CASE REPORT

Gas gangrene in a leprosy patient

TARUN NARANG, SUNIL DOGRA & INDERJEET KAUR
Department of Dermatology, Venereology and Leprology, Postgraduate Institute of Medical Education and Research, Chandigarh, India

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A 42 year-old male, who was a known case of borderline lepromatous leprosy on treatment with WHO MB-MDT, presented to us in a state of stupor. One week previously, while on a pilgrimage, he walked bare foot for a long distance, following which he noticed pain and swelling in his left leg. On examination, the patient was disorientated, tachypnoeic, febrile and had tachycardia with hypotension (systolic BP 90 mm Hg and diastolic 60 mm Hg). Examination of the left leg revealed a trophic ulcer on the sole and diffuse swelling with vesiculo–bullous lesions extending up to the knee. There was a foul-smelling serosanguinous discharge with crepitus on palpation of the swollen leg. Gram stain of the bulla fluid showed pleomorphic, gram-positive bacilli and a few leukocytes.

Investigations on admission revealed a white blood cell count of 16 000 cells/mm$^3$ with 78% neutrophils, 20% lymphocytes and 2% monocytes. Blood urea, creatinine, urine examination and serum electrolytes were within normal limits. Blood glucose was 110 mg/dl. X-ray of the left leg revealed diffuse gas bubbles in the intramuscular tissue planes extending from the foot to the thigh (Figures 1 and 2).

Treatment with intravenous antibiotics (benzyl penicillin, metronidazole and gentamicin) was started immediately. Hip disarticulation was performed due to the rapid spread of infection. However he deteriorated rapidly and died due to multi-organ failure, 72 hours after the onset of symptoms.

Gas gangrene is caused by exotoxin-producing Clostridial species (large, gram-positive, spore-forming bacilli). Clostridium perfringens causes 80–95% of cases of gas gangrene. The incubation period between injury and onset of symptoms is approximately 1–3 days, but can be as short as hours. Typically, the onset is sudden. There is severe pain out of proportion to the external evidence of infection. Cutaneous manifestations consist of tense, oedematous, pale skin that progresses to tense bullae filled with serosanguinous fluid, followed by violaceous dermal necrosis. There is an associated brownish, foul-smelling discharge,
typically called 'dishwater exudate', which characteristically contains numerous organisms and few leucocytes. Crepitus may also be present, although it is a late finding. It has been suggested that the triad of pain, which may be severe, tachycardia out of proportion to the fever, and crepitus is strongly suggestive of Clostridial myonecrosis. A gram stain of wound exudate may reveal gram-positive 'box-car' shaped rods. In cases of Clostridial myonecrosis, radiographs may reveal gas in the tissues. As the infection progresses, there is usually associated hypotension, acute renal failure, or other organ dysfunction. However, despite the severity of the infection, patients may remain alert and lucid. Eventually, in the later stages of the disease, they may develop a toxic encephalopathy.

Figure 1. X-ray of the left foot and leg showing diffuse gas bubbles in the intermuscular tissue planes.

Figure 2. Gas feathering in the soft tissue of thigh.
The combination of aggressive removal of all infected muscle and effective antibiotic therapy is the determining factor for successful treatment of this life-threatening infection. Historically, penicillin G in dosages of 10–24 million U/day was the drug of choice. Currently, a combination of penicillin and clindamycin / clindamycin and metronidazole is widely used.¹,⁴

Gas gangrene is one of the most devastating infections with a mortality greater than 25%. Failure to diagnose early and inadequate surgical intervention, the two most common mistakes in the management of gas gangrene, eventually dictate the outcome.³ Leprosy patients with trophic ulcers may be at increased risk of developing gas gangrene. These patients may not experience pain, one of the hallmarks of gas gangrene, because of the sensory neuropathy, which delays the diagnosis and management, as in our case. A high index of suspicion with early diagnosis and treatment is required to prevent death.

References