Protein Expression of Angiogenesis Markers in the Prognosis of Human Gliomas

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Introduction

Vascular proliferation is an important factor in the progression of many tumor types including gliomas. Hypoxia is important in the induction of angiogenic pathways, as are certain genetic anomalies. Markers have been linked to this process including hypoxia inducible factor-1 (HIF1a) and CD31. This study aims to determine the incidence of CD31and HIF1a protein expression in human gliomas, with additional correlations sought regarding clinicopathologic parameters and patient outcomes.

Methods

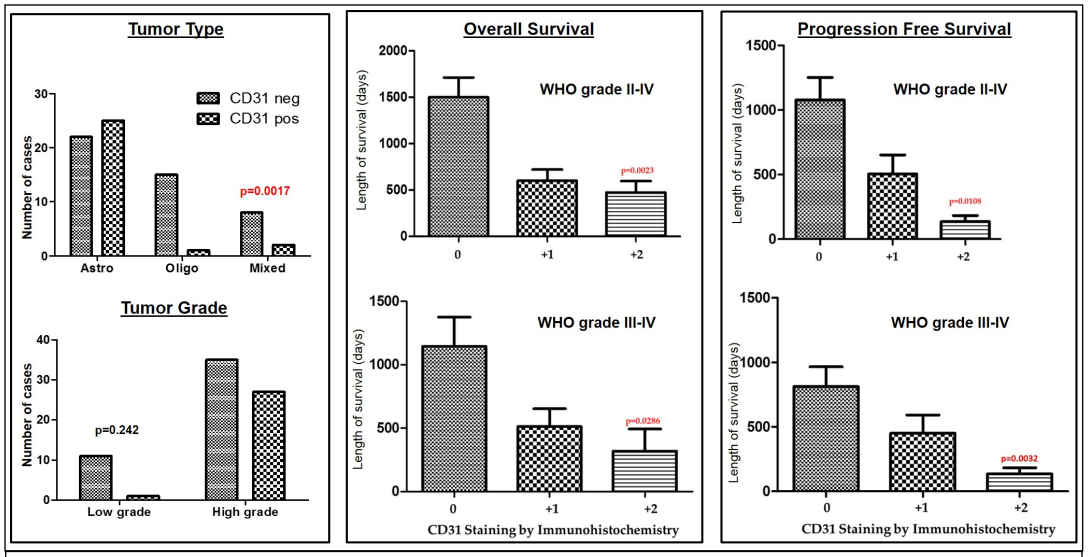
WHO grade I-IV tumors with adequate tissue and clinical follow-up were included in the study. Pilocytic astrocytoma (16), subependymal giant cell astrocytoma (2), pleomorphic xanthoastrocytoma (1), low grade oligodendroglial tumor (11), anaplastic astrocytoma/oligodendroglial tumor (20), and glioblastoma (40) were included.
Immunohistochemistry was performed, and samples with moderate (+1) or intense (+2) cytoplasmic or nuclear staining with a polyclonal antibody to HIF1a and CD31 were considered positive. Correlations were sought between intensity of staining, tumor pathology, length of overall survival (LOS) and progression free survival (PFS). Statistical analysis was performed using one way ANOVA.

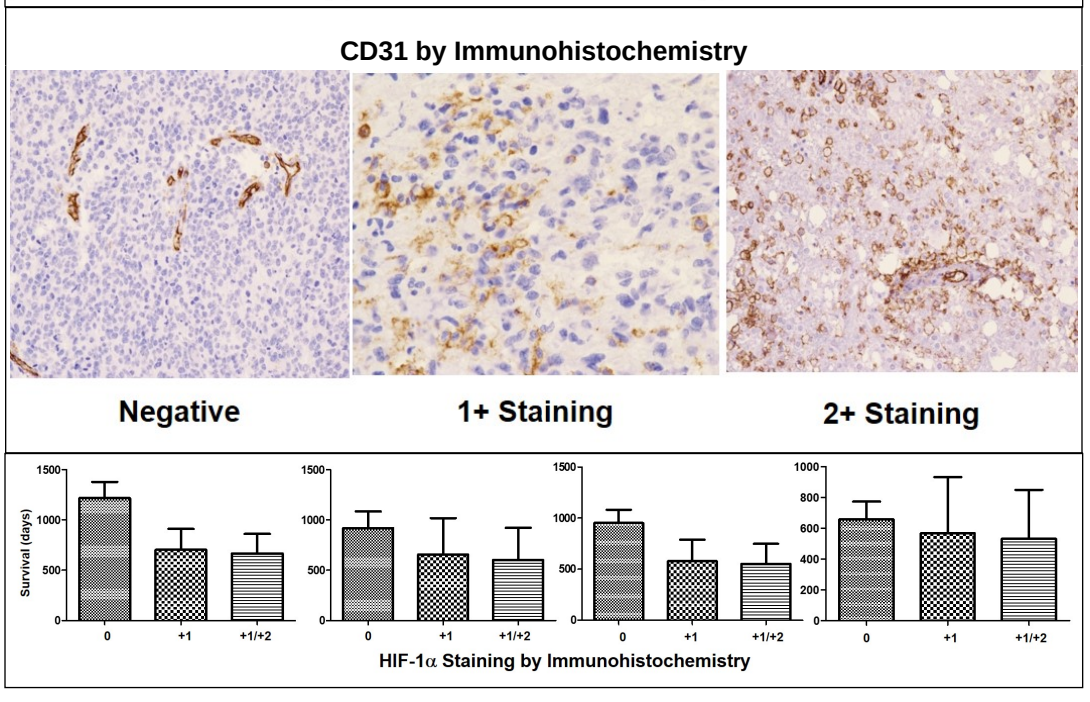
Results

43% of gliomas evaluated showed moderate (35%) to intense (8%) staining for CD31. LOS correlated inversely with intensity of staining. The average LOS in tumors negative for CD31 (1499 days) was significantly longer than those with moderate (+1) or intense (2+) staining (600 and 473 days) (p= 0.0031). Similarly, when only high-grade gliomas were evaluated the average LOS for CD31 negative tumors (1145 days) was significantly longer than those with 1+ or 2+ staining (511 and 318 days) (p=0.0286). Progression free survival was also significantly different in the two groups (p=0.0065). 14% of the gliomas tested showed moderate or intense staining for HIF1a with no significant difference in overall or progression free survival.

Conclusions

CD31 protein expression is associated with decreased overall and progression free survival in gliomas (WHO grade I-IV) tested. This difference is particularly pronounced in high-grade lesions.





References

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