

The Persistent Lyme Disease: “True Chronic Lyme Disease” rather than “Post-treatment Lyme Disease Syndrome”

Sir,

A controversy continues regarding the reality of a chronic form of Lyme disease. Chronic Lyme disease can present as a “post-Lyme syndrome” explained by inflammatory and immunological phenomena, or as a genuine “chronic form” attributable to the persistence of the bacteria despite proper antibiotic therapy as per the current guidelines. The current guidelines however may not be so appropriate in the latter case.

The case referenced is of a 40-year-old patient, a hunting gard, regularly suffering from multiple tick bites. He began experiencing a lack of energy with diffuse palate of pains (cramps, stiffness, and neuropathic burning pain), tremor and fluctuating migrating arthralgia that evolved over a 3-month period. A first Lyme serology proved positive in Western blot. A second Lyme serology, performed a few months later, was negative but showed the presence of IgM antibodies below the threshold of positivity: OspCBss(0,6), OspCBaf (0, 7), OspCBag (0, 5) and OspCBspp (0, 6).

A 21-day treatment of ceftriaxone (2 g/day) resulted in a spectacular improvement in his overall state of health. Yet, despite the improvement, there remained persistent bouts of moderate asthenia with episodes of arthralgia. Consequentially, two new antibiotic treatments were administered: ceftriaxone (2 g/day) for 15 days and doxycycline (100 mg twice a day) for 1 month. His symptoms disappeared almost completely. However, his symptoms gradually reappeared. A new approach with antibiotics was initiated: ceftriaxone (2 g/day for 1 month) followed by doxycycline (200 mg twice a day) associated with hydroxychloroquine 200 (once a day). Two months later, after a quick improvement, the patient exhibited no symptoms. Five months later, while the treatment was continued, the patient was still asymptomatic.

The clinical improvements and setbacks corresponding strictly to the administration and interruption of antibiotics, and the final remission are in favor of a chronic persistence of *Borrelia*. Interestingly, the persistence of *Borrelia* infection, despite a proper antibiotherapy, has been well described in literature.^[1] It would be due to the existence of the cystic shapes of *Borrelia* resisting to antibiotics and the creation of extracellular (matrices) biofilms protecting the bacteria.^[1] Bacteria that grow as a biofilms are indeed protected from killing by antibiotics.

In patients presenting with a chronic form, the interferon-gamma response is not followed by an increase in IL-4, thus suggesting both a persistent Th1 response and a deficiency in the Th2 response.^[2] *Borreliosis* may thus induce immunosuppression with a lack of humoral response and long-term immunity.^[3] False-negative serological results could be attributed to a deficiency of antibody production. As a matter of fact, Leeflang *et al.* reported a poor sensitivity of the enzyme immunoassay/immunoblot of 0.77 (95% confidence interval: 0.67–0.85) in the diagnosis of neuroborreliosis.^[4] A meta-analysis of test accuracy reported a sensitivity of only 59.5%, varying from 30.6%–86.2%.^[5] Antibiotic testing is necessary to reach Lyme disease final diagnosis, namely in patients presenting with negative tests and a suggestive clinical presentation.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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