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Immunotherapy for Pediatric Gliomas: CAR T Cells Against B7H3: A Review of the Literature

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Abstract

Background: B7H3 is a co-stimulatory molecule for immune reactions found on the surface of tumor cells in a wide variety of tumors. Preclinical and clinical studies have reported it as a tumor target towards which various immunotherapy modalities could be directed. So far, good results have been obtained in hematological neoplasms; however, a contrasting situation is evident in solid tumors, including those of the CNS, which show high refractoriness to current treatments. The appearance of cellular immunotherapies has transformed oncology due to the reinforcement of the immune response that is compromised in people with cancer.

Objective: This article aims to review the literature to describe the advancement in knowledge on B7H3 as a target of CAR-T cells in pediatric gliomas to consider them as an alternative in the treatment of these patients.

Results: Although B7H3 is considered a suitable candidate as a target agent for various immunotherapy techniques, there are still limitations in using CAR T cells to achieve the desired success.

Conclusion: Results obtained with CAR-T cells can be further improved by the suggested proposals; therefore, more clinical trials are needed to study this new therapy in children with gliomas.

Keywords: Immunotherapy; chimeric antigen receptor T cells; immune checkpoint inhibitors; oncology; pediatric brain tumors; target antigen; toxicity.