Vertebral Osteomyelitis: An Unusual Presentation of *Bartonella henselae* Infection

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Objectives: To report cases of cat scratch disease with vertebral osteomyelitis.

Methods: We describe clinical features, diagnostic, treatment, and outcome of 2 patients with vertebral osteomyelitis due to *Bartonella henselae* and provide a review of the relevant literature.

Results: A 47-year-old man was investigated for fever, splenomegaly, and cervical adenopathy. A lymphoma was suspected on the clinical picture, the laboratory tests, and the computed tomographic scan. [^{18}F]-fluoro-2-deoxy-D-glucose-positron emission tomography detected splenic nodules and a hypermetabolic focus of C7 vertebral body compatible with a vertebral osteomyelitis on magnetic resonance imaging. *B henselae* infection was confirmed by polymerase chain reaction performed on lymph node biopsy. A 34-year-old woman was investigated for fever and right upper quadrant abdominal pain. She had consulted 2 weeks before for a unique lesion of right index and an axillar adenopathy that have improved spontaneously. A technetium bone scan performed 1 week later because of a thoracic backache demonstrated an increased uptake of the T6 vertebra. Vertebral magnetic resonance imaging was compatible with a T6 osteomyelitis. *B henselae* infection was confirmed by serology (seroconversion). Both patients were treated with rifampin and doxycycline and recovered within 3 months.

Conclusions: *B henselae* vertebral osteomyelitis can involve immunocompetent adults. In the case of vertebral osteomyelitis with negative blood cultures, recent history of local lymphadenopathy and cat exposure must be investigated and *B henselae* serology must be performed. Nevertheless, even if serology is positive, vertebral biopsy is required to rule out other pathogens or malignancy. *B henselae* infection can be confirmed by polymerase chain reaction performed on vertebral or lymph node biopsy.

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Bartonella henselae is a small fastidious aerobic facultative intracellular Gram-negative rod and the causative agent of cat scratch disease (CSD). CSD is a ubiquitous zoonotic infection that generally presents with unique lymphadenopathy localized to the draining site of a cat scratch or bite. The disease usually heals spontaneously within a few weeks or months (1). Systemic manifestations involving the deep organ have been previously described as liver and spleen granulomas or abscesses, meningoencephalitis, cutaneous, ocular, or cardiac valvular localizations (1–4). Osteomyelitis due to *B henselae* has been rarely reported (1–3,5–12). Because *B henselae* is very fastidious, diagnostic tools such as polymerase chain reaction (PCR) analysis of biopsy specimens

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and serological assays (13–16) have improved diagnosis for the atypical cases.

METHODS

Herein, we detail 2 cases concerning immunocompetent adult patients with vertebral osteomyelitis due to *B henselae*. Both patients exhibited serological evidence for *B henselae* infection (indirect immunofluorescence assay). PCR analysis for *B henselae* DNA was performed on biopsy specimens (National Reference Center of rickettsiae, Marseille, France). We describe the cases and then provide a brief review of the literature regarding spine involvement during the course of CSD.

RESULTS

Case 1

A previously healthy 47-year-old man was admitted to the hospital due to fever reaching 39°C associated with cervical lymph node enlargement for a period of 2 weeks despite 2 consecutive antibiotic regimens (oral cephalosporin and pristinamycine). The patient was a computer specialist and owner of dogs and a kitten. He had no history of receiving a recent animal scratch or bite. Physical examination revealed a 3-cm right-sided firm and tender jugular lymphadenopathy and a mild splenomegaly. No skin lesion was found in the drainage area of the lymphadenopathy.

The white blood cell count was normal and the serum C-reactive protein level was elevated at 270 mg/L. The levels of aspartate and alanine aminotransferase were elevated to 1.5-fold the upper limit of the normal range. Blood cultures remained sterile. Serological profiles for Epstein-Barr virus, cytomegalovirus, and toxoplasmosis were compatible with past infections. Human immunodeficiency virus and syphilis serological tests were negative.

Chest radiography was normal. Abdominal ultrasonography confirmed the 15-cm splenomegaly with infracentimetric hypoechogen nodules. The cervical computed tomographic (CT) scan confirmed the 3-cm cervical anterior lymphadenitis containing a central hypodense area. Suspecting lymphoma, [^{18}F] fluoro-2-deoxy-D-glucose-positron emission tomography (^{18}F-FDG-PET) was performed, showing hypermetabolic foci of the spleen and the right cervical area. It also revealed a hypermetabolic focus of a C7 vertebral body that corresponded to low signal intensity on T1-weighted sequences and hyperintensity after the use of contrast medium on cervical magnetic resonance imaging (MRI), which was compatible with vertebral osteomyelitis or a neoplastic lesion (Fig. 1A and B).

Direct microscopic examination of a needle aspirate of the cervical lymph node was negative after Gram and Ziehl-Neelsen staining. The cervical lymph node was surgically removed and cultures yielded negative results for pyogenic bacteria, mycobacteria, and fungi. Histological examination showed inflammatory and necrotizing tissue with evidence of histiocytic granulomas.

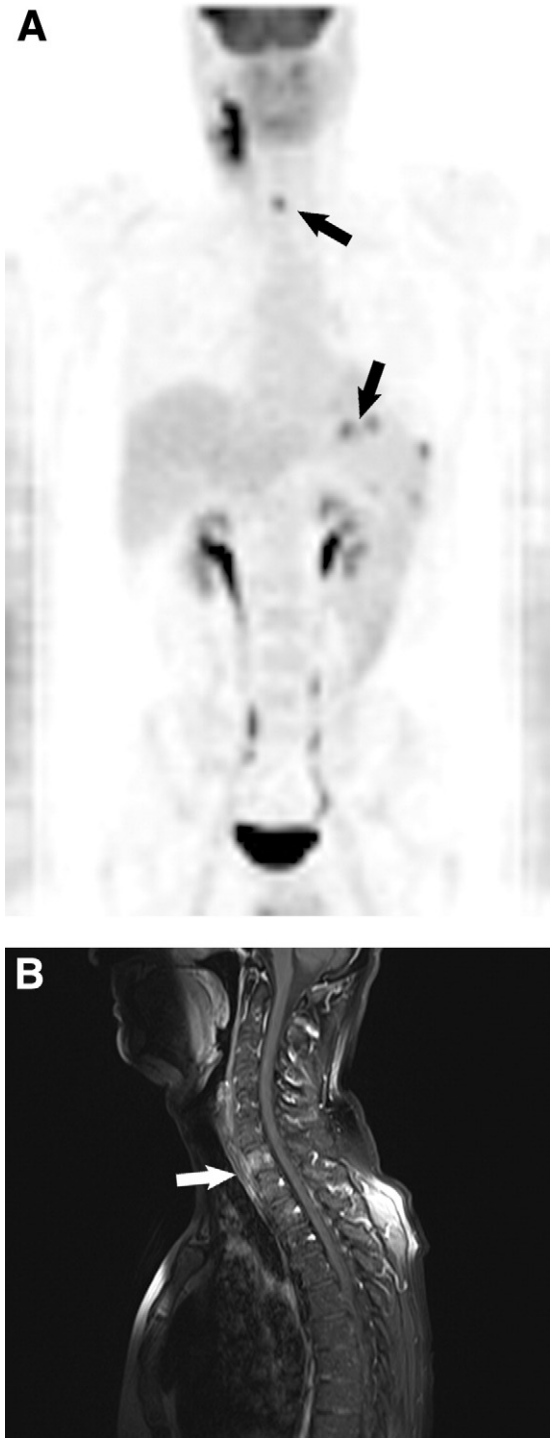

Figure 1 Imaging findings for case 1. (A) ^{18}F-FDG-PET: hypermetabolic focus of C7 vertebral body and hypermetabolic splenic nodules and right cervical adenopathy (black arrows). (B) Corporeal focal bone lesion T1-weighted with gadolinium enhancement and fat saturation: MRI C7 corporeal and prevertebral ligament contrast uptake on sagittal section (white arrows).

Serological analysis for *B henselae* yielded positive results (IgG titer 1:512, threshold 1:256). A similar analysis, performed 3 weeks later, yielded negative results. Finally, PCR analysis of the lymph node was positive for *B*