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Unraveling Glioblastoma: TME Implication and Gene Therapy Advances

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Abstract

Glioblastoma is a malignant manifestation of a solid brain tumour with a very dismal prognosis due to an overall median survival of 14 months. The currently administered Standard treatment plan, the STUPP regimen, is not very effective in tackling this neoplasia. A major concern that affects the development of new drug formulations, specifically for Glioma, is the inherent sub-clonal heterogeneity, which includes the dynamic and intricate nature of the Tumour Microenvironment (TME). Targeting the cellular niche using personalized medication for glioma specifically gene therapy, seems to be promising, with most studies in preclinical models yielding optimistic results. This paper analyses the great headways made in glioma gene therapy in the last 10 years while looking into different therapeutic strategies. That said, certain challenges do plague the clinical use of gene therapy which have been highlighted in the hopes that future researchers will address these concerns and further propel gene therapy in its journey from the Lab to the bedside.

Keywords: Glioblastoma; TME; gene therapy; hallmarks of cancer.

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