## ABSTRACT

Curr Opin Neurol. 2022 Dec 1;35(6):803-813. doi: 10.1097/WCO.000000000001118. Epub 2022 Oct 21.

Immunotherapy approaches for adult glioma: knowledge gained from recent clinical trials.

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PURPOSE OF REVIEW: Summarize principles behind various immunotherapy approaches for high and low-grade glioma in the context of recently completed clinical trials and the new insights they provide.

RECENT FINDINGS: Despite the widespread success of therapies targeting the T-cell checkpoints programmed-death 1 and cytotoxic T lymphocyte antigen 4 in other malignancies, recent phase III trials in glioblastoma confirm the lack of efficacy of anti-programmed-death 1 monotherapy in more than 90% of patients. Vaccination approaches remain under investigation for high-grade glioma and have shown activity in some low-grade glioma patients. Chimeric antigen receptor T cells now feature a new generation of products engineered to potentially withstand glucocorticoid therapy. Oncolytic viral therapies have similarly advanced in sophistication, with drug-sensitive gene expression and tumor-selective modifications. Combinations of therapies hold promise for overcoming the numerous mechanisms of immune suppression in glioma.

SUMMARY: Although immunotherapies have yet to show rates of efficacy compared with other malignancies, new knowledge of immunology and combination therapies brings hope for improved efficacy in the future.

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DOI: 10.1097/WCO.000000000001118 PMID: 36367046 [Indexed for MEDLINE]