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Tick bites in the Lyme light

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Tick bites in the Lyme light

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A six-year-old boy presented to a walk-in clinic with a four-day history of an isolated, painless, nonpruritic, red rash with gradually expanding borders on his right arm. There was no history of fever, headache, myalgia, joint symptoms, palpitations, fainting or facial weakness. His family had returned two days previously from a three-week camping trip in the Point Pelee area of southern Ontario. During the trip, the patient had worn shorts and T-shirts most of the time, and rarely applied insect repellents. His examination was normal except the exanthem on his arm, which had a 'bull's eye' appearance and measured 5 cm in diameter (Figure 1). He received a three-week course of amoxicillin and the rash was noted to gradually disappear over the period of therapy. Serological laboratory testing for Lyme disease was negative. He improved during follow-up, with resolution of the rash and no occurrence of neurological or musculoskeletal symptoms.

LEARNING POINTS

Lyme disease may present as any of the following:

- **Early localized disease (ELD)** is characterized by the enlarging, often nonpruritic erythema migrans (EM) skin rash and occurs in 70% of cases (1). The rash may have a bull's eye appearance, similar to the present case. Other features may include fever, arthralgia and localized lymphadenitis. Diagnosis of ELD is clinical. Serological testing is not recommended for diagnosis at this stage; <30% of individuals with this early manifestation of Lyme disease have positive serology. Lyme serology may also be negative if effective treatment is initiated early in the course.
- **Early disseminated disease** may occur or be the sequelae of untreated ELD. Possible manifestations are: multiple EM, arthritis, meningitis, VII nerve palsy, generalized lymphadenopathy and, rarely, heart block. Two-tiered serological testing (ELISA followed by Western blot) (2) and/or polymerase chain reaction testing or culture are required for confirmation; cerebrospinal fluid testing has diagnostic value in some neurological cases.
- **Late disease** usually manifests as large joint arthritis, most often affecting the knees, and less frequently with neurological manifestations. Serological testing is recommended and is at its most sensitive at this stage.
- Lyme disease should be considered in children who reside in or have visited Lyme disease risk areas, such as Point Pelee (Ontario), where infected tick vectors are found (1) and present with EM within 30 days of potential exposure. Note that patients often do not recall a tick bite.
- The oral drug of choice is doxycycline if the child is >8 years of age, and amoxicillin in younger children. Doxycycline is not recommended for children <8 years of age because its use is associated with discolouration of the teeth. Treatment duration ranges from 14 to 28 days and is guided by the clinical features. Intravenous penicillin or ceftriaxone is used for more serious manifestations of disseminated Lyme disease such as meningitis. Details regarding treatment of children with Lyme disease are provided in a recent Canadian Paediatric Society practice point (3).
- Lyme disease is an important reportable tick-borne zoonosis caused by the spirochete *Borrelia burgdorferi* and transmitted in Canada by blacklegged ticks (*Ixodes scapularis* or *Ixodes pacificus*). Lyme disease risk areas in Canada include southern regions of the provinces of British Columbia, Manitoba, Quebec, as well as southern and eastern Ontario, and parts of New Brunswick and Nova Scotia (1). Cases reported to date in



Figure 1 Erythema migrans. In this case, the erythema migrans skin rash, which is the typical manifestation of early Lyme disease, has a 'bull's eye' form. ©All Rights Reserved. Lyme Disease and other tick-borne diseases: Information for the healthcare professionals. Public Health Agency of Canada. Reproduced with permission from the Minister of Health, 2015.

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the Canadian Paediatric Surveillance Program (CPSP) study, launched in July 2014, have occurred in Nova Scotia (62%), Ontario (29%) and Quebec (9%).

- Disease incidence peaks in summer, when outdoor activities coincide with the season during which ticks are active. Those who live in or visit Lyme disease risk areas are most likely to be infected, because it is in these locations that Canadians are most likely to be bitten by infected ticks. The disease most often affects children five to 14 years of age (1). Initial data from the national CPSP study identified that 64% of reported cases presented in July or August and occurred in children at a median age of presentation of seven years (range one to 12 years).
- Individuals participating in outdoor activities, or living and working in risk areas, should be advised about important preventive measures in forests or overgrown areas. These include

wearing long-sleeved clothing and footwear, using insect/tick repellents, showering or bathing within 2 h of being outdoors to wash away loose ticks, and performing regular daily checks to find and promptly remove attached ticks. It is not practical nor recommended to test ticks for infection as part of routine management. Prophylaxis is not routinely recommended.

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The Canadian Paediatric Surveillance Program (CPSP) is a joint project of the Canadian Paediatric Society and the Public Health Agency of Canada, which undertakes the surveillance of rare diseases and conditions in children and youth. For more information, visit our website at www.cpsp.cps.ca.