and killed all nine of nine primary glioma cultures taken from brain tumor surgical specimens. “Primary” refers to gliomas originating in the brain, not metastasizing from other locations.

Source: Cedars-Sinai Medical Center

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