MicroRNA targeting as a therapeutic strategy against glioma.

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Abstract

Glioblastoma multiforme (GBM), the most common and aggressive form of primary brain tumor, presents a dismal prognosis. Current standard therapies are only able to improve patient survival by a few months. The search for alternative approaches in glioblastoma treatment, together with the recent discovery of a new class of small RNA molecules that are capable of regulating gene expression, prompted a race for a deeper and thorough understanding of how these molecules work. Today, it is known that microRNAs are involved in many cellular processes that are altered in GBM tumors, such as angiogenesis, invasion, cell proliferation and apoptosis. Research in this area is now gathering efforts to translate these findings into clinically relevant therapies that could improve the diagnosis and outcome of GBM patients. In this review, we discuss the use of microRNAs as potential diagnostic, prognostic and therapeutic tools against glioblastoma. We will also assess the current challenges and future perspectives of microRNA-based therapies, with a special focus on why this promising therapeutic approach is not yet into the clinic and how to overcome this limitation.

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