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Lyme Disease in Canada with Possible Transmission by an Insect

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Summary

The first documented case of Lyme disease to have originated in Canada is presented. A 51-year old French female nurse visited Quebec, Canada from 20 July to 5 August, 1984 and contracted Lyme disease. She reported an insect bite on 3 August 1984 on the back of her knee with erythema chronicum migrans appearing at the site of the bite on 5 August 1984. The patient presented with meningeal lymphocytic reaction near the end of September, 1984. Total Ig serum titers in indirect immunofluorescence tests on 1 October 1984, 10 October 1984, and 10 January 1985 were 1/512, 1/2048 and 1/16,384, respectively.

Lyme disease or related diseases have been documented in North America, Europe, and Australia (7). Although prevalent in northeastern, midwestern and western areas of the United States (10), this disease has not been reported in Canada. We report herein the first case of Lyme disease to have been contracted in Canada. Epidemiological evidence suggests that the vector was an arthropod other than a tick.

A 53-year old French woman, a nurse by profession, with ankylosing spondylarthritis but otherwise in apparently good health visited Quebec, Canada from 22 July to 5 August, 1984. While boarding a bus on 3 August in the region of Chicoutimi, Quebec, on the banks of the Shipshaw hydroelectric dam near Jonquiere, she experienced a painful bite through her cotton slacks on the back of her knee. After taking her seat on the bus, she examined her leg where she had been bitten but saw no attached arthropod.

The woman noticed an erythema several cm in diameter surrounding the bite on 5 August. The erythema spread around her knee until it completely encircled it on 14 August. At that time, the lesion presented with central clearing leaving a 4-5 mm wide purple to reddish halo on its outer perimeter. Thereafter, the lesion stabilized, faded and by 22 August had disappeared, though the bite mark remained until 7 September.

The patient entered the Hospital Center at Rennes, France, near the end of September 1984 with recurring pains in her right buttock, thigh and leg. Pain was most acute at night and was described as "electric". The patient complained of headache, fatigue and presented with meningeal lymphocytic reaction. Electrocardiogram analysis was normal. One month later, the patient still complained of fatigue, mild arthritic and muscular pain. Periods of fatigue and vertebral articular pain were persisting the last time the patient was examined on 10 January 1985.

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Bloods drawn during the course of illness were tested for antibody to *Cryptococcus neoformans*, *Borrelia burgdorferi*, rickettsiae (*Rickettsia mooseri*, *R. rickettsii* and *C. burnetti*) and a variety of viruses (e. g. Eyach (Orbivirus), Soldado, Soldado-like, Avalon (Nairovirus), Alphavirus, Flavivirus, Bunyavirus, and several within the Uukuvirus group). All but the *B. burgdorferi* serology tests were negative. Indirect fluorescent antibody (IFA) titers of sera drawn 1 October 1984, 30 October 1984 and 10 January 1985 against *B. burgdorferi* were 1/512, 1/2048, 1/16,384, respectively.

Anti-inflammatory drugs for arthralgia that were within the framework of treatment for ankylosing spondylarthritis were administered initially. The antibiotic, Oracilline® (phenoxymethylpenicilline) was administered per os for 10 days at the rate of 2 million units per day after the diagnosis of Lyme disease was made during the first week of January 1985.

Lyme disease is an illness that often occurs in stages (11). Typically it begins with erythema chronicum migrans (ECM). Many patients later develop more serious manifestations such as neurologic and arthritic abnormalities. This patient developed the classical ECM and later presented with peripheral radiculoneuropathy. Serologic findings with titers $\geq 1/512$ in IFA tests confirmed the diagnosis as Lyme disease (6).

Lyme disease or related disorders are prevalent in many parts of Europe including France (7). However, since this patient remembers being bitten in Canada by an arthropod at the site where the ECM developed, it does indeed appear that the patient contracted the disease in Canada where it previously has been unreported.

Ixodes dammini is the primary vector of *B. burgdorferi* (5), the causative agent of Lyme disease (3), in northeastern United States, though this or similar appearing borreliae have been isolated or detected in other ticks as well (1, 2, 8). Although this tick does occur in southern Ontario, Canada (12), it has not yet been reported from Quebec, Canada (9), though birds could bring *I. dammini* into this province (2). However, since the patient claims that she was bitten through her slacks by an insect at the site where the ECM developed and not bitten by a tick, and since insects have been suggested as vectors in Europe (4) and borreliae have been detected in insects in a Lyme disease focus (2), a biting insect may well have been the vector in this instance.

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