Controlling tumor invasion: bevacizumab and BMP4 for glioblastoma.
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Abstract
Aim: Bevacizumab has been reported to result in increased tumor invasion when used to treat malignant glioma. We hypothesized that BMP4 would prevent diffuse tumor infiltration induced by bevacizumab for malignant glioma in a xenograft model. Methods: Human glioblastoma (GBM) tumor cells were implanted in the striatum of immunocompromised mice. The animals were treated with bevacizumab and BMP4. Tumor growth and invasion were measured. Results: The bevacizumab-treated mice had increased survival compared with control animals (p = 0.02). BMP4 alone did not result in improved survival (p = 1.0). The bevacizumab (p = 0.006) and bevacizumab plus BMP4 (p = 0.006) groups demonstrated significantly decreased total tumor size compared with control. Tumor invasion was significantly decreased in the bevacizumab (p = 0.005), BMP4 (p = 0.04) alone and bevacizumab plus BMP4 (p = 0.002) groups compared with control. No synergistic effect between bevacizumab and BMP4 was observed. Conclusion: Bevacizumab treatment did not result in diffuse infiltration of human GBM in a mouse xenograft model. BMP4 did have an independent favorable effect on GBM that was not synergistic with bevacizumab treatment.

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