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Demographic Description of the Presentation and Treatment of Lower Extremity Skin and Soft Tissue Infections Secondary to Skin Popping in Intravenous Drug Abusers

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ABSTRACT

Skin popping refers to the act of subcutaneous injection of intravenous drugs, a practice that often results in the development of cellulitis and the formation of soft tissue abscesses. Although the foot and ankle represent common injection sites, few data have described the presentation and natural history of this pathologic entity. The objective of the present study was to retrospectively assess the descriptive demographic data of a patient cohort admitted for lower extremity skin and soft tissue infection caused by intravenous drug abuse. Fifty skin popping lesions in 49 patients were identified during a 733-day data collection period (August 1, 2010 to August 31, 2012) that had been treated by the in-patient podiatric surgical service for lower extremity infection caused by intravenous drug abuse at an urban, level-one trauma center. With respect to patient race, our hospital has a typical in-patient census of 55% black patients and 25% white patients. The present patient cohort consisted of 12% black patients and 65% white patients. The mean length of stay was 5.71 ± 3.56 days, and 42 patients (85.71%) underwent some form of surgical debridement, with 31 (63.27%) having undergone a formal procedure in the operating room. Six patients (12.24%) left the hospital against medical advice or refused intervention at some definitive point of care, and 36 (73.47%) did not return for scheduled outpatient follow-up visits. Three cases (6%) resulted in minor amputation. The microbiologic culture data and common antibiotic prescriptions used in the diagnosis and treatment, respectively, of these patients have been summarized. We hope these original descriptive data can be used by other physicians treating patients at similar urban practices to improve the care of these sometimes difficult-to-treat patients and better serve this population as a whole.

According to a 2009 US Government report, more than 600,000 Americans admitted to heroin use in the year before being surveyed and 4.8 million Americans had used cocaine (1). This was a surprisingly large number of drug users and could potentially lead to a large patient population seeking medical attention for the untoward sequelae of drug abuse. Although intravenous drug abusers aim to inject their respective drugs of choice intravenously, this will not always be the case. Long-term users can have difficulty finding intravenous access and might instead opt to inject subcutaneously, or they will inadvertently miss the target vessel and inject the drug into the subcutaneous tissue. This process of injecting illicit drugs subcutaneously has commonly been referred to as *skin popping*.

An investigation by Binswanger et al (2) found that nearly one third of patients with active intravenous drug abuse (IVDA) had abscesses or cellulitis, or both. They also noted that this patient population often attempted self-treatment of infections with street-bought medications and even attempted to perform incisions and drainage on their own, without seeking professional medical attention. These findings provide evidence of the relative aversion of these patients toward formal medical treatment in today's society and has been associated with a delay in receiving formal care in the setting of infection. It could be that intravenous drug abusers delay seeking professional medical treatment because they fear the social judgment related to their drug abuse or fear drug withdrawal and inadequate pain control during treatment. Regardless of why they delay medical attention, this situation will often lead to more difficult-to-treat patients with secondary soft tissue infections.

Although soft tissue infection is a relatively common complication of IVDA, a relative paucity of published studies has directly reported on this pathologic entity (2–13). This has been particularly true in the

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lower extremity, where the variable and relatively decreased thickness of the superficial fascia poses a greater potential for the contamination of deep structures. Additionally, the lower extremity represents a common site for attempted injection secondary to the access provided by the dorsal venous arch and greater saphenous vein. The objective of the present study was to retrospectively assess the epidemiologic data of a patient cohort admitted for lower extremity skin and soft tissue infections caused by IVDA.

Patients and Methods

A review of the medical records of consecutive patients admitted to Temple University Hospital (Philadelphia, PA) from August 1, 2010 to August 31, 2012 (733 days) was performed. Our inclusion and exclusion criteria were admittedly broad, because we were unaware of any pathognomonic clinical, histologic, or imaging findings specifically associated with skin popping. It was our hope that the data provided from the present investigation would lead to such findings and improve the ability of surgeons to reach an accurate diagnosis. Thus, our inclusion criteria consisted of patients admitted with a lower extremity (foot and/or ankle) skin and soft tissue infection caused by IVDA in which the podiatric surgical service was consulted. The patients had to have had either (1) a documented admission of intravenous drug use in the anatomic area or (2) positive drug screening findings with clinical evidence of injection in the foot or ankle. This clinical evidence primarily consisted of localized abscess formation with injection marks in the anatomic area. The patients were excluded if they denied IVDA, had negative drug screen results, and had no clinical signs of injection in the anatomic area of concern.

Data were collected with respect to patient demographics, length of hospital stay, anatomic location of the infection, prevalence of bedside debridement, prevalence of formal debridement in the operating room, wound closure technique, the need for amputation, microbiologic culture results, antibiotic treatment, the need for advanced imaging analysis, whether the patient had had previous hospital admissions for the same diagnosis, and scheduled outpatient follow-up care.

No internal or external funding was received for any portion of our investigation. All data were collected and stored in a personal computer for subsequent analysis. Descriptive statistical analysis of the collected demographic information was performed by 1 of us (A.J.M.) using Statistical Analysis Systems, version 9.2 (SAS Institute, Cary, NC).

Results

The analysis resulted in the inclusion of 50 skin-popping lesions in 49 consecutive patients observed during a data collection period starting August 1, 2010 and ending August 31, 2012 (733 days), for an incidence rate of 1 in-patient admission every 14.96 days treated by the podiatric surgery service for this condition. The mean age of the cohort was 38.39 ± 10.31 (range 21 to 62) years. Of these 49 patients, 27 (55.1%) were males. Regarding the racial demographics, 32 lesions (65.31%) occurred in whites, 6 (12.25%) in blacks/African Americans, and 11 (22.45%) in patients self-reported as “other.” This varied from the typical in-patient population at Temple University Hospital (Philadelphia, PA). A January 2011 patient census revealed 55% were black or African American and 25% were white during the course of the month.

The mean length of stay was 5.7 ± 3.56 (range 1 to 19) days. Of the 49 patients, 42 (85.71%) had been admitted for the first time to our institution for treatment of a skin popping lesion, and 7 (14.29%) had been readmitted with a diagnosis of a recurrent or new skin popping lesion. Also, 6 patients (12.24%) had left against medical advice or had refused an intervention at a definitive point of care. This was most often a recommendation for formal surgical debridement in the operating room. All patients were given a discharge appointment in our clinic; however, only 13 of the patients (26.53%) returned for this or any follow-up visit. Finally, 29 patients (59.18%) had had some form of medical insurance coverage on admission to our hospital.

Regarding the location of the skin-popping lesion, 25 patients (51.02%) had involvement of just the right lower extremity, 23 (46.94%) of just the left lower extremity, and 1 (2.04%) bilateral lower extremity involvement. In terms of an anatomic location below the knee, 13 (26%) of the skin popping infections were localized to the digital or metatarsophalangeal joint level (Figs. 1 and 2), 18 (36%) involved the dorsum of the midfoot, 2 (4%) involved the plantar foot or heel, and 17 (34%) involved the ankle or leg. Of the 13 skin popping lesions located at the digital or metatarsophalangeal joint level, 7 (53.85%) involved the hallux or first interdigital space.

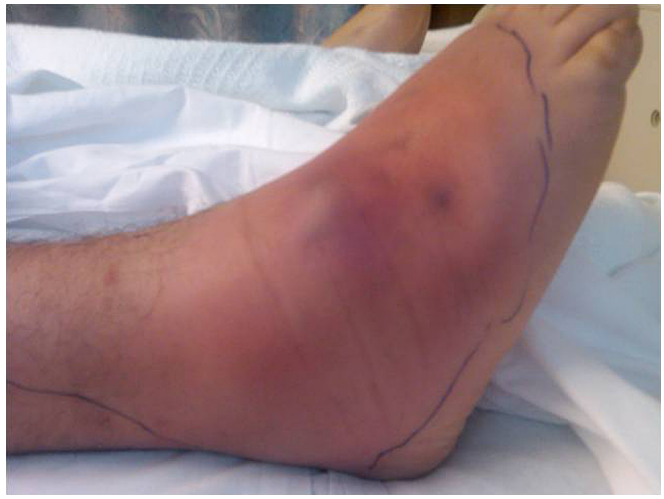

Fig. 1. Clinical presentation of a dorsal foot abscess after injection into the right dorsal venous arch.

Of the 49 patients, 14 (28.57%) underwent a magnetic resonance imaging study, usually preceding definitive surgical intervention. Although no specific objective data were procured from the magnetic

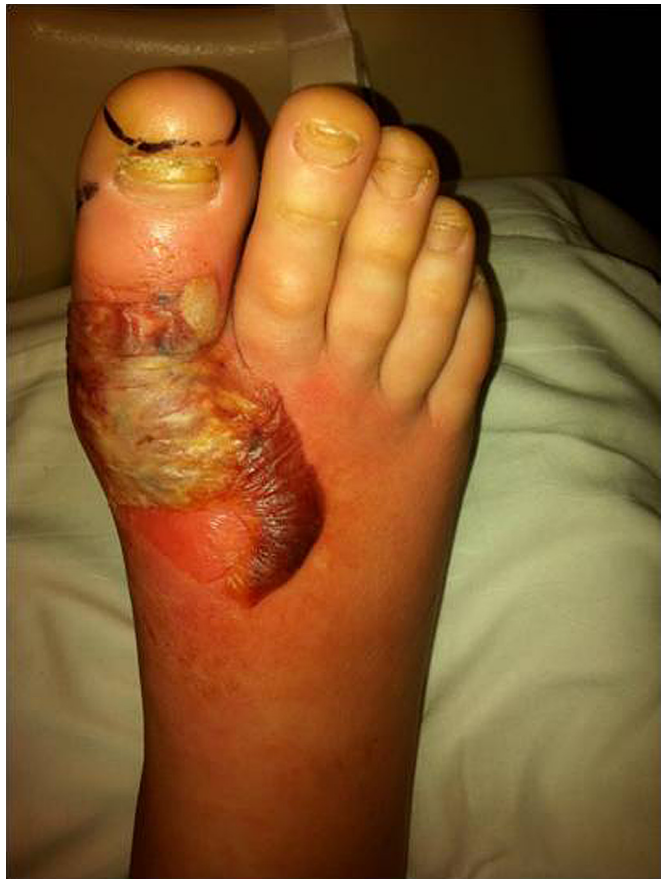

Fig. 2. Clinical presentation of a first metatarsophalangeal joint abscess after intravenous drug injection.