

What Is Your Diagnosis?



A 59-year-old man with a history of intravenous drug abuse presented with a large leg ulcer.

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Mary B. White, MD; Azadeh Lankarani-Fard, MD; both from Veterans Affairs Greater Los Angeles Healthcare System, California.

The authors report no conflict of interest.

The Diagnosis: Chronic Skin Ulcer in an IV Drug User (Shooter's Patch)

A 59-year-old man with a history of intravenous (IV) drug use presented with an enlarging ulcer on the anterior aspect of the thigh (Figure 1). The patient had been injecting heroin into the lesion for the last several years because he no longer had IV access due to sclerosis of the veins. Magnetic resonance imaging of the femur showed no definite evidence of osteomyelitis (Figure 2). Wound cultures showed numerous diphtheroids, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Escherichia coli*. Intraoperative findings revealed the ulcer was overlying a firm ossified mass that was adherent to the femur. Surgical biopsy of the soft tissue and deeper bone showed granulation tissue and fibrosis but no evidence of malignancy or osteomyelitis.

These chronic skin ulcers or “shooter’s patches” may be found in IV drug users who otherwise lack IV access due to sclerosis of the peripheral veins, as seen in our patient. Because IV drug users often develop cutaneous ulcers, they may use the highly vascular granulation tissue at the periphery of the ulcer as an alternative to IV injection because it produces nearly the same effect as the IV route.¹ The repetitive injury to the damaged skin results in chronic inflammation and, in this case, ossification of the soft tissue.

Patients presenting with these lesions usually report severe pain in the affected area in an attempt to obtain narcotic pain medications.¹ They may not readily admit to IV drug use, often giving alternative explanations for the development of the ulcer. The nondominant forearm and anterior aspect of the thighs often are used because these areas are both easily accessible and concealable.¹ The size of the ulcer is variable and depends on the duration and frequency of usage. In our patient’s case, the ulcer was quite large because he had been injecting several times daily for more than 6 years.

The organisms most commonly isolated from these ulcers are gram-positive bacilli such as *S aureus* and *Streptococcus* species. However, other organisms frequently are found, including oral flora, gram-negative bacteria, anaerobes, fungi, or a combination thereof.^{1,3} Intravenous drug users may lick the needle prior to injection, chew up the drug in pill form to prepare it for injection, use toilet water or saliva to mix the drug before injection, or use other contaminated water sources to “clean” drug paraphernalia. Other factors leading to the development of skin ulcers,



Figure 1. A large necrotic ulcer on the anterior aspect of the thigh.



Figure 2. Large soft tissue mass in the anterior lateral aspect of the thigh with reticular sheets of calcifications and periosteal reaction.

abscesses, or cellulitis include skin popping (vs IV injection), speedball injection (cocaine mixed with heroin), more frequent injection, inadequate skin sterilization, human immunodeficiency virus (HIV) positivity, and “booting” (repeatedly drawing back

blood and reinjecting). It is recommended that cultures be obtained from deep wound aspiration or biopsy to avoid surface contaminants. Antimicrobial therapy should be guided by culture and sensitivity testing.¹

Ulcers may be caused by microbial contamination as well as the drug itself or the use of certain adulterants with which the drug is cut.^{2,3} For example, IV cocaine use and the adulterant quinine can cause necrotizing sterile ulcers. The drugs may be contaminated with soil, dust, or other pathogens. The syringe may be contaminated from prior use. The filtering material, such as cotton balls or cigarette filters, is not sterile and may contain particles that cause a foreign body reaction.^{2,3} All of these factors may intentionally or unintentionally result in the development of skin ulcers.

Repetitive injections into inflamed tissue can result in complications related to infection, ischemia, inflammation, and scarring. Abscesses and cellulitis are common and are found in 22% to 65% of drug users.³ Other localized infections include necrotizing fasciitis, osteomyelitis, lymphangitis, and septic thrombophlebitis. More systemic infections such as sepsis, endocarditis, and transmission of HIV and hepatitis B and C are possible and should be considered by the clinician.^{2,3} Tetanus and botulism infections have been described in rare instances.^{4,5} Patients with long-standing osteomyelitis also can develop malignancies in the affected area.⁶

The trauma of persistent skin injections also can lead to vascular compromise resulting in ischemia of the digits and limbs.^{2,3} Thrombotic and embolic events in larger vessels can cause organ failure, pulmonary emboli, and stroke. Scarring of the lymphatics can lead to remarkable irreversible edema.^{2,3}

Treatment of such chronic skin ulcers in an IV drug user requires a multidisciplinary approach.

Once stabilized, patients will require a biopsy of the lesion to assess for underlying osteomyelitis or malignancy as well as identification of microbial pathogens. Most patients will need a period of antibiotic therapy and wound care before being considered for any surgical correction of the defect. Depending on the complexity and location of the ulcer, the wound may heal by secondary intention or require possible skin grafting.^{1,7,8} Occasionally, the only available option is amputation.

In addition, patients should receive treatment of their drug addiction. All patients should have their tetanus vaccinations updated and be screened for HIV as well as hepatitis B and C infection.

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