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RANO 2.0: Update to the Response Assessment in Neuro-Oncology Criteria for High- and Low-Grade Gliomas in Adults

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Abstract

Purpose: The Response Assessment in Neuro-Oncology (RANO) criteria for high-grade gliomas (RANO-HGG) and low-grade gliomas (RANO-LGG) were developed to improve reliability of response assessment in glioma trials. Over time, some limitations of these criteria were identified, and challenges emerged regarding integrating features of the modified RANO (mRANO) or the immunotherapy RANO (iRANO) criteria.

Methods: Informed by data from studies evaluating the different criteria, updates to the RANO criteria are proposed (RANO 2.0).

Results: We recommend a standard set of criteria for both high- and low-grade gliomas, to be used for all trials regardless of the treatment modalities being evaluated. In the newly diagnosed setting, the postradiotherapy magnetic resonance imaging (MRI), rather than the postsurgical MRI, will be used as the baseline for comparison with subsequent scans. Since the incidence of pseudoprogression is high in the 12 weeks after radiotherapy, continuation of treatment and confirmation of progression during this period with a repeat MRI, or histopathologic evidence of unequivocal recurrent tumor, are required to define tumor progression. However, confirmation scans are not mandatory after this period nor for the evaluation of treatment for recurrent tumors. For treatments with a high likelihood of pseudoprogression, mandatory confirmation of progression with a repeat MRI is highly recommended. The primary measurement remains the maximum cross-sectional area of tumor (two-dimensional) but volumetric measurements are an option. For IDH wild-type glioblastoma, the nonenhancing disease will no longer be evaluated except when assessing response to antiangiogenic agents. In IDH-mutated tumors with a significant nonenhancing component, clinical trials may require evaluating both the enhancing and nonenhancing tumor components for response assessment.

Conclusion: The revised RANO 2.0 criteria refine response assessment in gliomas.