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Bevacizumab for recurrent malignant gliomas: efficacy, toxicity, and patterns of recurrence.

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Abstract

BACKGROUND: Bevacizumab, a humanized monoclonal antibody against vascular endothelial growth factor, may have activity in recurrent malignant gliomas. At recurrence some patients appear to develop nonenhancing infiltrating disease rather than enhancing tumor.

METHODS: We retrospectively reviewed 55 consecutive patients with recurrent malignant gliomas who received bevacizumab and chemotherapy to determine efficacy, toxicity, and patterns of recurrence. Using a blinded, standardized imaging review and quantitative volumetric analysis, the recurrence patterns of patients treated with bevacizumab were compared to recurrence patterns of 19 patients treated with chemotherapy alone.

RESULTS: A total of 2.3% of patients had a complete response, 31.8% partial response, 29.5% minimal response, and 29.5% had stable disease. Median time to radiographic progression was 19.3 weeks. Six-month progression-free survival (PFS) was 42% for patients with glioblastoma and 32% for patients with anaplastic glioma. In 23 patients who progressed on their initial therapy, bevacizumab was continued and the concurrent chemotherapy agent changed. In no case did the change produce a radiographic response, but two patients had prolonged PFS of 20 and 31 weeks. Recurrence pattern analysis identified a significant increase in the volume of infiltrative tumor relative to enhancing tumor in bevacizumab responders.

CONCLUSIONS: Combination therapy with bevacizumab and chemotherapy is well-tolerated and active against recurrent malignant gliomas. At recurrence, continuing bevacizumab and changing the chemotherapy agent provided long-term disease control only in a small subset of patients. Bevacizumab may alter the recurrence pattern of malignant gliomas by suppressing enhancing tumor recurrence more effectively than it suppresses nonenhancing, infiltrative tumor growth.

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[Neurology](#). 2009 Feb 24;72(8):772-3; author reply 773-4.

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PMID: **18316689** [PubMed - indexed for MEDLINE]

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