ABSTRACT

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Association of Neurological Impairment on the Relative Benefit of Maximal Extent of Resection in Chemoradiation-Treated Newly Diagnosed Isocitrate Dehydrogenase Wild-Type Glioblastoma.

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BACKGROUND: Increases in the extent of resection of both contrast-enhanced (CE) and non-contrast-enhanced (NCE) tissue are associated with substantial survival benefits in patients with isocitrate dehydrogenase wild-type glioblastoma. The fact, however, remains that these lesions exist within the framework of complex neural circuitry subserving cognition, movement, and behavior, all of which affect the ultimate survival outcome. The prognostic significance of the interplay between CE and NCE cytoreduction and neurological morbidity is poorly understood.
OBJECTIVE: To identify a clinically homogenous population of 228 patients with newly diagnosed isocitrate dehydrogenase wild-type glioblastoma, all of whom underwent maximal safe resection of CE and NCE tissue and adjuvant chemoradiation. We then set out to delineate the competing interactions between resection of CE and NCE tissue and postoperative neurological impairment with respect to overall survival.
METHODS: Nonparametric multivariate models of survival were generated via recursive partitioning to provide a clinically intuitive framework for the prognostication and surgical management of such patients.
RESULTS: We demonstrated that the presence of a new postoperative neurological impairment was the key factor in predicting survival outcomes across the entire cohort. Patients older than 60 yr who suffered from at least one new impairment had the worst survival outcome regardless of extent of resection (median of 11.6 mo), whereas those who did not develop a new impairment had the best outcome (median of 28.4 mo) so long as all CE tissue was resected.
CONCLUSION: Our data provide novel evidence for management strategies that prioritize safe and complete resection of CE tissue.

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