ABSTRACT

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Immunotherapy for Neuro-oncology.

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Immunotherapy has changed the landscape of treatment of many solid and hematological malignancies and is at the forefront of cancer breakthroughs. Several circumstances unique to the central nervous system (CNS) such as limited space for an inflammatory response, difficulties with repeated sampling, corticosteroid use for management of cerebral edema, and immunosuppressive mechanisms within the tumor and brain parenchyma have posed challenges in clinical development of immunotherapy for intracranial tumors. Nonetheless, the success of immunotherapy in brain metastases (BMs) from solid cancers such as melanoma and non-small cell lung cancer (NSCLC) proves that the CNS is not an immune-privileged organ and is capable of initiating and regulating immune responses that lead to tumor control. However, the development of immunotherapeutics for the most malignant primary brain tumor, glioblastoma (GBM), has been challenging due to systemic and profound tumor-mediated immunosuppression unique to GBM, intratumoral and intertumoral heterogeneity, and lack of stably expressed clonal antigens. Here, we review recent advances in the field of immunotherapy for neuro-oncology with a focus on BM, GBM, and rare CNS cancers.

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