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Gas Gangrene Associated With Clostridium septicum Infection

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Authors:
Zachary Field, MD; Andrew Birr, MD; and Jacqueline Kropf, DO
Orlando Health Orlando Regional Medical Center, Orlando, Florida

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A 66-year-old man presented to the emergency department with progressively worsening severe left hip and left lower extremity pain. His medical history included type 2 diabetes, chronic kidney disease, and chronic lymphedema.

On presentation, he was afebrile, with a pulse of 110 beats/min and a blood pressure of 85/54 mm Hg. On physical examination, crepitus and skin sloughing was noted on the left upper thigh.

Results of initial laboratory studies showed an elevated white blood cell count of 29,000/μL, an acidotic arterial blood pH of 7.19, and a decreased lactate level of 3.5 mg/dL. Computed tomography (CT) scans of the bilateral lower extremities revealed extensive soft tissue emphysema within the left gluteal muscles and the anterior and posterior margins of the proximal left lower extremity (**Figure**).

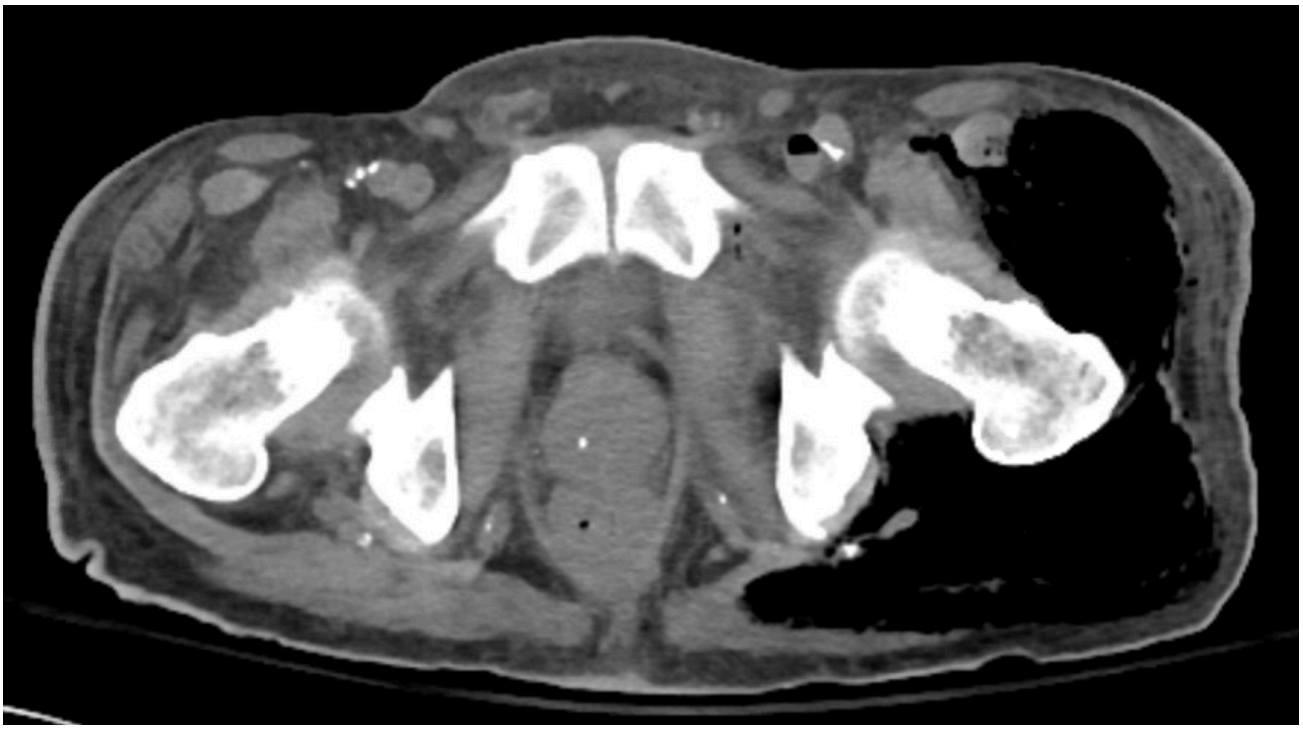

Figure. *CT scans of the bilateral lower extremities revealed extensive soft tissue emphysema within the left gluteal muscles and the anterior and posterior margins of the proximal left lower extremity.*

Treatment was initiated with fluid resuscitation, broad-spectrum antibiotics, and vasopressors. The patient was taken for immediate bilateral lower extremity debridement. The next day, he also underwent bilateral below-the-knee amputations. Blood cultures grew *Clostridium septicum*.

Discussion. *C septicum* is a highly virulent spore-forming microbe that can lead to the development of myonecrosis, a subtype of necrotizing soft-tissue infection with a high mortality rate.[1] While more than 20 clostridial exotoxins have been identified, the major virulence factor is the α-toxin. This toxin causes hemolysis and localized destruction leading to tissue necrosis and gas production.[1] Patients with immunosuppression associated with corticosteroid use, alcohol abuse, neutropenia, solid organ malignancy, or in in the case of our patient, diabetes mellitus, are at an increased risk of developing *C septicum* infection.[1,2]

Unlike infections with the more common clostridial variant *Clostridium perfringens, C septicum* infections can occur without any identifiable trauma. *C septicum* is thought to cause infection via hematogenous spread of sporulated bacteria through translocation of the gastrointestinal tract, where the bacteria are often found. This causes seeding of bacteria in localized tissue, causing extensive gas gangrene.[1,2] While no standardized antibiotic treatment regimen currently exists for *C septicum* infections, some studies have suggested high susceptibility to penicillin, tetracycline, and clindamycin and lower susceptibility to vancomycin.[3]

While physicians most commonly associate necrotizing fasciitis with an open wound, atraumatic

myonecrosis should remain in the differential diagnosis for a patient presenting with severe limb pain and crepitus, since it can ultimately lead to fulminant sepsis and death.

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