

Cat Got Your Spleen? Hepatosplenic *Bartonella* Infection



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PRESENTATION

The patient's collection of pets offered a key clue to the source of his vague symptoms. A 63-year-old goat herder presented after three weeks of recurrent intermittent fevers and fatigue. He also reported a 22-pound unintentional weight loss and mild headaches and arthralgias. He had no myalgias, rashes, lymphadenopathy, abdominal pain, conjunctivitis, or seizures. His past medical history was notable only for latent tuberculosis, which had been treated 30 years earlier with a 9-month course of isoniazid. He owned numerous dogs and semi-domesticated cats. During the previous year, his menagerie had included at least 18 kittens, but he did not recall any recent animal bites or scratches.

ASSESSMENT

On presentation, the patient was febrile with a temperature of 102.2° F (39° C). Otherwise, he was hemodynamically stable with a blood pressure of 130/84 mmHg and a pulse of 68 beats per minute. His respiratory rate was 18 breaths per minute with an oxygen saturation of 95% while breathing room air. He appeared comfortable and was in no apparent distress. His physical examination was notable only for pertinent negatives, including a lack of hepatosplenomegaly, lymphadenopathy, rashes, or cardiac murmurs.

Results from the patient's liver chemistries and basic metabolic panel were within normal limits. His white blood cell count was 12.5×10^3 cells/ μ L with 90% neutrophils. His erythrocyte sedimentation rate and C-reactive protein level were mildly elevated. Cerebrospinal fluid cell counts,

protein, and glucose were normal. Blood and cerebrospinal fluid cultures were negative, as were a human immunodeficiency virus antibody test and a QuantiFERON-TB Gold test for *Mycobacterium tuberculosis*.

Imaging was ordered as part of the patient's work-up for fever of unknown origin. Magnetic resonance imaging of the head and a transthoracic echocardiogram were unremarkable. Computed tomography (CT) of the chest, abdomen, and pelvis revealed multiple, hypodense hepatic and splenic lesions (Figure 1). The largest measured 1.3 cm. Liver biopsy demonstrated a mixed inflammatory infiltrate with giant cell histiocytes but no well-formed granulomas (Figure 2). Samples were examined for fungal forms with Grocott's methenamine silver stain and periodic acid-Schiff stain; for bacteria, with acid-fast and Steiner staining. All were negative. Specimens examined with viral stains were negative for cytomegalovirus and herpes simplex virus 1 and 2.

DIAGNOSIS

After several days of hospital observation, marked by recurrent fevers, the patient was diagnosed with *Bartonella* infection when *Bartonella henselae* IgG and IgM titers returned positive at >1:1024 and >1:320, respectively. Other serologic tests for species of *Histoplasma*, *Coccidioides*, *Blastomyces*, *Brucella*, and *Cryptococcus* were negative. Tests for *Coxiella burnetii*, *Bartonella quintana*, cytomegalovirus, Epstein-Barr virus, and herpes simplex virus 1 and 2 were also negative.

Despite the patient's atypical presentation, his known exposures, clinical course and markedly positive serologies supported a diagnosis of hepatosplenic cat-scratch disease. Most commonly caused by the intraerythrocytic bacteria *Bartonella henselae*, cat-scratch disease is a relatively uncommon illness with an annual cumulative incidence of 3.7/100,000 people.^{1,2} Children younger than 10 years old predominate among those infected.¹ The cat flea, *Ctenocephalides felis*, which plays a role in cat-to-cat transmission,

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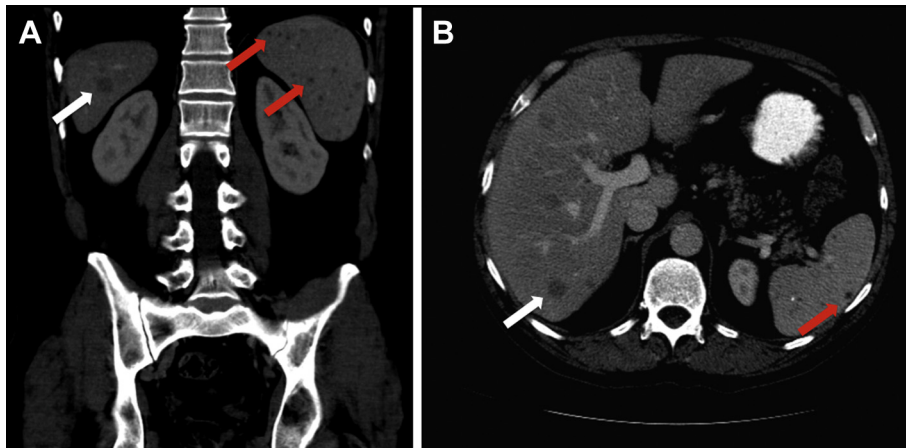


Figure 1 Computed tomography (CT) of the chest, abdomen, and pelvis was obtained. (A) Coronal views disclosed numerous hypodense lesions in the liver (white arrows) and spleen (red arrows). (B) Transverse views showed the same. The largest lesion measured 1.3 cm (white arrows).

serves as the major arthropod vector for *B. henselae*. Transmission to humans is mainly via a cat scratch or bite, especially from kittens and outdoor cats.²

Approximately 90-95% of patients with cat-scratch disease present with the typical self-limited regional lymphadenitis.³ Patients older than 60 years are more likely to present atypically, with up to 25% lacking lymphadenitis.³ Other uncharacteristic presentations seen

in this population are endocarditis, encephalitis, or fever of unknown origin.³ Rarely, infection with *Bartonella* species disseminates to other organ systems, including the liver and the spleen (Figure 3).² Hepatic and splenic involvement occur with similar frequency across age groups.³ Immunocompromised patients may have more fulminant presentations, including multisystem bacteremia with dermatologic involvement and bacillary angiomatosis.²

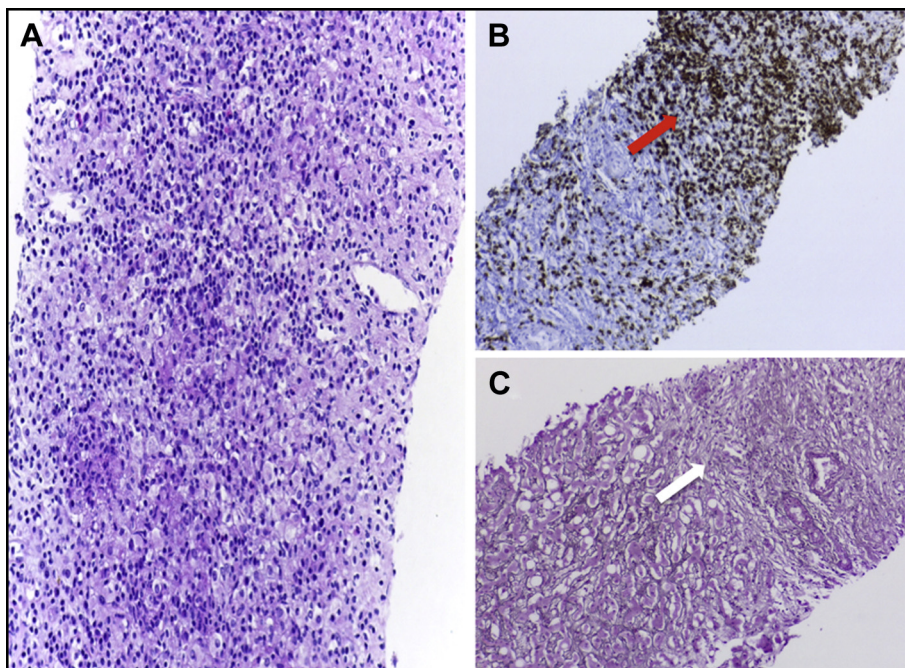


Figure 2 A liver biopsy was performed. (A) The sample was examined with hematoxylin and eosin stain. (B) CD3 antibody stain was also applied. (C) Reticulin staining was done as well. Hematoxylin and eosin and CD3 antibody stains revealed a mixed inflammatory infiltrate comprised predominantly of T cells (red arrow). Loss of hepatic architecture (white arrow) was noted with reticulin stain.

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