Adjuvant gamma knife stereotactic radiosurgery at the time of tumor progression potentially improves survival for patients with glioblastoma multiforme.


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Abstract

OBJECTIVE: Gamma knife stereotactic radiosurgery (GK-SRS) is a safe and noninvasive treatment used as adjuvant therapy for patients with glioblastoma multiforme (GBM). Several studies have yielded conflicting results in the effectiveness of radiosurgery in GBM. This study is a retrospective review of our institutional experience with GK-SRS adjuvant therapy in the treatment of GBM.

METHODS: From October 1998 to January 2003, 51 consecutive patients were treated with GK-SRS as an "upfront" adjuvant therapy after surgery or at the time of tumor progression at Northwestern Memorial Hospital. Survival analysis was performed using the Kaplan-Meier actuarial method. Univariate and multivariate analyses of patient characteristics and treatment variables were performed.

RESULTS: Treatment with adjuvant GK-SRS yielded a median overall survival of 14.3 months for our cohort. Survival rate of the cohort was 68% at 12 months, 30% at 24 months, and 24% at 36 months. Karnofsky performance score greater than 90 and adjuvant chemotherapy were associated with increased survival on multivariate analysis. Adjuvant GK-SRS performed at tumor progression seems to increase median survival to 16.7 months compared with 10 months when performed after the time of initial tumor resection. Median survival rates by recursive partitioning analysis class breakdown in our cohort are greater than those predicted by other studies.

CONCLUSION: GK-SRS is a relatively safe and noninvasive procedure that conferred an improvement in overall survival of GBM patients in our retrospective study. Particularly, GK-SRS may improve overall survival when performed at the time of tumor progression.