

Comprehensive review of tropical endemic infections and demyelinating diseases of the central nervous system

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Abstract

Background: Although more prevalent in higher latitudes, Multiple Sclerosis (MS) also affects individuals who live in tropical areas. Neuromyelitis Optica Spectrum Disorders (NMOSD), on the other hand, is more prevalent in tropical regions. For both demyelinating conditions, endemic tropical infections may be a serious complicating factor.

Methods: This was a comprehensive review carried out by a panel of specialists. The most prevalent endemic infections found between latitudes 23°27' (Tropic of Cancer) and -23°27' (Tropic of Capricorn) were , tuberculosis, Hansen's disease, syphilis, leishmaniasis, leptospirosis, Human Immunodeficiency Virus (HIV), Human T-Lymphotropic Virus (HTLV), arboviruses and coronaviruses.

Results: Each of these infections was discussed in detail regarding the risk of affecting the clinical course of MS/NMOSD and the potential risks for individuals receiving immunomodulatory or immunosuppressive therapy.

Conclusion: Differential diagnoses between MS/NMOSD and the above-cited tropical infections are essential in endemic areas. Should the patient develop neurological symptoms during MS/NMOSD treatment, tropical infections need to form part of the differential diagnosis work-up when the patient lives in endemic areas. The risk of tropical infections in patients with MS/NMOSD needs to be taken into consideration regarding the choice of therapy. At present, most clinical trials, guidelines, and protocols have been developed and designed for high-latitude areas. Unfortunately, they do not consider potential infections that are prevalent in the tropical and equatorial zones.

Endemic infections have been an issue throughout history. An important cause of death for all age groups, viruses, bacteria, parasites, and fungus continue to be a problem in the 21st century. The recent coronavirus COVID-19 pandemic has just confirmed this. For patients with autoimmune diseases, infections can mean an even higher threat of morbidity and mortality. For patients with Multiple Sclerosis (MS) and Neuromyelitis Optica Spectrum Disorders (NMOSD) the outcomes of infections may have additional negative influences. For a long time, MS was considered a disease of high latitudes of the Northern hemisphere. It is now well-known that there are many patients with MS in tropical and equatorial regions of the globe. While MS itself may be a complicating factor in infections, MS pharmacological therapy adds to the challenge. Some tropical infections may simulate a bout of MS and immunosuppressive drugs are an added confounding factor. NMOSD is a chronic neuroinflammatory demyelinating process primarily targeting the optic nerves, spinal cord, and brain. Each bout of the disease tends to be aggressive and leave disabling sequelae [8]. In addition, NMOSD does not have a specific treatment and many patients are treated with continuous unspecific immunosuppressive drugs. NMOSD is more prevalent in Afro-descendants, Latin-Americans, and Asians. In general, NMOSD is often found in lower latitudes and developing countries. Taking these parameters into consideration, patients with NMOSD seem to be under higher risk of complications from infectious diseases

Biography

It have more than 15 years of experience in medical and Pharma (incl. targeted therapy or immunotherapy) as well as other fields.