

Blood, Brain and Now Bone – Learning More About an Often Overlooked Pathogen

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Learning Objective

Identify an uncommon pathogen as a cause of osteomyelitis

Case Presentation

Case Presentation:

A 30-year-old Caucasian man with a history of peripheral neuropathy, diabetic foot ulcers, methicillin-resistant *S. aureus* osteomyelitis and amputation of the left second distal phalanx presented with a malodorous and painful plantar ulcer.

- Vital signs were within normal limits.
- Physical exam showed erythematous, edematous distal left foot and 3cm x 0.5cm x 2mm plantar ulcer with necrotic tissue and serosanguinous drainage (Fig 1).
- Labs revealed no leukocytosis, but elevated inflammatory markers.
- Left foot X-ray showed previous amputation of 2nd distal phalanx, soft tissue swelling and indistinctness of the cortex of the 3rd distal phalanx, consistent with osteomyelitis (Fig 2).

Hospital Course:

The patient underwent intraoperative debridement and resection of the distal second metatarsophalangeal joint. Post-operative antibiotics included vancomycin and cefepime. Intraoperative wound and bone cultures grew aerobic gram-positive bacilli with few diphtheroids. Histochemical analyses confirmed *Arcanobacterium haemolyticum*. He was discharged home on a six-week course of IV clindamycin with wound VAC.



Figure 1: Patient's diabetic foot ulcer prior to debridement. Bone cultures taken from the wound grew *A. haemolyticum*.



Figure 2: X-ray on admission showing soft tissue swelling and cortex changes consistent with osteomyelitis.

Discussion

A. haemolyticum (previously *Corynebacterium haemolyticum*), is a facultative aerobic gram-positive rod first isolated from U.S. servicemen and indigenous populations of the South Pacific in 1946. Early reported cases detailed *A. haemolyticum* as a causative pathogen for exudative pharyngitis (most commonly in adolescents) and cutaneous infections. *A. haemolyticum* infections can be separated epidemiologically into 2 distinct subsets: healthy adolescents presenting with upper respiratory tract infections and immunocompromised patients presenting with more serious systemic infections.

The organism has been identified in severe infections including vertebral osteomyelitis, endocarditis, sepsis, brain abscess, and Lemierre's disease. Osteomyelitis caused by *A. haemolyticum* has been described in less than five cases in the literature. It is often overlooked or misdiagnosed due to its slow growth and features similar to other pathogens. Initial microbiology often shows mixed flora, including gram-positive rods and diphtheroid bacilli, which are part of the normal flora of the skin. *A. haemolyticum*'s distinct colony features are typically only seen after 72 hours of incubation.

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