Efficacy and limitations of stereotactic radiosurgery in the treatment of glioblastoma.

Koga T, Saito N.
Department of Neurosurgery, The University of Tokyo Hospital.

Abstract
Treatment of recurrent glioblastoma is still challenging. Stereotactic radiosurgery has been accepted as a treatment option for recurrent glioblastoma after standard chemotherapy and irradiation. However, the efficacy of stereotactic radiosurgery at recurrence has been limited, mainly due to the highly infiltrative nature of the tumor which makes the lesion difficult to define as the target. To enhance the efficacy of stereotactic radiosurgery, several methods of targeting based on neuroimaging technology such as positron emission tomography and magnetic resonance imaging have been adopted to irradiate as many of the viable tumor cells as possible and showed some enhanced efficacy. In a trial of intensified treatment by extending the irradiation field, improvement of local control did not result in longer survival. Radiation-induced adverse event is another problem after stereotactic radiosurgery for recurrent glioblastoma because almost all patients underwent irradiation as a part of the initial treatment. To overcome the side effects associated with re-irradiation, use of bevacizumab, a humanized monoclonal antibody to vascular endothelial growth factor, has shown some efficacy. Advances in irradiation technology, neuroimaging, and adjuvant treatment are needed to enhance the efficacy of stereotactic radiosurgery for recurrent glioblastoma and reduce the morbidity associated with irradiation.


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