

IMAGES IN EMERGENCY MEDICINE**Infectious Disease**

Man with right foot wound

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1 | PATIENT PRESENTATION

A 45-year-old man with a history of alcohol abuse, polysubstance use, and active intravenous drug use presented to the emergency department for new wounds on his right foot that reportedly began 3 to 4 days before presentation. Examination was notable for a dark eschar several centimeters in diameter with surrounding rubor (Figures 1 and 2). He was taken for surgical debridement out of concern for necrotizing soft tissue infection (Figure 3) and wound cultures were obtained. The treating emergency department physicians received a concerning email 1 week later about a potentially dangerous exposure.

2 | DIAGNOSIS

2.1 | Polymicrobial wound including cutaneous diphtheria

Right lower extremity wound culture was positive for polymicrobial growth, including *Corynebacterium diphtheriae*. The patient was started on cephalexin 1000 mg q6h for 2 weeks after surgical debridement and given Tdap immunization after cultures resulted. There was significant symptomatic and clinical improvement after initiation of treatment. Clinical staff who directly cared for the patient were warned to contact the hospital's infection control team if they had not received a Tdap booster within the last decade and either touched the patient's wounds without gloves or were present during irrigation and/or debridement without a surgical mask.

Diphtheria infection can lead to respiratory or cutaneous illness or an asymptomatic carrier state. Cutaneous diphtheria has variable pre-



FIGURE 1 Photo of right medial ankle with eschar and confluent papular rash

sentations and may appear as a scaling rash, non-healing sores, or shallow ulcers; the lesions often occur in preexisting skin infections.^{1,2} It

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FIGURE 2 Photo of anterior right lower extremity with ecchymotic skin changes and open wound with blood and purulence

is typically preceded by a disruption in the integrity of the skin that can be acute, chronic, or traumatic in nature.³ Cutaneous manifestations last longer than the respiratory disease and is spread more easily, commonly through direct contact.^{4,5} The significant antibody response produced following a skin infection is protective from the development of the pharyngeal form but can result in a nidus within the ulcer that can infect susceptible hosts via cutaneous or respiratory transmission.^{5,6} In the United States, most cutaneous diphtheria outbreaks occur in alcoholic homeless men and intravenous drug users, typically those with poor access to health care and low immunization rates.^{3,7} Treatment of these patients should include antibiotic therapy (covering gram positives), contact isolation, and diphtheria antitoxin, if severe, to neutralize non-tissue-bound toxin.^{1,8} In some cases, surgical debridement may be necessary to aid in wound healing.¹ Close contacts should be updated on their diphtheria toxoid immunization to prevent further spread.

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FIGURE 3 Photo of lower extremity after surgical debridement

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