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Moderately Hypofractionated Radio(chemo)therapy With Simultaneous Integrated Boost for Recurrent, Previously Irradiated, High-grade Glioma

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Abstract

Background/aim: The therapy of recurrent, previously irradiated, high-grade gliomas is still a major interdisciplinary challenge, and the overall prognosis remains poor. Reirradiation has been established as a major component of the management of relapse, in addition to further debulking surgery and systemic options. Herein, we present a moderately hypofractionated reirradiation concept with simultaneous integrated boost for such recurrent, previously irradiated tumors.

Patients and methods: From October 2019 to January 2021, 12 patients with recurrent malignant gliomas were re-irradiated. All patients had previously undergone surgery and irradiation with mostly normal fractions at the time of primary therapy. Radiotherapy of relapse was performed in all patients with 33 Gy, with 2.2 Gy single dose with a simultaneously integrated boost of 40.05 Gy with a single dose of 2.67 Gy in 15 fractions. Nine out of the 12 patients underwent debulking surgery before reirradiation, and seven patients received concurrent chemotherapy with temozolomide. The mean follow-up was 15.5 months.

Results: The median overall survival after recurrence was 9.3 months. The survival rate after 1 year was 33%. Toxicity during radiotherapy was low. In two patients, small areas of radionecrosis were observed at follow-up magnetic resonance imaging in the target volume; these patients were clinically asymptomatic.

Conclusion: Moderate hypofractionation shortens the duration of radiotherapy and thereby improves accessibility for patients with limited mobility and prognosis, and achieves a respectable overall survival rate. Furthermore, the extent of late toxicity is also acceptable in these preirradiated patients.

Keywords: Hypofractionated radiotherapy; chemoradiotherapy; glioblastoma; high-grade glioma; relapse.