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# Fractionated stereotactic reirradiation and concurrent temozolomide in patients with recurrent glioblastoma.

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### Abstract

The aim of this paper is to evaluate the efficacy of fractionated stereotactic radiotherapy (FSRT) and concomitant temozolomide (TMZ) as a salvage treatment option in patients with recurrent glioblastoma (GBM). Between May 2006 and December 2009, 36 patients with recurrent GBM received FSRT plus concomitant TMZ at University of Rome La Sapienza, Sant' Andrea Hospital. All patients had Karnofsky performance score  $\geq 60$  and were previously treated with standard conformal radiotherapy (RT) (60 Gy) with concomitant and adjuvant TMZ for 6-12 cycles. The median time interval between primary RT and reirradiation was 14 months. At the time of recurrence, all patients received FSRT plus concomitant daily TMZ at the dose of 75 mg/m<sup>2</sup>, given 7 days per week from the first day of RT. Radiation dose was 37.5 Gy delivered in 15 fractions over 3 weeks. Median overall survival after FSRT was 9.7 months, and the 6- and 12-month survival rates were 84 and 33%, respectively. The median progression-free survival (PFS) was 5 months, and 6- and 12-month PFS rates were 42 and 8%, respectively. In univariate analysis, KPS ( $P = 0.04$ ), the interval between primary RT and reirradiation ( $P = 0.02$ ), and O6-methylguanine-DNA-methyltransferase (MGMT) methylation status at the time of diagnosis ( $P = 0.009$ ) had an effect on survival; however, in multivariate analysis, only MGMT methylation was statistically significant ( $P = 0.03$ ). In general, FSRT was well tolerated and the treatment was completed in all patients. Neurological deterioration due to radiation-induced necrosis occurred in three patients (8%). FSRT plus concomitant TMZ is a feasible treatment option associated with survival benefits and low risk of complications in selected patients with recurrent GBM. The potential advantages of combined chemoradiation schedules in patients with recurrent GBM need to be explored in future studies.

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