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EDITORIAL · Volume 121, Issue 5, P1182-1184, April 01, 2025

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Contouring with FLAIR: Targeting Peritumoral Edema (and Beyond) in Glioblastoma

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The last 2 decades have seen incremental improvements in outcomes for patients with glioblastoma (GBM), but a clear understanding of why nearly every patient with GBM experiences recurrence within 1 to 2 years remains elusive. This uncertainty is reflected in the range of views regarding optimal radiation therapy target volumes. Radiation oncologists strive to balance antitumor efficacy of radiation therapy with normal tissue toxicity, but in the case of high-grade gliomas neither side of the equation is well understood. Since the 1980s, Radiation Therapy Oncology Group (RTOG)/NRG and European Organisation for Research and Treatment of Cancer (EORTC) trials have recommended treating a clinical tumor volume (CTV), produced by adding 2 to 2.5 cm margins on the resection cavity and enhancing residual disease, with a dose of 60 Gy; however, RTOG/NRG trials have also recommended including a 46 Gy volume, consisting of brain parenchyma hyperintense on T2-fluid attenuated inversion recovery (FLAIR) imaging, with a 2 cm margin.¹ This practice is supported by historical studies demonstrating that areas of peritumoral edema were found to contain isolated tumor cells on stereotactic biopsies.^{2,3}


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