

## ABSTRACT

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Is there a role for neoadjuvant anti-PD-1 therapies in glioma?

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**PURPOSE OF REVIEW:** In this review, we summarized recent findings that highlight the progress for checkpoint blockade immunotherapy in glioblastoma (GBM) patients.

**RECENT FINDINGS:** We reviewed new data from our group and others that suggest that the timing of when immunotherapy is applied can impact the antitumor immune response and, potentially, the ultimate clinical benefit of patients.

**SUMMARY:** The neoadjuvant priming and expansion of exhausted T cells within the GBM microenvironment, followed by the removal of an immune suppressive tumor microenvironment through surgical resection, may lead to enhanced antitumor immune responses that beneficial clinically. As such, neoadjuvant immunotherapeutic approaches and rational combinations may be helpful scientifically to understand how immunotherapeutic interventions influence the tumor microenvironment, as well benefit the patients.

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