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Re-irradiation with Radiosurgery for Recurrent Glioblastoma Multiforme.

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Abstract

Local tumor control remains a significant challenge in patients with glioblastoma multiforme (GBM). Despite aggressive radiation therapy approaches, most recurrences are within the high-dose field, limiting the ability to safely re-irradiate recurrence using conventional techniques. Fractionated stereotactic radiosurgery (fSRS) is a technique whose properties make it useful for re-irradiation. We retrospectively reviewed the charts of 14 patients with recurrent GBM treated with salvage radiosurgery. Seven patients were male and seven were female with a median age of 58 (range: 39-76). All patients had prior cranial radiation therapy to a median dose of 60 Gy (58-69). There were 18 lesions treated with a median tumor volume of 6.97 cm³ (0.54-50.0 cm³). fSRS was delivered in 1-3 fractions to a median dose of 24 Gy (18-30 Gy). Median follow-up for the cohort was 8 months (3-22 months). On follow-up MRI, 8 of 18 lesions had a radiographic response. The median time-to-progression following primary irradiation was 8 months (1-28 months) while the median time-to-progression (TTP) following fSRS was 5 months (1-16 months). Median local control following re-irradiation was 5 months and actuarial local control was 21% at 1-year. Overall survival following primary irradiation was 79% at 12 months and 46% at 2 years. Overall survival following re-irradiation was 79% at 6 months and 30% at 1 year. No significant treatment-related toxicity was seen in follow-up. These results indicate that re-irradiation for recurrent GBM using fSRS is well-tolerated and can offer a benefit in terms of progression-free survival (PFS).

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