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# Phase II study of metronomic chemotherapy with bevacizumab for recurrent glioblastoma after progression on bevacizumab therapy.

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### Abstract

We evaluated the efficacy of metronomic etoposide or temozolomide administered with bevacizumab among recurrent glioblastoma (GBM) patients who progressed on prior bevacizumab therapy in a phase 2, open-label, two-arm trial. Twenty-three patients received bevacizumab (10 mg/kg) every 2 weeks with either oral etoposide (50 mg/m<sup>2</sup>) daily for 21 consecutive days each month or daily temozolomide (50 mg/m<sup>2</sup>). The primary endpoint was 6-month progression-free survival (PFS-6) and secondary endpoints included safety and overall survival. Both the etoposide and temozolomide arms of the study closed at the interim analysis due to lack of adequate anti-tumor activity. No radiographic responses were observed. Although 12 patients (52%) achieved stable disease, PFS-6 was 4.4% and the median PFS was 7.3 weeks. The only grade 4 adverse event was reversible neutropenia. Grade 3 toxicities included fatigue (n = 2) and infection (n = 1). Metronomic etoposide or temozolomide is ineffective when administered with bevacizumab among recurrent GBM patients who have progressed on prior bevacizumab therapy. Alternative treatment strategies remain critically needed for this indication.

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