ABSTRACT

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Emerging immune-based technologies for high-grade gliomas.

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INTRODUCTION: The selection of a tailored and successful strategy for high-grade gliomas (HGGs) treatment is still a concern. The abundance of aberrant mutations within the heterogenic genetic landscape of glioblastoma strongly influences cell expansion, proliferation, and therapeutic resistance. Identification of immune evasion pathways opens the way to novel immune-based strategies. This review intends to explore the emerging immunotherapies for HGGs. The immunosuppressive mechanisms related to the tumor microenvironment and future perspectives to overcome glioma immunity barriers are also debated.

AREAS COVERED: An extensive literature review was performed on the PubMed/Medline and ClinicalTrials.gov databases. Only highly relevant articles in English and published in the last 20 years were selected. Data about immunotherapies coming from preclinical and clinical trials were summarized.

EXPERT OPINION: The overall level of evidence about the efficacy and safety of immunotherapies for HGGs is noteworthy. Monoclonal antibodies have been approved as second-line treatment, while peptide vaccines, viral gene strategies, and adoptive technologies proved to boost a vivid antitumor immunization. Malignant brain tumor-treating fields are ever-changing in the upcoming years. Constant refinements and development of new routes of drug administration will permit to design of novel immune-based treatment algorithms thus improving the overall survival.

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