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Transforming Agents: The Power of Structural Modifications in Glioblastoma Multiforme Therapy

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Abstract

Glioblastoma (GBM) is a very deadly type of brain tumor with a poor prognosis and a short survival rate. Recent advancements in understanding GBM's molecular and genetic characteristics have led to the development of various therapeutic and diagnostic strategies. Key elements such as microRNAs, lncRNAs, exosomes, angiogenesis, and chromatin modifications are highlighted, alongside significant epigenetic alterations that impact therapy and diagnosis. Despite these advancements, molecular classifications have not improved patient outcomes due to intratumoral diversity complicating targeted therapies. In this article, it is tried to emphasize the potential of investigating the epigenetic landscape of GBM, particularly identifying patients with diffuse hypermethylation at gene promoters associated with better outcomes. Integrating epigenetic and genetic data has enhanced the identification of glioma subtypes with high diagnostic precision. The reversibility of epigenetic changes offers promising therapeutic prospects, as recent insights into the "epigenetic orchestra" suggest new avenues for innovative treatment modalities for this challenging cancer. In this review article, we focus on the roles of translational elements and their alterations in the context of GBM diagnosis and therapy.

Keywords: Glioblastoma multiforme; Structural modifications; Transforming Agents; therapy.

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