



Bad ink: A case of a chronic ulceration of the lower extremity secondary to tattooing

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Introduction: Tattoos are a vastly popular form of body modification. However, there are no government regulations in regards to tattoo ink compositions. In this paper we report a case of chronic ulceration secondary to tattoo.

Case presentation: A 42-year-old female presented with a history of a non healing ulcer on her leg over a recent tattoo. Surgical excision of ulcerated area as well as negative pressure vacuum therapy and weekly wound care visits were performed and patient was fully healed by her 16 week follow up.

Conclusion: The composition of commonly used Tattoo ink can cause ulcerative lesions.

Key words: tattoo, ulceration, wounds, lower extremity

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Since the word tattoo was introduced to the Western Hemisphere by explorer James Cook, it has gained widespread popularity through all social classes including the likes of Winston Churchill himself. However, increases in popularity also come with increases in documented complications such as allergic, granulomatous and lichenoid reactions [1]. We present a rare case of a non-healing ulceration and allergic reaction caused by a tattoo.

Case Report

A 42 year-old female presented to our wound care center with complaints of a six-month history of a non-healing ulceration to her lateral left ankle. The patient stated that one-year prior she received a tattoo to her left ankle while vacationing in Cuba. The tattoo initially healed with no issues. At 6 months after the initial tattoo application the patient noticed a raised area where red ink had been placed, which eventually ulcerated.

The patient attempted to treat the area with topical over-the-counter cortisone creams and triple antibiotic ointment, with no improvement. The patient complained of mild discomfort and pruritus to the area but there was no noteworthy pain. The patient had no significant past medical history and no known drug allergies. The patient was not currently taking any medications at home.

Physical examination revealed full thickness ulceration to the lateral aspect of the ankle. The ulceration measured 0.6cm x 0.6cm x 0.3 cm. The wound base was a mixture of fifty percent granular and fifty percent fibrotic tissue. The periwound area had a raised verrucous appearance in a 2cm diameter with xerosis and erythema. There was no noted drainage or purulence (Figure 1). Patient had strong pedal pulses bilaterally. Varicose veins were noted as well as corona phlebectatica. A punch biopsy was performed at the initial visit. The pathology report revealed acanthotic and parakeratotic epidermis with surface suppurative inflammation and superficial dermal mixed acute and chronic inflammation, hypocellular and partially necrotic dermal collagen and pigment in the dermis.

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Figure 1 Initial wound presentation.

The patient underwent wide excision of the ulceration with 2mm margins surrounding. The tissue was sent for pathology and cultures. The area was debrided of any non-viable tissue and a bovine collagen graft (Integra) was applied and secured with staples. Negative pressure therapy (KCI wound VAC) was initiated at that time

Post excision pathology report showed skin ulceration with acute and chronic inflammation, focal abscess formation and collections of histiocytes. There were no organisms found on AFB or PAS stains. Surgical cultures revealed heavy growth of Methicillin-Resistant Staphylococcus Aureus. An infectious disease consultation was obtained and the patient was treated with IV vancomycin while inpatient and oral trimethoprim/Sulfa at discharge for ten days [2].

We continued use of negative pressure wound VAC therapy (KCI wound VAC) and weekly sharp debridement. Wound VAC therapy was discontinued at 7 weeks. Weekly debridement of any fibrotic tissue and the use of multi-layer compressive dressings were continued. The patient was completely healed at their 16-week follow up and was discharged from our care at that time (Figure 2).



Figure 2 Final appearance of healed wound.

Discussion

The growing popularity of tattoos has led to an increase in the rate of complications associated with tattoo application. A review of the literature depicts complications of tattooing as early as 1952 where Lubek et al documented four separate pathologic consequences of tattooing, namely Boeck's sarcoid, secondary syphilis, discoid lupus and a mercury sensitivity reaction. Currently, the FDA has no approved tattoo inks and do not regulate their composition [3]. In April of 2014 the FDA launched a "think before you ink" campaign warning consumers of substantial risks including infection, allergies, scarring, granulomas and MRI complications [4]. Tattoo inks include different pigments ranging from inorganic metallic salts, organic molecules and organic dyes. Kluger et al reported known allergenic metals, nickel, cobalt, chromium and mercury, found in tattoo inks. While there are documented complications from all tattoo pigments, hypersensitivity reactions to red pigments are the most common [3,5]. Particularly reactions to red pigments containing cinnabar, which is composed of mercuric sulfide. Reactions to red pigment have been associated with allergic contact dermatitis, lichenoid dermatitis, pseudolymphomatous and sarcoid reactions [5].

Hypersensitivity reactions and complications are not isolated to the lower extremity. There have been a number of documented cases of adverse reactions to tattoos involving all areas of the body [4]. Tattooing

has the potential to spread infectious diseases, namely hepatitis, chancroid, MRSA and atypical mycobacterial diseases, among others and lowers the ability to fight infections in the tattooed area [2,6]. The process of tattooing in itself induces a chronic inflammatory response that can be seen years later [6]. Currently there are no set standards in the treatment of tattoo related reactions. Tattoo related reactions have variable presentation and the treatment and management of these dermatologic inflammatory reactions are based on the presenting pathology with the use of biopsy and cultures [7,8]. Tattoo related ulceration appears to be uncommon with only a few cases documented in the literature [4,7,8]. Our case presents the rare occurrence of tattoo-associated ulceration while also highlighting a novel method of management that ultimately led to wound healing.

Moving forward it is critical to stress the importance of patient awareness of the risks associated with tattooing. Though these risks may appear minimal, they can be disfiguring and lead to the introduction of deadly infectious agents. Tattooing has been around for centuries and its popularity is unlikely to decrease, so timely recognition of adverse reactions to tattooing such as allergic reaction, granulomatous and ulcerating reactions should be reported and managed promptly to ensure optimal patient outcomes.

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