Interaction of allergy history and antibodies to specific varicella-zoster virus proteins on glioma risk.


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Abstract

Glioma is the most common cancer of the central nervous system but with few confirmed risk factors. It has been inversely associated with chicken pox, shingles and seroreactivity to varicella virus (VZV), as well as to allergies and allergy-associated IgE. The role of antibody reactivity against individual VZV antigens has not been assessed. Ten VZV-related proteins, selected for high immunogenicity or known function, were synthesized and used as targets for antibody measurements in the sera of 143 glioma cases and 131 healthy controls selected from the San Francisco Bay Area Adult Glioma Study. Glioma cases exhibited significantly reduced seroreactivity compared to controls for six antigens, including proteins IE63 (odds ratio (OR) = 0.26, 95% confidence interval (CI): 0.12-0.58, comparing lowest quartile to highest) and the VZV-unique protein ORF2p (OR = 0.44, 95% CI: 0.21-0.96, lowest quartile to highest). When stratifying the study population into those with low and high self-reported allergy history, VZV protein seroreactivity was only associated inversely with glioma among individuals self-reporting more than two allergies. The data provide insight into both allergy and VZV effects on glioma: strong anti-VZV reactions in highly allergic individuals are associated with reduced occurrence of glioma. This result suggests a role for specificity in the anti-VZV immunity in brain tumor suppression for both individual VZV antigens and in the fine-tuning of the immune response by allergy. Anti-VZV reactions may also be a biomarker of effective CNS immunosurveillance owing to the tropism of the virus.

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