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Antiangiogenic strategies in medulloblastoma: reality or mystery.

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Abstract

Medulloblastoma is the most common malignant brain tumor of childhood. Surgery, radiation therapy, and chemotherapy successfully cure many patients, but survivors can suffer long-term toxicities affecting their neurocognitive and growth potential; furthermore, there is no curative therapy in up to 30% of cases, mainly because of our incomplete understanding of many of the underlying molecular and cellular processes. Angiogenesis is a hallmark of the progression of medulloblastoma and, over the last years, investigators have sought to develop effective and less toxic antiangiogenic strategies, including the inhibition or destruction of abnormal blood vessels using either antiangiogenic or vascular disrupting agents. However, the results are conflicting principally because of the complex biology of tumor vasculature and the irregular geometry of the vascular system in real space. In addition, current targets of antiangiogenic therapy, such as vascular endothelial growth factor (VEGF), are thought to be critical for both physiologic and pathologic angiogenesis, and clinical side effects of anti-VEGF therapy are beginning to emerge. We here review the state-of-the-art concerning antiangiogenic targets for medulloblastoma treatment, and discuss the complexity of the vascular system that intrinsically limits the efficacy of current strategies.

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