Nogo-A Expression in Glial CNS Tumors: A Tool to Differentiate Between Oligodendrogliomas and Other Gliomas?

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Gliomas are the most frequent primary brain tumors. In a minority of cases, the differentiation between astrocytomas and oligodendrogliomas based on morphologic characteristics alone can be difficult; though it is important, as patients with oligodendrogliomas follow a more favorable clinical course. Here we report on the immunohistochemical expression pattern of the oligodendrocytic marker Nogo-A in 113 central nervous system tumors including 28 oligodendrogliomas [15, World Health Organization (WHO) grade II; 13, grade WHO III], 50 astrocytomas [10, grade WHO II; 11, grade WHO III; 29 glioblastoma multiforme (GBM)], 11 ependymomas WHO grade II, 7 central neurocytomas, 2 dysembryoplastic neuroepithelial tumors (DNTs), 5 clear cell meningiomas, and 10 metastases to the brain. The oligodendrocytic marker Nogo-A was found to be strongly expressed in 71% of oligodendrogliomas, but in 0% of ependymomas WHO grade II, astrocytomas WHO grade II or III, DNTs, central neurocytomas, or clear cell meningiomas. In GBM, a subgroup of tumors (24%) showed strong expression of Nogo-A coincidently with Ki67 positivity but glial fibrillary acidic protein-negativity. However, neither in oligodendrogliomas nor GBM was a correlation between the loss of 1p19q and the extent of Nogo-A expression observed. Our findings indicate that Nogo-A is strongly expressed in the majority of oligodendrogliomas and might be a helpful marker to distinguish oligodendrogliomas from astrocytomas WHO grades II and III as well as ependymomas. They also support the hypothesis that GBM may be a heterogeneous group of tumors derived from different progenitor cells.

PMID: 18685489 [PubMed - as supplied by publisher]