

Clinical Pearls

Lyme borreliosis presenting as severe back pain after Shinrin-Yoku (forest bathing) in southern Germany

Thomas Weitzel¹ , MD^{1,2,3,*}, Inia Perez, MD⁴ and Lorena Porte, MD²

¹ Programa Medicina de Viajero, Clínica Alemana, Facultad de Medicina Clínica Alemana, Universidad del Desarrollo, Santiago, Chile, ² Laboratorio Clínico, Clínica Alemana, Facultad de Medicina Clínica Alemana, Universidad del Desarrollo, Santiago, Chile, ³ Instituto de Ciencias e Innovación en Medicina (ICIM), Facultad de Medicina Clínica Alemana, Universidad del Desarrollo, Santiago, Chile and ⁴ Servicio de Infectología, Clínica Alemana, Facultad de Medicina Clínica Alemana, Universidad del Desarrollo, Santiago, Chile

*To whom correspondence should be addressed. Email: thomas.weitzel@gmail.com

Submitted 9 February 2021; Revised 17 February 2021; Accepted 18 February 2021

Key words: Travel medicine, vector-borne diseases, tick-borne infections, *Borrelia burgdorferi* complex, neuroborreliosis, Bannwarth syndrome, low back pain

Travel medicine traditionally intends to prevent and manage imported infections in inhabitants from developed nations visiting the global South. This unidirectional view creates a gap, which has recently been recognized as an emerging topic in travel medicine, since nowadays emerging economies contribute significantly to international travel.¹ Our case illustrates the diagnostic challenges of a patient in Chile presenting acute low back pain after returning from a trip to Germany.

A 58-year-old otherwise healthy German woman, living in Chile since 8 years, attended Clínica Alemana with a 1-week history of low back pain, radiating into the left thigh, accompanied by headache and fatigue. She was diagnosed with acute lumbar syndrome and treated with non-steroidal anti-inflammatory drugs. After 2 days, she consulted again with persisting severe pain, especially nocturnal, now radiating down both legs. Anamnestically, 3 weeks earlier she had returned from a 2-week visit to Germany. Shortly after, she had noticed a slightly pruritic rash in her left popliteal space (Figure 1A) and received 5-days of treatment with oral cefadroxil for intertrigo with secondary cellulitis. Further history revealed she had participated in a Shinrin-Yoku (forest bathing) mindfulness practice in Southern Germany, during which participants spent ~1-h sitting on the forest floor.

Due to the outdoor exposure and subsequent skin lesion, borreliosis serology was performed, revealing positive IgM and IgG ELISA screening test (Virion-Serion, Würzburg, Germany). Confirmatory immunoblot testing (Mikrogen, Neuried, Germany) demonstrated positive IgM and indeterminate IgG results (Fig. 1B), compatible with acute borreliosis. The patient was

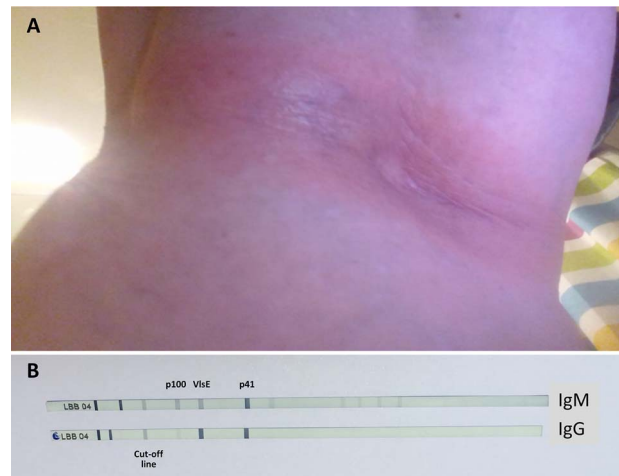


Figure 1. (A) Erythematous rash of the left popliteal space of patient returning from Germany. (B) *Borrelia burgdorferi* s.l. recombinant immunoblot was IgM positive with three bands (p100, VlsE and, p41); IgG showed an indeterminate result with two bands (VlsE and p41)

hospitalized; cerebrospinal fluid showed lymphocytic pleocytosis (15/μl) and slightly elevated total protein (53 mg/dl); additional antibody index testing (CSF:serum) was not available. With the diagnosis of lymphocytic meningoradiculitis (Bannwarth syndrome), IV ceftriaxone (2 g qd) was initiated and continued for 2 weeks. The patient experienced a quick recovery without further sequelae.

Bannwarth (or Garin-Bujadoux-Bannwarth) syndrome is an early manifestation of Lyme neuroborreliosis, typically caused by *Borrelia garinii* in Europe, which clinically presents as severely painful meningoradiculitis.^{2,3} For physicians in the Southern Hemisphere, the presented case might offer several learning points. Lyme borreliosis has a variety of clinical manifestations including dermatological, neurological, musculoskeletal and cardiac problems.² In sick travelers returning from the Northern Hemisphere, a history of potential tick exposure is important, since bites are painless and often go unnoticed. Physical exams should include typical tick bite locations, including popliteal space, inguinal region and intergluteal cleft. First generation cephalosporins, often used for empirical cellulitis treatment, are inefficient to eliminate *Borrelia* spp. and to prevent neuroinvasive disease.⁴ Bannwarth syndrome is easily misdiagnosed as common lumbago; however, it has a good prognosis if treated correctly.⁵

Although Lyme borreliosis has rarely been recognized as a travel-associated disease and is probably underrepresented in institutions specialized in tropical and travel medicine, it was diagnosed in 4% of sick returnees from the USA in a recent analysis of the GeoSentinel network.⁶ Travelers visiting endemic regions should be informed about Lyme borreliosis and advised to adhere to tick bite prevention measures such as adequate clothing, permethrin treatment of textiles and regular tick checks during and after outdoor activities.

Authors' contributions

T.W. wrote the original draft and treated the patient. T.W. and L.P. contributed to the laboratory diagnosis and I.P. treated the

patient and contributed to data acquisition. All authors reviewed and agreed on the final manuscript.

Funding

None declared.

Conflict of interest

The authors have declared no conflicts of interest.

References

1. Chen LH, Leder K, Wilson ME. Closing the gap in travel medicine: reframing research questions for a new era. *J Travel Med* 2017; **24**. doi: [10.1093/jtm/tax001](https://doi.org/10.1093/jtm/tax001).
2. Steere AC, Strle F, Wormser GP *et al.* Lyme borreliosis. *Nat Rev Dis Primers* 2016; **2**:16090.
3. Rauer S, Kastenbauer S, Hofmann H *et al.* Guidelines for diagnosis and treatment in neurology - Lyme neuroborreliosis. *Ger Med Sci* 2020; **18**. doi: [10.3205/000279](https://doi.org/10.3205/000279).
4. Nowakowski J, McKenna D, Nadelman RB *et al.* Failure of treatment with cephalexin for Lyme disease. *Arch Fam Med* 2000; **9**: 563–7.
5. Ogrinc K, Lusa L, Lotrič-Furlan S *et al.* Course and outcome of early European Lyme neuroborreliosis (Bannwarth syndrome): clinical and laboratory findings. *Clin Infect Dis* 2016; **63**:346–53.
6. Stoney RJ, Esposito DH, Kozarsky P *et al.* Infectious diseases acquired by international travellers visiting the USA. *J Travel Med* 2018; **25**:1–7.