

HDACs expression in glioblastoma: an immunohistochemical study

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Glioblastoma is the most common and lethal primary malignant brain tumor. Although standard treatments have been improving, the clinical outcome remains unacceptably poor. Several genetic alterations are supposed to be involved in the etiology of different grades of astrocytoma, including epimutations. Histone deacetylases (HDACs) are involved in the post-translational modification on the lysines of histone tails. For this reason HDACs are recognized as promising targets for cancer treatment (1). In the past several years, HDAC inhibitors (HDACis) have been used as radiosensitizers in glioblastoma treatment. However, no study has demonstrated the status of global HDAC expression in gliomas and its possible correlation to the use of HDACis (2). Aim of our study was to evaluate with an immunohistochemical and immunoblotting analyses the expression of different classes of HDACs (Class I: HDAC 1-2-3-8; class II: HDAC 4-6) in microdissected glioblastoma. Tumor samples were taken from 14 patients (n.8 men and n.6 women) ranging in age from 43 to 74 years. HDAC1 and HDAC3 expression was not significantly different between the two proteins and was predominantly located at cytoplasmic level of cancer cells with different intensity of immunoreaction from mild to moderate whereas HDAC2 staining was localized to the nucleus of neoplastic cells. The pattern of HDAC4 immunoreactivity was always cytoplasmic and showed a marked and diffuse increase of immunostaining in neoplastic areas. HDAC8 was always absent in cancer cells and the only positivity was located in the endothelial cells of the vessels. HDAC6 was often absent and, if present, showed a very low cytoplasmic immunopositivity in cancer cells. HDAC1, HDAC2 and HDAC3 levels were not significantly different in immunoblotting results; HDAC4 showed a marked increase while HDAC6 and HDAC8 expression was poor, confirming the IHC data. These previous results demonstrate a different pattern of HDAC expression and could suggest a more addressed therapeutical use of HDACis in glioblastoma.

References

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Keywords

Glioblastoma; HDACs; immunohistochemistry.