

ORT_30 - Viral DNA frequency of Epstein-barr virus (EBV) and human Herpesvirus-6 (HHV-6) in a cohort of multiple sclerosis patients and blood donors in the state of Rio de Janeiro, Brazil

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Introduction: Multiple sclerosis (MS) is an autoimmune disease that affects the central nervous system (CNS) characterized by neuroinflammation, demyelination and neuronal damage. MS is the most common autoimmune disease affecting the CNS, affecting > 2.5 million people worldwide. The mean age of onset is 30 years and the prevalence according to geographic distribution and ethnicity. MS causes motor, sensory, autonomic, sensory and cognitive disability, with severe functional impairment in young individuals. The frequency of MS in Brazil ranges from 1.36/100,000 to 27.2/100,000 inhabitants. Although the etiology of MS remains uncertain, clinical, epidemiological and laboratory findings suggest that environmental factors, and in particular one or more infectious agents, may be involved in the pathogenesis of the disease. Approximately 85% of patients have relapsing-remitting MS (RRMS), while 10-15% have primary progressive MS (PPMS). EBV and HHV-6 belong to the Herpesviridae family, are DNA viruses surrounded by an icosahedral capsid and have an envelope consisting of a lipid bilayer of cellular origin and viral glycoproteins. Both are latent viruses responsible for infections that can reactivate over the years and are among the best established environmental risk factors in MS. EBV antigenic mimicry involving B cells has been implicated in MS risk factors, and the concomitance of EBV and latent HHV-6 infection has been linked to the inflammatory cascade of MS.

Objectives: To verify the possible role of EBV and HHV-6 as triggering or aggravating factors in RRMS and PPMS, we compared their frequency in blood samples collected from 166 MS patients and 166 blood donor samples as a group of healthy individuals.

Methodology: To analyze viral DNA was screened by real-time PCR (qPCR), patient data collection and statistical analysis.

Results: The frequency of EBV and HHV-6 in patients with MS was 1.8% (3/166) and 8.9% (14/166), respectively. Among positive patients, 100% (3/3) EBV and 85.8% (12/14) HHV-6 are RRMS and 14.4% (2/14) HHV-6 are PPMS. Detection of EBV was 1.2% (2/166) and HHV-6 was 0.6% (1/166) in blood donors. Regarding the clinical phenotype of these patients, incomplete multifocal myelitis and optic neuritis were the main CNS manifestations.

Conclusion: These are the first data on the concomitant infection of these viruses in patients with MS in Brazil. To date, our findings confirm a higher prevalence in women with MS and a high frequency of EBV and HHV-6 in patients with RRMS.

Keywords: Multiple Sclerosis, EBV, HHV-6