



BRIEF REVIEW

What? Is Epstein–Barr Virus Infection Linked to Multiple Sclerosis?

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Multiple sclerosis (MS) is a disease of the central nervous system that chronically affects nearly one million Americans. MS is most prevalent in women ages 20–40. Patients with a family history of MS are at a higher risk of developing this ailment.[1]

In persons having this demyelinating disease, the immune system damages the brain and spinal cord myelin sheaths, resulting in episodic neurological attacks that are separated in time and by anatomical space.[2] Presentations include weakness, lethargy, pain, visual impairment, and impaired coordination. Various environmental and genetic factors are associated with its pathophysiology.[3]

Multiple sclerosis might be induced by a viral infection. Epstein–Barr virus (EBV) is a common virus of the herpes family. Infections are usually transmitted via bodily fluids, but airborne contagion can follow sneezing or coughing. EBV infestations have been linked to MS epidemiologically, but the relationship remains unclear.[2] EBV affects over 90% of people during their lives and inactively exists in B-lymphocytes.[4]

Might there be links between viral infections and patients evidencing multiple sclerosis? In blood collected between 1993 and 2013 from >10 million military personnel, EBV was detected in all except one of 801 individuals who developed MS.[3]

Viral disease triggers were documented in blood samples from subjects with MS after assaying for Epstein–Barr nuclear antigen 1 (EBNA1) antibodies; their presence is associated with latent EBV infections. Between 20 and 25% of them evidenced proteins in their blood that bind to EBNA1 and glial cell adhesion molecules; a protein produced in the central nervous system. Immunization with EBNA1 attenuated the disease course of MS in mice. Based on this evidence, it is possible that there is a connection between Epstein–Barr virus and people developing multiple sclerosis.[2]

Whether an EBV vaccine could prevent demyelination remains unknown. Research could test whether an Epstein–Barr virus vaccination would immunize against MS. It would be a great scientific advance if this could mitigate the dysfunction of multiple sclerosis.

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