

## Well-tolerated radiotherapy provides longer life to patients with recurrent brain cancer

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Patients who received hypofractionated stereotactic radiotherapy for their recurrent brain cancers lived longer lives, according to researchers at Thomas Jefferson University.

Not only does hypofractionated stereotactic radiotherapy (H-SRT) provide longer survival, patients do not experience side effects commonly seen with use of chemotherapies and targeted therapies, the researchers found. They believe these findings, reported online in the Journal of Clinical Oncology, set a new bar for the treatment of recurrent gliomas.

"In many centers, patients with tumor progression within six months after the initial conformal radiotherapy are denied a second radiotherapy course (such as H-SRT), based on the assumption that their prognosis is poor." said senior author Maria Werner-Wasik, M.D., professor of <u>Radiation Oncology</u> at Jefferson Medical College of Thomas Jefferson University and Co-Director of the Stereotactic Radiosurgery Program at Jefferson Hospital for Neuroscience. "Our findings support the recommendation that essentially all patients with progressive high-grade gliomas, who are in good shape and have tumors amenable to local radiotherapy, should be considered for H-SRT."

In this study of 147 patients - currently the largest published series examining re-irradiation of recurrent high grade gliomas using H-SRT the median survival was about 11 months when H-SRT was used after cancer progressed. In comparison, the newest targeted therapy provides



survival of about six months after <u>cancer recurrence</u>, the researchers said.

"These results are dramatic and we hope our experience influences how physicians treat patients with recurrent <u>brain cancer</u>," said study coauthor David Andrews, M.D., professor of Neurological Surgery and Co-Director of the Stereotactic Radiosurgery Program. "We will need to design a randomized clinical trial to compare this method of treatment with current standard of care, and these data provide a compelling foundation for the design of such a trial."

The role of chemotherapy with radiation therapy has not been defined for recurrent gliomas and few studies have reported on this.

"While not a randomized trial, our study did not demonstrate a survival advantage in combining chemotherapy with H-SRT at recurrence compared to patients who received H-SRT alone," said the study's first author, Shannon Fogh, M.D., chief resident, Radiation Oncology at Thomas Jefferson University Hospital. "We feel it is important for clinicians to consider this before adding other therapy with associated toxicity and cost."

Thomas Jefferson University Hospital pioneered the use of this particular technology, which uses a stereotactic linear-accelerator-based radiosurgery unit that delivers tightly focused beams of radiation to tumor while sparing the surrounding normal tissue. It does this by using both magnetic resonance imaging (MRI) and computerized tomography (CT) images to create a three-dimensional representation of a tumor that is both anatomically and spatially exact. The radiation is then delivered in doses that conform precisely to the tumor. By irradiating just the tumor, and sparing normal tissue in the brain, physicians can use much higher doses over shorter periods of time.



"We can give a dose that is 50 percent beyond what has been considered the maximum dose of radiation the brain can tolerate," said Dr. Andrews. "We have learned over a 15 year experience that this dose is not only safe, but has almost doubled survival for these patients."

H-SRT can be delivered over two weeks, compared to five or six weeks for standard fractionation, researchers said.

"A shortened treatment course is not only more beneficial to patients with respect to quality of life and convenience but also may represent a significant decrease in cost associated with re-treatment," Dr. Fogh said.

In this study, the researchers determined that the patients who have the longest survival when treated with SRT after recurrence are those who are younger, have smaller tumors, and a shorter time between diagnosis and recurrence.

"Perhaps the most surprising and relevant finding from our review is a good prognosis in patients who recurred shortly after initial treatment," Dr. Fogh said. "Only two prior studies have examined prognosis in patients who recur shortly after treatment, and they showed conflicting results. It may be that the larger number of patients examined in our study, compared to the others, allowed us to more accurately assess this phenomenon."

## Provided by Thomas Jefferson University

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