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# Conditional Survival Estimates for Malignant Glioma Patients: Secondary Analysis of RTOG 9006

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## Abstract

**Objectives:** Conditional survival (CS) provides estimates of how survival changes over time. The primary objective of this secondary analysis is to report CS estimates for patients with malignant gliomas enrolled on RTOG 9006.

**Methods:** A post hoc analysis of RTOG 9006 was performed using data obtained from the NCI NCTN Data Archive. Eligible patients included those enrolled on RTOG 9006 (n=632). CS estimates from the time of diagnosis and following 1, 3, and 5 years of survival were calculated using Kaplan-Meier. Multivariable Cox proportional hazards modeling multivariate analysis (MVA) was performed to evaluate the prognostic significance of age, KPS, treatment arm, histology, and extent of surgical resection following 1, 3, and 5 years of survival. The RPA class was evaluated on univariate analysis following the same initial survival periods.

**Results:** Among 632 patients, OS at 1 and 3 years was 50.9% and 17.3%, respectively. CS improved over time, with patients who survived the first year having a 46.4% chance of surviving an additional year and 82.9% chance for those who had already survived 3 years. Age, KPS, and extent of surgical resection were significant predictors of OS at diagnosis but prognostic value declined over time. Glioblastoma multiforme (GBM) histology was significant at all time points. Patients who survived 3 years had significantly improved additional survival with conventional fractionation compared with hyperfractionation. In addition, RPA lost prognostic significance over time.

**Conclusions:** Given the diminishing influence of KPS and surgical resection, treatment decisions should be based on individualized approaches considering evolving survival probabilities, not solely initial prognosis.

**Keywords:** RPA; conditional survival; glioma; gliomas; high grade glioma; high grade gliomas; hyperfractionation; recursive partitioning analysis.

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