THE CASE

A 31-year-old woman presented to her obstetrician’s office at 16 weeks’ gestation with a 2-day history of low-grade fever and an erythematous rash measuring 1 x 4 cm on her right groin. She had a medical history of a penicillin allergy (urticaria) and her outdoor activities included gardening and picnicking.

We suspected that she was experiencing an allergic reaction and recommended an anti-histamine (diphenhydramine). The patient returned 4 days later with new symptoms including headache, photophobia, neck pain, unilateral large joint pain, and periorbital cellulitis, as well as expansion of her rash. She was afebrile and an examination revealed that the 1 x 4 cm rash on her groin had grown; it was now a demarcated erythematous rash with faint central clearing measuring 5 x 8 cm. Right periorbital erythema and nuchal rigidity were also noted.

Because of her expanding rash and nuchal rigidity, we suspected Lyme meningitis and we referred her to the emergency department. Within 24 hours, the rash had spread to her abdomen, thigh, and wrist, and was consistent with erythema migrans.

Laboratory evaluation revealed an increased number of white blood cells (13.5 million cells/mcL; normal range 4.5-11.0 million cells/mcL), and an increased number of neutrophils (10.8 million cells/mcL; normal range 1.8-8.0 million cells/mcL), indicating leukocytosis with a left shift. Lab tests also revealed a low hemoglobin level (10.6 g/dL; normal range 12-16 g/dL) and a mean corpuscular volume of 85.6 fL/red cell (normal range 80-100 fL/red cell), indicating microcytic anemia. A lumbar puncture was negative for disseminated Lyme disease by Gram stain, culture, and polymerase chain reaction.

THE DIAGNOSIS

A diagnosis of Lyme disease was confirmed with a positive Lyme titer serology via an enzyme-linked immunosorbent assay. The rash and other symptoms responded promptly to intravenous ceftriaxone 2 g, and the patient was discharged home on oral cefuroxime 500 mg bid for 14 days.

DISCUSSION

Lyme disease is the most common vector-borne illness in the United States, concentrated heavily in the Northeast and upper Midwest. The most recent information released by the Centers for Disease Control and Prevention (CDC) lists Vermont, Maine, Pennsylvania, Rhode Island, Connecticut, New Jersey, Massachusetts, Delaware, New Hampshire, and Minnesota as the states with the highest incidence of Lyme disease.

The number of reported cases in the United States has increased over the past 2 decades, from approximately 11,000 in 1995 to about 28,000 in 2015. Over the past year, we have seen several cases of Lyme disease in the obstetric population of our own practice.

Prompt treatment is crucial. Pregnant women who are acutely infected with Borrelia burgdorferi (the primary cause of Lyme disease) and do not receive treatment have experi-
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enced multiple adverse pregnancy outcomes, including preterm delivery, infants born with rash, and stillbirth. Additional concern exists for fetal cardiac anomalies, with data showing that there are twice as many cardiac defects in children born to mothers residing in endemic regions.5

What animal studies have taught us about Lyme disease
The potential causal relationship between Lyme disease and fetal demise was first studied in 2007. This case report involved the stillbirth of a full-term baby from an acutely infected woman who did not receive treatment. She experienced erythema multiforme 6 weeks prior to delivery.6

The vast majority of research on Lyme disease in pregnancy comes from work with mice and dogs. These studies confirmed that acute infection with Lyme disease is associated with an increased risk of adverse fetal outcomes, specifically fetal death.7 Silver et al further researched the association using murine models in the 1980s. They found that fetal death occurred in 12% of acutely infected mice, compared with none of the mice that were chronically infected.7

In 2010, Lakos and Solymosi examined the effects of Lyme disease on pregnancy outcomes in acutely infected women. Seven out of 95 pregnant women acutely infected with B. burgdorferi experienced fetal demise, further supporting the association seen in animal experiments.8

Treating pregnant patients
Doxycycline and tetracycline, which are routinely used to treat Lyme disease, are not appropriate in the obstetric population. The CDC recommends up to a 3-week course of antibiotics; the standard regimen is amoxicillin 500 mg by mouth tid. For women who are allergic to penicillin, as was the case with our patient, cefuroxime 500 mg by mouth bid is the treatment of choice.9

Our patient underwent a detailed ultrasound at 21 weeks, which revealed normal fetal anatomy and no evidence of cardiac malformations. The remainder of her pregnancy was uncomplicated, and she gave birth vaginally at 41 weeks to a baby boy weighing 3700 g.

THE TAKEAWAY
There is a need to increase awareness of Lyme disease in pregnancy on a national level. It is the responsibility of every practitioner caring for obstetric patients in endemic regions to address new-onset rash promptly. There have been cases of women who experienced erythema migrans and arthralgias after exposure to a tick bite, later delivering infants with cardiac anomalies such as atrial and ventricular septal defects.10 In obstetric patients acutely infected during the first trimester, a fetal echocardiogram is reasonable, given the demonstrated high potential for fetal cardiac anomalies.

Preventing adverse fetal outcomes requires early treatment with antibiotics. The CDC maintains that there have been no life-threatening adverse fetal effects from Lyme disease seen in women who are appropriately treated, as well as no transmission of Lyme disease in the breast milk of lactating mothers.9

References