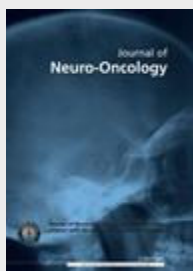


## Journal Article



## Treatment of recurrent glioblastoma: can local delivery of mitoxantrone improve survival?

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**Abstract** In this study, the records of 276 adult patients with recurrent glioblastoma (GBM) treated at recurrence at our institution between 2004 and 2006 were reviewed for progression-free survival (PFS), overall survival (OS), and toxicity. At recurrence, all patients underwent systemic treatment with temozolomide (200 mg/sqm on days 1–5 every 28 days) until tumor progression. Patients, whose tumor was judged resectable without risk of adjunctive neurological deficit, underwent a second surgery with or without positioning of a Rickam/Ommaya reservoir. The reservoir was used for locoregional chemotherapy with mitoxantrone. Two hundred seventy-six rGBL patients (pts) were divided into three subgroups: A 161 pts treated only with temozolomide, B 50 pts re-operated-on +temozolomide, and C 65 pts re-operated on + temozolomide + locoregional CHT. For group A, the 6 month PFS and 6 month survival (ST) were 39.3 and 43%, respectively, with a median survival time (mST) of 5 months (range 4–6) and 25% of pts alive at 9 months. For group B, the 6 month PFS and 6 month survivors were 64 and 74.1%, respectively, with a mST of 8 months (range 6–10) and 25% of pts alive at 12 months. For group C, the 6 month PFS and 6 month survivors were 70.7 and 87.7%, respectively, with a mST of 11 months (range 9–13) and 25% of pts alive at 18 months (A vs. B vs. C, log-rank  $P < 0.001$ ) (B vs. C,  $P = 0.041$ ) (A vs. B  $P = 0.009$ ). Cox proportional hazard model was used to obtain Hazard Ratio (HR) for type of treatment corrected by age and time (in months) between diagnosis and first recurrence: second tumor debulking was statistically effective for survival, reducing by 36% the risk of death (HR = 0.64; 0.46–0.89), but the most significant favorable prognostic factor for survival was the local delivery of

mitoxantrone which reduced the risk of death to 50% (HR = 0.50; 0.38–0.68).

**Keywords** Recurrent glioblastoma - Ommaya reservoir - Rickam Reservoir - Mitoxantrone - Locoregional chemotherapy

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