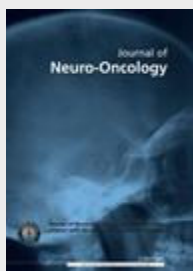


Journal Article



Expression of stem cell markers in human astrocytomas of different WHO grades

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Abstract According to new hypotheses astrocytomas/gliomas either arise from or attract neural stem cells. Biological markers, particularly antigenic markers, have played a significant role for the characterization of these tumour stem cells (TSCc). Because these studies have been performed with single experimental samples mostly from gliomas, we investigated the expression of the stem cell markers CD133/Prominin, Nestin, Sox-2, Musashi-1, CXCR4, Flt-4/VEGFR-3 and CD105/Endoglin in 72 astrocytomas of different WHO-grades and compared it to normal adult human brain. Expression of their mRNA was quantified by quantitative RT-PCR, of their protein by counting immunopositive cells. In contrast to normal brain, tumour samples showed a high variability for the expression of all markers. However, their mean expression was significantly increased in astrocytomas, but this depended on the WHO grade only for CD133, Nestin, Sox-2 and Musashi-1. Confocal microscopy revealed that these markers mostly could be co-stained with glial fibrillary acidic protein, a marker for astogial cells, but less frequently with the proliferation marker Ki-67/MIB-1. These markers sometimes, but not necessarily could be co-stained with each other in complex patterns. Our results show that most astrocytomas contain considerable portions of cells expressing stem cell markers. It appears that some of these cells originate from tumour genesis (supporting the stem cell hypothesis) while others are attracted by the tumours. Further functional markers are required to differentiate these TSC-types.

Keywords Astrocytomas - CD133 - CXCR4 - Endoglin - Flt-4 - Musashi-1 - Nestin - SOX-2 - Stem cell markers - Tumour stem cells

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References secured to subscribers.

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