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Salvage reirradiation for recurrent glioblastoma with radiosurgery: radiographic response and improved survival.

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Abstract

PURPOSE: To determine the radiographic and clinical efficacy of stereotactic single dose radiosurgery (SRS) and fractionated stereotactic radiotherapy (FSRT) as salvage therapy for glioblastoma (GBM) at recurrence.

METHODS: Thirty-six patients with pathologically proven recurrent GBM were treated with salvage reirradiation by either SRS or FSRT between March of 2001 and August of 2006. Thirty-one patients had an initial diagnosis of GBM. Five patients had a malignant transformation. All patients had received radiotherapy with a dose of 50-60 Gy, a median 13.6 months prior to reirradiation (range: 0.8-119 months). At the time of recurrence, 26 patients were treated with SRS with a median dose of 18 Gy (range: 12-20 Gy). FSRT was performed in ten patients with a dose of 36 Gy in six fractions, twice weekly. Follow-up included MRI and clinical examination every 2 months.

RESULTS: Median survival time after SRS was 8.5 months, compared to 7.4 months after FSRT ($P = 0.81$). Of 26 patients treated with SRS, radiographic tumor response or stable disease was observed in eight (35%) patients and tumor progression was seen in 18 (65%) patients. Of 10 patients treated by FSRT, radiographic tumor response or stable disease was observed in four (40%) patients and tumor progression was observed in four (40%) patients (two lost to follow-up). Patients who responded to treatment had statistically improved survival compared to non-responders, with median survival of 15.8 vs. 7.3 months ($P < 0.05$).

CONCLUSION: Salvage reirradiation with SRS or FSRT for recurrent GBM results in radiographic response in a proportion of patients. Survival was significantly improved among patients who either responded or had stable disease after salvage reirradiation, compared to non-responders. Further study is warranted to investigate the method and time of reirradiation for recurrent GBM.

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