

PubMed

U.S. National Library of Medicine
National Institutes of Health



Display Settings: Abstract

J Neurooncol. 2010 Dec 22. [Epub ahead of print]

Radiotherapy and temozolomide for newly diagnosed glioblastoma and anaplastic astrocytoma: validation of Radiation Therapy Oncology Group-Recursive Partitioning Analysis in the IMRT and temozolomide era.

Paravati AJ, Heron DE, Landsittel D, Flickinger JC, Mintz A, Chen YF, Huq MS.

Department of Radiation Oncology, University of Pittsburgh Cancer Institute, 5230 Centre Ave, Pittsburgh, PA, 15232, USA.

Abstract

Since the development of the Radiation Therapy Oncology Group-Recursive Partitioning Analysis (RTOG-RPA) risk classes for high-grade glioma, radiation therapy in combination with temozolomide (TMZ) has become standard care. While this combination has improved survival, the prognosis remains poor in the majority of patients. Therefore, strong interest in high-grade gliomas from basic research to clinical trials persists. We sought to evaluate whether the current RTOG-RPA retains prognostic significance in the TMZ era or alternatively, if modifications better prognosticate the optimal selection of patients with similar baseline prognosis for future clinical protocols. The records of 159 patients with newly-diagnosed glioblastoma (GBM, WHO grade IV) or anaplastic astrocytoma (AA, WHO grade III) were reviewed. Patients were treated with intensity-modulated radiation therapy (IMRT) and concurrent followed by adjuvant TMZ (n = 154) or adjuvant TMZ only (n = 5). The primary endpoint was overall survival. Three separate analyses were performed: (1) application of RTOG-RPA to the study cohort and calculation of subsequent survival curves, (2) fit a new tree model with the same predictors in RTOG-RPA, and (3) fit a new tree model with an expanded predictor set. All analyses used a regression tree analysis with a survival outcome fit to formulate new risk classes. Overall median survival was 14.9 months. Using the RTOG-RPA, the six classes retained their relative prognostic significance and overall ordering, with the corresponding survival distributions significantly different from each other ($P < 0.01$, χ^2 statistic = 70). New recursive partitioning limited to the predictors in RTOG-RPA defined four risk groups based on Karnofsky Performance Status (KPS), histology, age, length of neurologic symptoms, and mental status. Analysis across the expanded predictors defined six risk classes, including the same five variables plus tumor location, tobacco use, and hospitalization during radiation therapy. Patients with excellent functional status, AA, and frontal lobe tumors had the best prognosis. For patients with newly-diagnosed high-grade gliomas, RTOG-RPA classes retained prognostic significance in patients treated with TMZ and IMRT. In contrast to RTOG-RPA, in our modified RPA model, KPS rather than age represented the initial split. New recursive partitioning identified potential modifications to RTOG-RPA that should be further explored with a larger data set.

PMID: 21181233 [PubMed - as supplied by publisher]

[LinkOut - more resources](#)