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Role of stereotactic radiosurgery and fractionated stereotactic radiotherapy for the treatment of recurrent glioblastoma multiforme.

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Abstract

Glioblastoma multiforme (GBM) is a devastating malignant brain tumor characterized by resistance to available therapeutic approaches and relentless malignant progression that includes widespread intracranial invasion, destruction of normal brain tissue, progressive disability, and death. Stereotactic radiosurgery (SRS) and fractionated stereotactic radiotherapy (fSRT) are increasingly used in patients with recurrent GBM to complement traditional treatments such as resection, conventional external beam radiotherapy, and chemotherapy. Both SRS and fSRT are powerful noninvasive therapeutic modalities well suited to treat focal neoplastic lesions through the delivery of precise, highdose radiation. Although no randomized clinical trials have been performed, a variety of retrospective studies have been focused on the use of SRS and fSRT for recurrent GBMs. In addition, state-of-the-art neuroimaging techniques, such as MR spectroscopic imaging, diffusion tensor tractography, and nuclear medicine imaging, have enhanced treatment planning methods leading to potentially improved clinical outcomes. In this paper the authors reviewed the current applications and efficacy of SRS and fSRT in the treatment of GBM, highlighting the value of these therapies for recurrent focal disease.

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