Glioblastoma: patterns of recurrence and efficacy of salvage treatments.

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Abstract

Background: It is controversial if distant recurrence of glioblastoma is more common after temozolomide (TMZ) concurrent with radiotherapy (RT). Optimal therapy for patients with recurrent disease after RT/TMZ is unclear. Our purpose was to evaluate recurrence patterns in glioblastoma and the effect of treatment at recurrence upon survival. Methods: We performed a retrospective review of 67 patients with newly diagnosed glioblastoma treated with RT/TMZ between 2003-2007. Statistical analyses included Kaplan-Meier method for survival, and multivariate Cox proportional hazards model for the effect of salvage treatment on survival. Results: 58 patients (86.6%) recurred locally; 9 patients (13.4%) had a distant non-contiguous focus of new disease. Median survival (MS) was 17 months; median time-to-progression (TTP) 6.8 months. The local and distant groups had comparable prognostic factors. There was no difference in MS (p=0.35) or TTP (p=0.95) by location of recurrence. At relapse, 26 patients (38.8%) received continuous, dose-intense TMZ, 24 (35.8%) other therapy (4.5% RT; 20.9% lomustine +/- procarbazine; 4.5% etoposide; 1.5% conventional TMZ; 4.5% TMZ then lomustine), and 17 (25.4%) were untreated. Dose-intense TMZ was associated with prolonged MS compared to all other patients (21.5 months vs. 12.4 months, p=0.019, HR=3.86, 95% CI: 1.81-8.22) and similar to MS with other chemotherapy regimens (18.8 months, p=0.40, HR=1.30, 95% CI: 0.65-2.61). Conclusion: The pattern of recurrence of glioblastoma treated with RT/TMZ was predominantly local. Second-line treatment with continuous dose-intense TMZ may prolong survival in patients with recurrent glioblastoma. Overall survival is similar to other conventional salvage regimens; however TMZ may be better tolerated. This study is limited by its retrospective nature and potential selection bias. Prospective controlled studies are needed.

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