Cilengitide treatment for malignant glioma: current status and future direction.

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Abstract

Malignant glioma is the most common primary brain tumor and accounts for the majority of diagnoses. Treatment has involved a combination of surgery, radiation, and chemotherapy, yet these modalities rarely extend the life of the patient to more than one year from diagnosis. Integrins are expressed in tumor cells and tumor endothelial cells, and are important in angiogenesis and invasion in glioma. αvβ3 and αvβ5 integrins regulate cell adhesion, and inhibitors of these integrins suppress tumor growth in certain pre-clinical models. Several integrin-targeted drugs are in clinical trials as potential compounds for the treatment of cancer. Among them, cilengitide is a novel integrin antagonist for the treatment of glioblastoma. The multimodal anti-glioma effects are based on its cytotoxic, anti-angiogenic, anti-invasive, and synergetic effects. Preclinical studies showed a promising synergy between cilengitide and radiochemotherapy in order to normalize tumor vasculature and attenuate tumor invasion. Cilengitide is currently being assessed in phase III trials for patients with glioblastoma multiforme and in phase II trials for other types of cancers, demonstrating promising therapeutic outcomes to date. The results of these and other clinical studies are expected with great hope and interest. A more clear understanding of the benefits and pitfalls of each approach can then lead to the design of strategies to derive maximal benefit from these therapies.


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