Gamma knife treatment for glioblastomas shows promising results

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Researchers from University Hospitals Case Medical Center report promising results from a cutting-edge research study that treated the aggressive brain tumors glioblastoma multiforme (GBM) using a novel type of imaging called MR spectroscopy coupled with high dose radiation in the form of Gamma Knife radiosurgery.

Patients' survival rates increased by almost four months (3.7 months) compared with patients who were treated with traditional conventional radiotherapy alone.

"The four month increase is quite significant as the median survival of patients treated with conventional radiotherapy alone is only one year," said Douglas B. Einstein, M.D., Ph.D., lead author of the study and Vice Chairman and Clinical Director of the Department of Radiation Oncology at University Hospitals Case Medical Center and Assistant Professor at Case Western Reserve University School of Medicine.

The results of this study were presented at the American Society for Radiation Oncology (ASTRO) meeting in Chicago on Nov. 2, 2009.

GBM is the most common and aggressive type of brain cancer, and is notorious for growing back within months of surgery. It is the type of cancer that the late Sen. Edward Kennedy battled.

Thirty-five patients were enrolled in this Phase II, five-year study. Patients underwent MR spectroscopy imaging to non-invasively identify

regions of the GBM tumor that were more aggressive than other areas. These regions were then targeted with high-dose radiation from a Gamma Knife. Treatment was then followed by standard conventional radiotherapy.

The Gamma Knife is an instrument that allows physicians to perform radiosurgery, a non-invasive neurosurgical procedure that uses powerful doses of radiation to target and treat diseased brain tissue while leaving surrounding tissue intact. The state-of-the art technology allows physicians to operate on brain lesions often considered inoperable.

MR spectroscopy involves a specialized MR scan where peaks of metabolic compounds can be identified and quantitated within the MR image. These peaks include choline which is elevated in areas of the MR image that have a high cell turnover such as an active brain tumor and NAA found in neuronal tissue and used to separate normal neuronal cells from the glioma brain tumor cells.

Given the positive finding from this study, a multi-center Phase III randomized trial is being designed, said Dr. Einstein.

Source: University Hospitals Case Medical Center