The Multiple Sclerosis and the Role of Human Herpesvirus 6 in Its Progression

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Abstract : Background and Objective: Multiple sclerosis (MS) is an inflammatory autoimmune disease of the CNS that affects the myelination process in the central nervous system (CNS). Complex interactions of various "environmental or infectious" factors may act as triggers in autoimmunity and disease progression. The association between viral infections, especially Human Herpesvirus 6 (HHV-6), and MS is one potential cause that is not well understood. In this study, we aim to summarize the available data on HHV-6 infection in MS disease progression. Materials and Methods: For this study, the keywords "Multiple sclerosis", " Human Herpesvirus 6 ", and "central nervous system" in the databases PubMed and Google Scholar between 2017 and 2022 were searched, and 12 articles were chosen, studied, and analyzed. Results: HHV 6 tends towards TCD 4+ lymphocytes and enters the CNS due to the weakening of the blood-brain barrier due to inflammatory damage. Following the observation that the HHV-6 U24 protein has a seven amino acid sequence with myelin basic protein, which is one of the main components of the myelin sheath, it could cause a molecular mimicry mechanism followed by cross-reactivity. Reactivation of HHV-6 in the CNS can cause the release of proinflammatory cytokines, including TNF-α, leading to immune-mediated demyelination in patients with MS. Conclusion: There is a high expression of endogenous retroviruses during the course of MS, which indicates the relationship between HHV-6 and MS, and that this virus can play a role in the development of MS by creating an inflammatory state. Therefore, measures to modulate the expression of HHV-6 may be effective in reducing inflammatory processes in demyelinated areas of MS patients.

Keywords : multiple sclerosis, human herpesvirus 6, central nervous system, autoimmunity
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