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The Link of the Human Immunodeficiency Virus With the Progression of Multiple Sclerosis Disease

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Abstract : Multiple sclerosis (MS) is a progressive 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 immunodeficiency virus (HIV) and MS is one potential cause that is not well understood. This study aims to summarize the available data on human HIV infection in MS disease progression. In this study, the keywords "Multiple sclerosis", "Human immunodeficiency virus ", and "Central nervous system" in the databases PubMed, and Google Scholar between 2017 and 2022 were searched and 15 articles were chosen, studied, and analyzed. Revealed histologic signs of "MS-like illness" in the setting of HIV, which comprised widespread demyelination with reactive astrocytes, foamy macrophages, and perivascular infiltration with inflammatory cells, all of which are compatible with MS lesions. Human immunodeficiency virus causes dysfunction of the immune system, especially characterized by hypergammaglobulinemia and chronic activation of B cells. Activation of B cells leads to increased synthesis of immunoglobulin and finally to an excess of free light chains. Free light chains may be involved in autoimmune responses against neurons. There is a high expression of HIV during the course of MS, which indicates the relationship between HIV and MS, that this virus can play a role in the development of MS by creating an inflammatory state. Therefore, measures to modulate the expression of HIV may be effective in reducing inflammatory processes in demyelinated areas of MS patients.

Keywords : multiple sclerosis, human immunodeficiency virus, central nervous system, autoimmunity
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