Current status of antiangiogenic therapies for glioblastomas.

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Abstract

INTRODUCTION: Glioblastoma (GBM), the most common primary malignant brain tumor in adults, lacks effective long-term treatment. The tumor is dependent on neovascularization for survival, making angiogenesis an attractive target for therapeutic intervention. The exact mechanism underlying the effects of antiangiogenic agents on GBM remains debatable, although it likely involves vascular endothelial growth factor (VEGF), and other proangiogenic growth factors. Early studies in the recurrent GBM setting were promising and prompted two multinational randomized phase three trials (AVAglio and RTOG 0825) investigating the effect of bevacizumab, an anti-VEGF monoclonal antibody, in newly diagnosed GBM.

AREAS COVERED: In this article, the authors discuss the basic mechanisms of angiogenesis and antiangiogenic resistance. The authors additionally summarize the current state of clinical research and how it will impact both future research and the development antiangiogenic therapies.

EXPERT OPINION: The ultimate utility of antiangiogenic therapy in the management of GBM remains unclear. In an effort to improve outcomes, there remains an urgent need to better understand the biology underlying angiogenesis and tumor survival, as well as mechanisms of antiangiogenic resistance. Ultimately, combinatorial approaches using antiangiogenic agents, targeted molecular therapy, immunotherapy or cytotoxics may be needed to improve treatment outcomes.

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