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Hypofractionated Stereotactic Radiation Therapy: An Effective Therapy for Recurrent High-Grade Gliomas.

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Abstract

PURPOSE Salvage options for recurrent high-grade gliomas (HGGs) are limited by cumulative toxicity and limited efficacy despite advances in chemotherapeutic and radiotherapeutic techniques. Previous studies have reported encouraging survival results and favorable toxicity with fractionated stereotactic radiotherapy, and small studies have shown similar benefit using a shortened course of hypofractionated stereotactic radiation therapy (H-SRT). We sought to determine the efficacy and toxicity profile of H-SRT alone or in addition to repeat craniotomy or concomitant chemotherapy. **PATIENTS AND METHODS** Between 1994 and 2008, 147 patients with recurrent HGG were treated with H-SRT (median dose, 35 Gy in 3.5-Gy fractions). Cox regression models were used to analyze survival outcomes. Variables included age, surgery before H-SRT, time to first recurrence, reirradiation dose, inclusion of chemotherapy with H-SRT, and gross tumor volume (GTV). Results: Younger age ($P = .001$), smaller GTV ($P = .025$), and shorter time between diagnosis and recurrence ($P = .034$) were associated with improvement in survival from H-SRT. Doses of radiation ≥ 35 Gy approached significance ($P = .07$). There was no significant benefit of surgical resection or chemotherapy in this population when analysis was controlled for other prognostic factors. **CONCLUSION** H-SRT was well tolerated and resulted in a median survival time of 11 months after H-SRT, independent of re-operation or concomitant chemotherapy. Patients who experienced recurrence within 6 months after initial treatment had an excellent response and should not be disqualified from H-SRT. This is the largest series to examine the efficacy and tolerability of H-SRT in recurrent HGG.

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