**Abstract**

**PURPOSE OF REVIEW:** Avoiding immune destruction is one emerging hallmark of cancer, including glioblastoma. The number of immunotherapy approaches to fight glioblastoma is growing. Here, we review the recent progress in four main areas: dendritic cell immunotherapy, peptide vaccination, chimeric antigen receptors and immune checkpoints.

**RECENT FINDINGS:** We and others are using dendritic cells to present glioblastoma antigens (whole tumor lysate) to the immune system; our initial data indicate that clinical benefit is associated to increased presence of natural killer cells in the periphery. A pilot study loading dendritic cells with glioblastoma stem-like cells will start soon. Peptide vaccination targeting the epidermal growth factor receptor variant III (EGFRvIII) epitope, present in 25% of glioblastomas, is ongoing. Intriguing results have been obtained by vaccination with three other peptides in pediatric gliomas. Another clinical trial is targeting EGFRvIII by adoptive cell transfer of chimeric antigen receptor. This exciting technology could be suited for a number of other potential epitopes discovered through next-generation sequencing. Finally, antibodies against the immune checkpoints cytotoxic T lymphocyte antigen-4 and programmed cell death-1, which demonstrated efficacy in advanced melanomas, will be used in novel trials for recurrent glioblastoma.

**SUMMARY:** In all these studies attention to novel side-effects and to MRI as immunological follow-up to distinguish progression or pseudoprogression will be of critical relevance.

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