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Single dose versus fractionated stereotactic radiotherapy for recurrent high-grade gliomas.

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Abstract

PURPOSE: To evaluate the efficacy of stereotactic radiotherapy (SRT) in patients with recurrent high-grade gliomas by comparing two different treatment regimens, single dose or fractionated radiotherapy.

METHODS AND MATERIALS: Between April 1991 and January 1998, 71 patients with recurrent high-grade gliomas were treated with SRT. Forty-six patients (65%) were treated with single dose radiosurgery (SRS) and 25 patients (35 %) with fractionated stereotactic radiotherapy (FSRT). For the SRS group, the median radiosurgical dose of 17 Gy was delivered to the median of 50% isodose surface (IDS) encompassing the target. For the FSRT group, the median dose of 37.5 Gy in 15 fractions was delivered to the median of 85% IDS.

RESULTS: Actuarial median survival time was 11 months for the SRS group and 12 months for the FSRT group ($p = 0.3$, log-rank test). Variables predicting longer survival were younger age ($p = 0.006$), lower grade ($p = 0.0006$), higher Karnofsky Performance Scale (KPS) ($p = 0.0005$), and smaller tumor volume ($p = 0.02$). Patients in the SRS group had more favorable prognostic factors, with median age of 48 years, KPS of 70, and tumor volume of 10 ml versus median age of 53 years, KPS of 60, and tumor volume of 25 ml in the FSRT group. Late complications developed in 14 patients in the SRS group and 2 patients in the FSRT group ($p < 0.05$).

CONCLUSION: Given that FSRT patients had comparable survival to SRS patients, despite having poorer pretreatment prognostic factors and a lower risk of late complications, FSRT may be a better option for patients with larger tumors or tumors in eloquent structures. Since this is a nonrandomized study, further investigation is needed to confirm this and to determine an optimal dose/fractionation scheme.

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