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Lack of association of herpesviruses with brain tumors.

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Abstract

Gliomas are the most frequent primary brain tumors in humans. Many studies have been carried out on their etiology; however, the only confirmed risk factors are hereditary predisposing conditions and high dose of ionizing radiation. Recently, human cytomegalovirus (HCMV) gene products and nucleic acids were reported to be present in all of 27 glioma samples investigated in contrast to other brain tissues, and it was hypothesized that HCMV might play a role in glioma pathogenesis. To evaluate these findings, samples of 40 gliomas, 31 meningiomas, and 6 acoustic neurinomas (ACNs) were analyzed for the presence of HCMV macromolecules using polymerase chain reaction (PCR) and immunohistochemistry. Additionally, corresponding blood samples from 72 patients were analyzed for the presence of HCMV DNA to check for a possible contamination of tumor tissues with HCMV-infected blood cells. No HCMV DNA sequences were found, neither in brain tumor tissues nor in corresponding blood samples. Immunohistochemistry did not detect HCMV-specific proteins. Addressing a possible role of other herpesviruses as has been suggested in seroepidemiological studies, seroprevalence of antibodies to HCMV, herpes simplex virus (HSV), Epstein-Barr virus (EBV), and varicella-zoster virus (VZV) were determined by enzyme-linked immunosorbent assay (ELISA). Serological analyses of brain tumor patients showed no significant differences in the prevalences of antibodies to HCMV, HSV, EBV, or VZV compared to the general population. Thus, the data of the present study do not support the hypothesis of an association of herpesviruses with the development of primary brain tumors.

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