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Research Article

## The High Prevalence of the Varicella Zoster Virus in Patients with Relapsing-Remitting Multiple Sclerosis: A Case-Control Study in the North of Iran

*Saeideh Najafi,1,\* Masood Ghane,1 Shahrokh Yousefzadeh-Chabok,2 and Mehdi Amiri3*

*1Department of Microbiology, Tonekabon Branch, Islamic Azad University, Tonekabon, IR Iran*

*2Department of Neurosurgery, Guilan University of Medical Sciences, Rasht, IR Iran*

*3Department of Cell Biology and Anatomy, Schulich School of Medicine and Dentistry, Western University, London, Canada*

*\*Corresponding author: Saeideh Najafi, Department of Microbiology, Tonekabon Branch, Islamic Azad University, P. O. Box: 4684161167, Tonekabon, IR Iran. Tel: +98-1924272294, Fax: +98-1924274415, E-mail: [Saeedeh.najafi@yahoo.com](mailto:Saeedeh.najafi@yahoo.com)*

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### Abstract

**Background:** Multiple sclerosis (MS) is the most common neurological autoimmune disease, characterized by multifocal areas of inflammatory demyelination within the central nervous system. It has been hypothesized that the stimulation of the immune system by viral infections is the leading cause of MS among susceptible individuals.

**Objectives:** The aim of this study was to investigate the prevalence of the varicella zoster virus (VZV) in patients with relapsing-remitting multiple sclerosis.

**Patients and Methods:** Plasma and peripheral blood mononuclear cells (PBMCs) collected from MS patients (n = 82) and controls (n= 89) were screened for the presence of anti-VZV antibodies and VZV DNA by the ELISA and PCR methods. DNA was extracted from all samples, and VZV infection was examined by the PCR technique. Statistical analysis was used to investigate the frequency of the virus in MS patients and a healthy control group.

**Results:** Of all the MS patients, 78 (95.1%) and 21 (25.6%) were positive for anti-VZV and VZV DNA, respectively. Statistical analysis of the PCR results showed a significant correlation between the abundance of VZV and MS disease ( $P < 0.001$ ).

However, there was no significant correlation between the abundance of anti-VZV antibodies and MS disease by the ELISA method.

**Conclusions:** These results support the hypothesis that VZV may contribute to MS in establishing a systemic infection process and inducing an immune response.

**Keywords:** Multiple Sclerosis, Varicella Zoster Virus, Relapsing-Remitting Multiple Sclerosis