Letter to the Editors

Post-Lyme Syndrome–Associated Polyneuropathy Treated With Immune Immunoglobulin and a Luteolin-Containing Formulation

To the Editors:

O utbreaks of transient erythema and migratory seronegative arthritis in the town of Lyme in Connecticut had puzzled physicians until Dr Alan Steere, at Yale University School of Medicine, then discovered that it was due to an infection by the spirochete Borrelia burgdorferi transmitted by female ticks.1,2

Lyme disease affects 10 to 100 of 100,000 individuals per year depending on the study and the region.3–5 Prompt administration of tetracyclines or lactam antibiotics treats the infection and may halt the associated symptoms.6 However, during the years, it became apparent that many patients continue to experience lingering neurologic and musculoskeletal symptoms of unknown etiology that have eluded diagnosis and therapy.7,8 Repeated courses of antibiotics for prolonged treatment periods have proven to be unsuccessful. The Centers for Disease Control and Prevention has estimated that 10% to 20% may experience “posttreatment Lyme disease (PTLD) syndrome.”8

Responses from 2024 patients indicated that it took them visiting at least 7 physicians and more than 10 years before proper diagnosis was made.9 One study estimated the annual Lyme-associated cost to be approximately 25 million Euros in Germany.9 Another study compared 52,795 individuals treated for Lyme disease with 263,975 matched controls and found that those with PTLD were associated with $3798 higher per infusion every 25 days. No adverse effects were reported.

Spirichete components have been reported to stimulate microglia10–12 and induce the expression of toll-like receptors.13 Microglia communicate with mast cells,14 which have recently emerged as master immunoregulatory cells that participate in allergies, mastocytosis, and mast cell activation,15 as well as other conditions or symptoms that involve neuroinflammation, associated with post-Lyme syndrome.21 Borrelia stimulates mast cells,22,23 which also express toll-like receptors.24 The neutropetide substance P augments Borrelia-induced prostaglandin E2 from murine microglia25 and stimulates mast cells.26 In fact, mast cells have recently been linked to disruption of the blood–brain barrier27 and to brain inflammation.28 Efforts to treat post–Lyme syndrome have proven futile. Intravenous immunoglobulin has been shown to improve neurologic symptoms.29–31 Moreover, certain naturally occurring flavonoids with anti-inflammatory properties32,33 have been increasingly used in neurologic diseases including “brain fog.”34 Luteolin inhibits mast cells34 and microglia.35 Luteolin is safe.36 In fact, a different luteolin-containing formulation (NeuroProtek) was recently shown to improve communication and sociability in children with autism.37 Interestingly, luteolin also improves cognition and memory in animal models.38,39

AUTHOR DISCLOSURE INFORMATION

T. C. T. is the developer of BrainGain and NeuroProtek, which have been trademarked in the United States. He has also been awarded US patent no. 8,268,365 — “Anti-inflammatory compositions for treating brain inflammation.”

The authors declare they have no other competing interests.

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REFERENCES


