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B7-H1 is correlated with the malignancy grade of gliomas but it is not the privilege of tumor stem-like cells.

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Human glioblastoma is notorious for its capacity to interfere with effective anti-tumor immune responses. B7-H1 is the third member of the B7 family that plays important roles in tumor immune evasion. Recent studies showed that brain tumor stem-like cells (TSCs) contributed to tumorigenesis and radioresistance. However, the relationship between B7-H1 and the clinical behavior of brain TSCs remain unclear. In the present study, we reported that B7-H1 was correlated with the malignancy grade of astrocytic tumors. There was significant up-regulation of B7-H1 at the growing edge of the tumors. Immunostaining and flow cytometry analysis indicated that B7-H1 was primarily expressed by Ki67 negative tumor cells. In vitro, tumors cultured under medium favoring the growth of neural stem cells were able to form spheres, along with expression of neural stem/progenitor cell markers. These cells were able to differentiate into different neural lineages when cultured in differentiation medium, indicating that these cells have TSCs characteristics. We also found that B7-H1 was expressed, but not exclusively on CD133(+) stem cells. Interestingly, we found CD133(-) tumor cells also had the capacity to form brain tumor. Our data establish a correlation between the expression of negative costimulatory molecule B7-H1 and the malignancy grade of human gliomas, suggesting B7-H1 can be a novel tumor marker & target for therapy although it is not the privilege of brain tumor stem-like cells.

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