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The prostate stem cell antigen represents a novel glioma-associated antigen.

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Abstract

Gliomas of WHO grades III-IV are malignant brain tumors mostly resistant to conventional therapies. Therefore, novel strategies for the treatment of gliomas are warranted. Although immunotherapy is gaining increased attention for the treatment of malignant gliomas and in particular of glioblastoma multiforme (GBM), this approach requires the identification of appropriate antigens. Our aim was to investigate the expression of the prostate stem cell antigen (PSCA), a highly N-glycosylated phosphatidylinositol (GPI)-anchored cell surface protein, in gliomas of different WHO grades in order to evaluate its potential as a diagnostic marker and as a target for immunotherapy. Tumor specimens and controls were assessed by quantitative RT-PCR, Western blotting and immunohistochemistry. The samples investigated in the study consisted of 210 human glial tumors, among which 31 were oligodendrogliomas, 9 ependymomas and 170 were astrocytomas (including 134 glioblastomas). PSCA was absent in normal brain tissue, but was detected in WHO grade III-IV gliomas. Weak PSCA protein expression was also recognized in some WHO grade I and WHO grade II tumors. The difference between WHO grade I-II tumors and WHO grade III-IV tumors was statistically significant ($p < 0.001$). Our results suggest that increased PSCA expression levels are linked to gliomas of WHO grades III and IV, and may represent a suitable additional target for immunotherapy of gliomas.

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