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MR-guided laser interstitial thermal therapy followed by early application of temozolomide for recurrent IDH-wildtype glioblastomas: preliminary results from a prospective study

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Abstract

This study aims to evaluate the safety, tolerability, and preliminary efficacy of combining laser interstitial thermal therapy (LITT) with early administration of temozolomide (TMZ) in patients with recurrent glioblastoma (rGBM). Ten patients with rGBM were enrolled. Following the LITT procedure, TMZ was administered at a dose of 75 mg/m²/day during the early-TMZ phase for three weeks. After a 7-day interval, TMZ was given according to the standard dosage scheme for 6 cycles. Adverse events and complications encountered were documented. Regular follow-up assessments were conducted to evaluate both patient performance status and tumor progression. All patients demonstrated good tolerance to LITT, with six out of ten achieving an ablation rate above 90%, and only one patient had an ablation rate below 70%. Oral administration of TMZ was well-tolerated by all patients during the early-TMZ phase. Mild headache was the most common adverse event (3/10), and only one severe adverse event occurred. At a 6-month follow-up post-LITT, tumor progression was observed in five patients; none of the patients reached survival endpoints. This preliminary report substantiates the favorable tolerability of early application of TMZ in combination with LITT. The safety profile was found to be acceptable, and the initial efficacy results were promising. Future studies should explore the potential of LITT combination therapy in greater detail and with larger patient samples.

Keywords: Glioblastoma; LITT; Laser ablation; Recurrence.

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