Abstract:

BACKGROUND: Epstein-Barr virus (EBV) has been discussed as a possible causative agent in inflammatory demyelinating diseases of the CNS. Cross-reactivity between EBV and myelin proteins has been proposed as a potential mechanism by which EBV could elicit an autoimmune response targeting the CNS. Recently, high antibody titers to native myelin oligodendrocyte glycoprotein (nMOG) were found in children affected by the first inflammatory demyelinating event. The relation between antibody responses to EBV and nMOG has not been addressed in children so far.

METHODS: We investigated the occurrence of antibodies to nMOG, EBV nuclear antigen 1 (EBNA-1), and early antigen (EA) in a case-control study including children with acute disseminated encephalomyelitis (ADEM, n = 19), children with clinically isolated syndrome (CIS, n = 25), children with other neurologic diseases (n = 28), and healthy children (n = 30). Immunoglobulin G (IgG) and immunoglobulin M (IgM) antibodies against the extracellular part of nMOG were assessed by a cell-based assay, and EBV-specific IgG antibodies to EBNA-1 and IgM antibodies to EA were assessed by ELISA.

RESULTS: Serum IgG antibodies to EBNA-1 were present in 43% of controls (25/58), 42% of children with ADEM (8/19), and 64% of children with CIS (16/25), whereas IgM antibodies to EA were detected in only 16% of children with ADEM.
High antibody titers to nMOG were only found in children with ADEM and CIS but were not related to the seropositivity to EBV. Moreover, in EBV-seropositive children, we did not observe any correlation between anti-EBNA-1 and anti-nMOG IgG antibody titers. CONCLUSION: High serum immunoglobulin G titers to native myelin oligodendrocyte glycoprotein are found in a significant number of children affected by clinically isolated syndrome or acute disseminated encephalomyelitis. These antibodies are not related to the antibody response to Epstein-Barr virus.