

John Cunningham Virus Interaction with Multiple Sclerosis Disease Progression

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Abstract : Background and Objective: Multiple sclerosis (MS) is the most common inflammatory autoimmune disease of the central nervous system (CNS) that affects the myelination process in the CNS. Complex interactions of various "environmental or infectious" factors may act as triggers in autoimmunity and disease progression. The association between viral infections, especially the John Cunningham virus (JCV) and MS is one potential cause that is not well understood. This study aims to summarize the available data on JCV infection in MS disease progression. Materials and Methods: For this study, the keywords "Multiple sclerosis", " John Cunningham virus ", and "central nervous system" in the databases PubMed, Google Scholar, Sid, and MagIran between 2019 and 2022 were searched, and 12 articles were chosen, studied, and analyzed. Results: MS patients are candidates for natalizumab therapy, which inhibits lymphocyte migration and increases the risk of progressive multifocal leukoencephalopathy (PML), a rare lytic infection of glial cells caused by JCV. Oligodendrocytes may be the target of JCV infection in the central nervous system (CNS). Conclusion: There is a high expression of JCV during the natalizumab treatment period for MS patients, suggesting that the virus may play a role in the development of MS by inducing an inflammatory state. Therefore, it is necessary to evaluate anti-JCV antibody serum as an important risk factor for the development of PML before deciding on the treatment course for these patients.

Keywords : multiple sclerosis, John Cunningham virus, central nervous system, autoimmunity

Conference Title : ICMVM 2023 : International Conference on Molecular Virology and Microbiology

Conference Location : Istanbul, Türkiye

Conference Dates : February 16-17, 2023