Integrin inhibitor cilengitide for the treatment of glioblastoma: a brief overview of current clinical results.

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Abstract
Glioblastoma is the most frequent primary malignant brain tumor in adults. Postoperative radiotherapy (RT) with concomitant and adjuvant chemotherapy with temozolomide is the standard treatment, however the prognosis remains poor with a median survival in the range of 12-15 months. In recent years, several targeted agents have been developed as potential inhibitors of molecular genetic and signal transduction pathways involved in gliomatogenesis, including those of vascular endothelial growth factor and its receptor, epidermal growth factor receptor, integrin, and mammalian target of rapamycin. The integrins are a family of transmembrane glycoprotein receptors that mediate cell matrix and cell-cell interactions, and are widely expressed in glioma cells and tumor vasculature. The critical role of integrins in angiogenesis, cell invasion and migration make them an attractive target for anticancer therapy. Inhibitory peptides and monoclonal antibodies to integrins are currently being investigated in clinical trials in patients with solid tumors, such as colorectal cancer, renal cell carcinoma, and melanoma. Cilengitide, a cyclized Arg-Gly-Glu(RGD)-containing pentapeptide that selectively blocks activation of the αvβ3 and αvβ5 integrins has shown encouraging activity in patients with glioblastoma as single agent, and in association with standard RT and temozolomide. In this review, we provide a brief overview of the preclinical experience and current clinical results of cilengitide therapy in patients with recurrent or newly diagnosed glioblastoma.

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