Investigating the Effect of Reirradiation or Systemic Therapy in Patients With Glioblastoma After Tumor Progression: A Secondary Analysis of NRG Oncology/Radiation Therapy Oncology Group Trial 0525.


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PURPOSE: To determine the impact on overall survival with different salvage therapies, including no treatment, reirradiation, systemic therapy, or radiation and systemic therapy, in participants of a phase 3 clinical trial evaluating dose-dense versus standard-dose temozolomide for patients with newly diagnosed glioblastoma.

METHODS AND MATERIALS: This analysis of patients from Trial RTOG 0525 investigated the effect of reirradiation or systemic treatment after tumor progression. Survival from first progression was compared between patients receiving no therapy, systemic therapy alone, radiation alone, and both modalities. The Cox proportional hazards model was used to compare the mortality hazard, controlling for potential confounders.

RESULTS: The analysis included 637 patients who progressed and had information on their management, excluding those who died less than half a month after progression. A total of 267 patients (42%) received neither reirradiation nor systemic treatment at progression, 24 (4%) received radiation alone, 282 (44%) received systemic treatment only, and 64 (10%) received both radiation and systemic therapy. Patients who received no treatment had a median survival of 4.8 months, lower than with radiation treatment alone (8.2 months), systemic therapy alone (10.6 months), and both modalities (12.2 months). In survival models controlling for potential confounders, those who received radiation alone had modestly better survival (hazard ratio HR 0.74, 95% confidence interval [CI] 0.43-1.28), whereas those who underwent systemic therapy either without (HR 0.42, 95% CI 0.34-0.53) or with radiation therapy (HR 0.44, 95% CI 0.30-0.63) had better survival. There was no significant survival difference between patients who received radiation only and those who received systemic therapy (either with radiation or alone).

CONCLUSIONS: Patients who received no salvage treatment had poorer survival than those who received radiation, chemotherapy, or the combination. However, patient selection for no
treatment likely reflects poorer expected prognosis. There was no significant survival difference among those receiving radiation therapy, systemic therapy, or both. Ongoing clinical trials will help define the role of reirradiation after glioblastoma progression.

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