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# MR Imaging-Guided Focused Ultrasound-Clinical Applications in Managing Malignant Gliomas

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## Abstract

Malignant gliomas (MGs) are the most common primary brain tumors in adults. Despite recent advances in understanding the biology and potential therapeutic vulnerabilities of MGs, treatment options remain limited as the delivery of drugs is often impeded by the blood-brain barrier (BBB), and safe, complete surgical resection may not always be possible, especially for deep-seated tumors. In this review, the authors highlight emerging applications for MR imaging-guided focused ultrasound (MRgFUS) as a noninvasive treatment modality for MGs. Specifically, the authors discuss MRgFUS's potential role in direct tumor cell killing, opening the BBB, and modulating antitumor immunity.

**Keywords:** Ablation; Blood-brain barrier; Glioblastoma; Glioma; Immunotherapy; MR imaging; Sonodynamic therapy; Ultrasound.

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