Helicobacter cinaedi bacteremia mimicking eosinophilic fasciitis in a patient with X-linked agammaglobulinemia

Ashley Hill, MD,[a] Adam Byrne, MD,[b] Danielle Bouffard, MD,[c] Me Linh Luong, MD,[d] Melissa Saber, MD,[a] and Hugo Chapdelaine, MD[e]
Montreal, Canada

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INTRODUCTION

Bruton agammaglobulinemia (XLA) is an X-linked genetic disorder characterized by severe antibody deficiency. The cornerstone of treatment is immunoglobulin replacement therapy, but patients remain at risk for recurrent sinopulmonary, gastrointestinal, and skin infections. XLA has also been associated several inflammatory and autoimmune diseases[1] such as arthritis, inflammatory bowel disease, and, more recently, eosinophilic fasciitis.[2] *Helicobacter cinaedi* is reportedly involved in several cutaneous manifestations ranging from cellulitis[3,4] to superficial ulcers on erythematous, eroded plaques.[5] We report a case of *H cinaedi* bacteremia mimicking eosinophilic fasciitis in a patient with XLA.

Abbreviation used:

XLA: X-linked agammaglobulinemia

CASE REPORT

An 18-year-old man with X-linked agammaglobulinemia supplemented with monthly intravenous immunoglobulins presented with a 1-year history of abrupt-onset, progressive erythematous plaques, first on his left ankle then on his right posterior calf. The plaques were painful, especially with prolonged standing or exercise. He complained of feeling feverish without objectified temperature and had a sense of general fatigue and malaise. He denied taking any new medications.

On physical examination, the patient presented with 2 erythematous, ill-defined, warm, and markedly indurated plaques in an asymmetric distribution reaching 11 × 10 cm on the left ankle and right posterior calf. Neither a groove sign, visible as a linear depression along the course of superficial veins in the upper limbs, as seen in eosinophilic fasciitis, nor a lilac border suggestive of morphea, were appreciable (Fig 1, *A*). Signs of systemic sclerosis such as Raynaud, sclerodactyly, or nailfold capillary changes were absent. Differential diagnosis included morphea profunda, eosinophilic fasciitis, systemic scleroderma, infectious panniculitis, lupus panniculitis, and erythema induratum. Inflammatory markers were strikingly elevated but peripheral eosinophilia and increased muscular markers were absent. A deep elliptical biopsy was performed on the right posterior calf. Pathology findings showed an abnormally fibrotic dermis and hypodermis with neovascularization of the dermis, fascia, and skeletal muscle (Fig 2, *A*). A polymorphous infiltrate, rich in eosinophils, was present within the dermis, hypodermis, fascia, and skeletal muscle (Fig 2, *B*). Results of periodic acid—Schiff—diastase and Warthin-Starry tissue stain were negative as was tissue culture for bacteria, mycobacteria, and deep mycoses. Magnetic resonance imaging found fascial enhancement and thickening of the right posterior calf. In light of these findings, a diagnosis of eosinophilic fasciitis

From the Departments of Dermatology,[a] Pathology,[c] Infectious Diseases and Medical Microbiology,[d] and Allergy and Immunology,[e] Centre Hospitalier de l'Université de Montréal (CHUM) and the Department of Pediatric Clinical Immunology and Allergy,[b] McGill University Health Centre.

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Correspondence to: Hugo Chapdelaine, MD, Division of Allergy and Immunology, Department of Medicine, Centre Hospitalier de l'Université de Montréal (CHUM), 1051, rue Sanguinet, Montréal, Québec H2X 0C1. E-mail: hugo.chapdelaine.chum@ssss.gouv.qc.ca.

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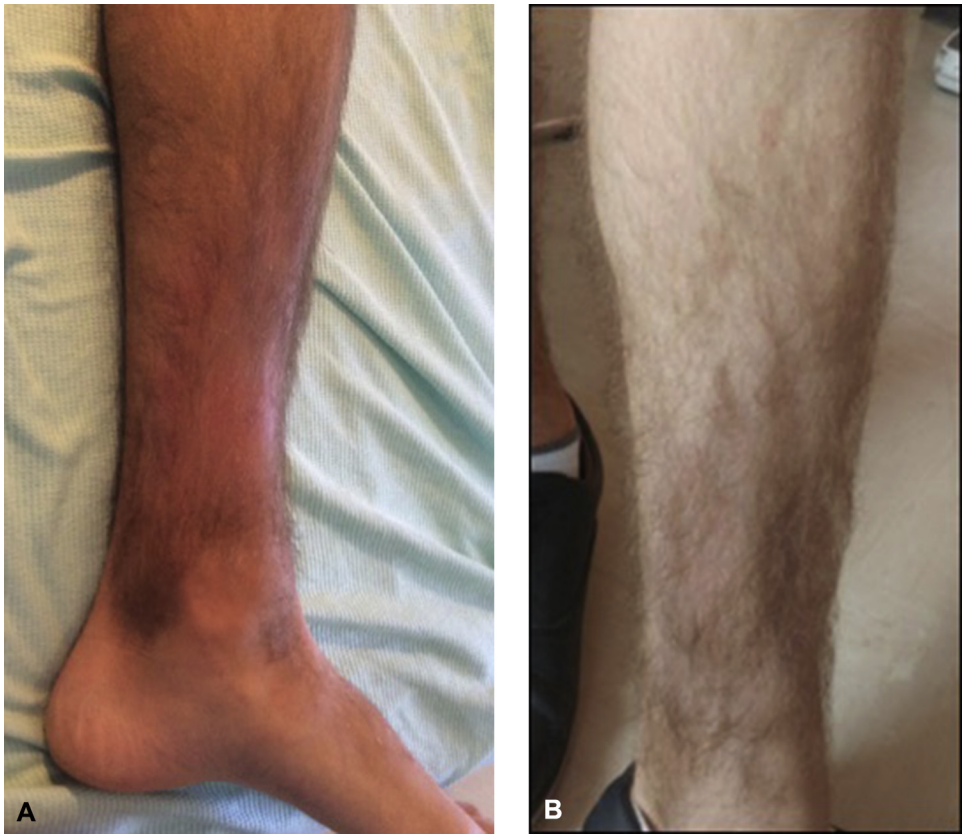

Fig 1. **A**, Two erythematous, indurated plaques on the right posterior calf and left medial ankle at presentation. **B**, Left ankle posttreatment.

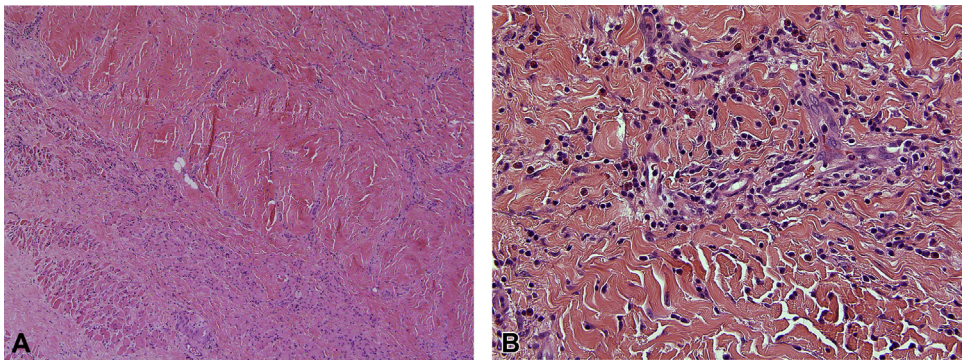

Fig 2. **A**, Fibrosis and neovascularization of the dermis, fascia, and skeletal muscle **B**, Infiltrate rich in eosinophils in the dermis. (Hematoxylin phloxine saffron stain; original magnifications: **A**, ×10; **B**, ×40.)

was proposed, and standard treatment with monthly pulses of methylprednisolone combined with high doses of oral prednisone was initiated. Methotrexate was introduced as a steroid-sparing agent, and steroid tapering was attempted. However, the patient had a recurrence of symptoms and deterioration of inflammatory markers every time steroid tapering was attempted. The recurrent nature of the illness led to the suspicion of a possible underlying infectious process; thus, blood cultures were obtained. Blood cultures came back positive with a curved gram-negative bacillus; however, all subculture media remained negative after 5 days of incubation. As such, 16S rRNA gene polymerase chain reaction and sequencing was performed directly on the blood culture broth, and the microorganism was identified as *H cinaedi*. The patient was started on intravenous meropenem, 1 g every 8 hours, and oral

doxycycline, 100 mg twice daily for a total of 6 weeks, as cephalosporins and penicillins show moderate to high minimum inhibitory concentrations,[6,7] and resistance has been described.[8] After just 2 weeks of treatment, his inflammatory markers returned to normal, and he showed substantial improvement clinically in terms of erythema, induration, and functionality (Fig 1, *B*).

DISCUSSION

H cinaedi has been increasingly reported as the cause of recurrent fever and bacteremia and a variety of cutaneous manifestations in patients with XLA. Most cases have been described as recurrent mild cellulitis, but superficial ulcerations resembling pyoderma gangrenosum, erythema, hyperpigmented macules, and an "erysipelaslike eruption" have been described.[9,10] Given the association of autoimmune manifestations in these patients and the difficulty in culturing this organism, *H cinaedi* infections are often misdiagnosed. As such, *H cinaedi* infection should be considered in immunocompromised patients presenting with atypical skin lesions, as prompt diagnosis and treatment with antimicrobials agents can lead to significant clinical improvement.

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