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Current mRNA-Based Vaccine Strategies for Glioma Treatment

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Abstract

Gliomas are one of the most aggressive types of brain tumors and are associated with high morbidity and mortality rates. Currently, conventional treatments for gliomas such as surgical resection, radiotherapy, and chemotherapy have limited effectiveness, and new approaches are needed to improve patient outcomes. mRNA-based vaccines represent a promising therapeutic strategy for cancer treatment, including gliomas. Recent advances in immunotherapy using mRNA-based dendritic cell vaccines have shown great potential in preclinical and clinical trials. Dendritic cells are professional antigen-presenting cells that play a crucial role in initiating and regulating immune responses. In this review, we summarize the current progress of mRNA-based vaccines for gliomas, with a focus on recent advances in dendritic cell-based mRNA vaccines. We also discuss the feasibility and safety of mRNA-based clinical applications for gliomas.

Keywords: dendritic cells; glioma/glioblastoma; immunotherapy; mRNA; vaccine.