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Laboratory Investigations[Back to TOC](#)[Past Issues](#)[Prerelease TOC](#)**Prolongation of survival following depletion of CD4⁺CD25⁺ regulatory T cells in mice with experimental brain tumors.****Laboratory Investigations**

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OBJECT. Regulatory CD4⁺CD25⁺ T cells have been shown to play an important role in the regulation of the immune response. Whereas the presence of these cells has been associated with immune suppression, the lack of regulatory T (Treg) cells has been shown to induce autoimmunity. The purpose of this study was to define the role of Treg cells in tumors of the central nervous system (CNS).

METHODS. The authors implanted syngeneic GL261 tumor cells in the brains or flanks of C57BL/6 mice. The resulting tumors were later removed at specific time points, and the presence of tumor-infiltrating lymphocytes was analyzed by performing flow cytometry for the presence of Treg cells. In a separate experiment, mice with GL261 tumors were treated with injections of anti-CD25 monoclonal antibody (mAb) to determine whether depletion of Treg cells may have an impact on the length of survival in mice with brain tumors. Tumor-infiltrating lymphocytes isolated from mice with GL261 tumors were found to have a significant increase in the presence of Treg cells compared with control lymphocytes ($p < 0.05$). Moreover, Treg cells isolated in murine brain tumors expressed FoxP3, CTLA-4, and CD62L. Mice treated with anti-CD25 mAb lived significantly longer than tumor-bearing control animals ($p < 0.05$). An analysis of brains in surviving animals showed a depletion of CD4⁺CD25⁺ T cells.

CONCLUSIONS. The results of this study indicate that CD4⁺CD25⁺ Treg cells play an important role in suppressing the immune response to CNS tumors. These Treg cells may therefore represent a potentially novel target for immunotherapy of malignant gliomas.

KEYWORDS: brain neoplasm,
immunotherapy, regulatory T cells,
CD4⁺CD25⁺ T cells



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