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Authors

Krivda, Kathleen R
Okoro, Uzoamaka J
Logemann, Nicholas F

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The use of systemic corticosteroids in debilitating sycosis barbae, sycosis barbae fulminans

Kathleen R Krivda MD, Uzoamaka J Okoro MD, Nicholas F Logemann DO

Affiliations: Department of Dermatology, Walter Reed National Military Medical Center, Bethesda, Bethesda, Maryland, USA

Corresponding Author: Kathleen Krivda MD, Walter Reed National Military Medical Center, 8901 Rockville Pike, Bethesda MD 20889, Tel: 240-751-3823, Email: kathleenkrivda@gmail.com

Abstract

Sycosis barbae is a rare and severe form of folliculitis involving the complete hair shaft that can lead to scarring as well as permanent hair loss. It typically presents as a subacute or chronic painful, papulopustular eruption in shaved areas, most commonly affecting the beard area, though it may occur on other hair-bearing sites. We report a case of debilitating sycosis barbae requiring inpatient admission, broad spectrum antibiotics, and systemic corticosteroids complicated by the development of cicatricial alopecia and extensive scarring causing limited mobility.

Keywords: folliculitis barbae, fulminans, pseudofolliculitis, sycosis, vulgaris

Introduction

Sycosis vulgaris, also knowns as sycosis barbae (SB), describes a deep-seated folliculitis in which inflammation or infection involves the entire shaft of the hair follicle [1]. This involvement differentiates SB from more common follicular pathologies, such as pseudofolliculitis barbae (PFB) and folliculitis barbae, in which only the superficial portions of the hair follicle are affected [2]. The most commonly reported causative pathogens are *Staphlococcus aureus* and dermatophytic fungi [2]. Less commonly, *Candida*, herpes viruses, and other gram-negative bacteria have been implicated [3]. The pathogenesis involves the introduction of a pathogen into the hair follicle, which triggers a robust immune response that leads to erythema, pain, and the development of pustules [4]. These pustules may cluster and spread, especially in the setting of poor grooming techniques, presenting as a painful, papulopustular eruption with serous or purulent drainage sinus tracts, abscesses, and systemic symptoms. Histopathological examination is nonspecific and may show dense perifollicular neutrophilic and lymphocytic infiltrates [5].

The incidence and prevalence of sycosis barbae remains largely unknown, as the only available epidemiological data on this condition is limited to sporadic case reports and series. We present a case of debilitating SB requiring inpatient admission, broad spectrum antibiotics, and systemic corticosteroids complicated by the development of cicatricial alopecia and extensive scarring causing limited mobility.

Case Synopsis

A 62-year-old Fitzpatrick skin type V man with a past medical history significant for type II diabetes melilites (T2DM) was admitted to the internal medicine service for concern of sepsis secondary to sycosis barbae. His dermatologic history was significant for chronic pseudofolliculitis barbae treated topically for many years before he was lost to follow up. Three weeks prior to admission, the patient recalls trimming his beard and subsequently his scalp with the same clippers. On that same day, his dentist incidentally noticed two non-tender, non-erythematous nodules on his proximal lateral neck and submandibular area. The next day, the patient

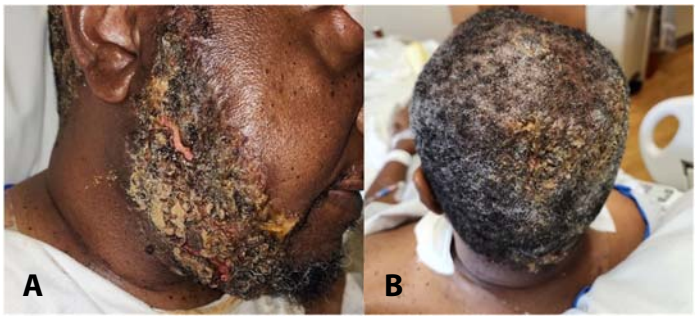

Figure 1. ***A)*** *Multiple, tender, edematous, confluent plaques with fissuring and erosion/ulceration with thick, tightly adherent yellow crust overlying the plaques located on beard area (chin, jaw, lower cheeks).* ***B)*** *Multiple, tender, edematous, confluent plaques with fissuring and erosion/ulceration with thick, tightly adherent yellow to honey-colored crust overlying the plaques extending to occipital scalp and vertex scalp.*

noticed a new tender, erythematous nodule in the same area.

Over the next twelve days, the patient developed more painful lesions over the cheeks, scalp, and beard. He presented to the Emergency Department (ED) where he was diagnosed with a superficial skin infection after facial CT demonstrated extensive soft tissue thickening with inflammation and edema, most notably along the bilateral cheeks, jaw, and frontal scalp. There was also prominent submental, submandibular, and cervical lymphadenopathy. Wound cultures were not obtained in the ED and he was treated empirically with a 10-day course of doxycycline, resulting in minimal improvement. After finishing the course of doxycycline, he returned to the ED with worsening of the lesions. On examination, he had multiple, tender, edematous plaques with fissuring and ulceration with crusting over the beard and scalp (**Figure 1**). Repeat facial CT exhibited acute worsening of soft tissue inflammation and edema, especially involving the anterior neck, bilateral preauricular regions, postauricular scalp, and occipital scalp. At that time, he was also found to be tachycardic with significant leukocytosis and was subsequently admitted for sepsis secondary to initial sycosis barbae. Upon admission, he was started on broad spectrum antibiotic coverage with vancomycin, ceftriaxone, and metronidazole; he was given intravenous fluids and scheduled oxycodone for pain control. Blood culture and wound cultures were also obtained.

Dermatology and Infectious Disease were consulted for further evaluation and management of the lesions. On initial dermatologic evaluation, the patient cited improvement after 24 hours of antibiotics but still reported significant pain from the abcesses and cellulitis. On review of his history, he reported shaving bumps for many years, but denied previous lesions to this extent or contacts with a rash or other similar symptoms. He denied any pets at home. In addition to his broad-spectrum intravenous antibiotics, he was prescribed diluted chlorhexidine soaks twice daily, and topical mupirocin three times daily to affected areas.

After two days of treatment, the patient's crusting and discomfort had slightly improved. The chlorhexidine soaks were discontinued and he was started on aluminum sulfate and calcium acetate soaks 3-4 times daily. Two days later, the patient continued to have mild symptomatic improvement, though his examination was notable for ongoing purulent drainage and friability of his scalp. At this time, the result of the wound and blood cultures from admission came back negative. Punch biopsy of his right vertex scalp was obtained and notable for dense nonspecific superficial and deep mixed inflammation of the epidermis and dermis (**Figure 2**). Tzanck prep showed no evidence of viral cytopathologic changes. A second set of bacterial, fungal, and varicella-zoster virus (VZV) cultures were taken from the lesions, as well as acid-fast bacilli smear and culture, herpes simplex virus (HSV) one

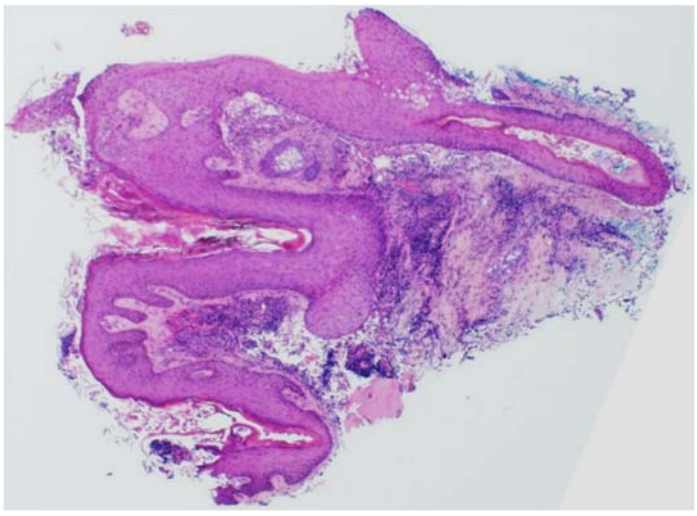

Figure 2. *Distorted, dilated follicles with accompanying dermal fibrosis and dense mixed inflammation. H&E, 20×.*

and two polymerase chain reaction (PCR), and VZV PCR—all of which resulted negative. Given the patient's negative infectious workup, recalcitrance to multiple antibiotics, and significant facial and scalp inflammation with associated pain requiring narcotics, he was started on a six-week prednisone taper (60mg daily for one week, 50mg daily for one week, 40mg daily for one week, 30mg for one week, 20mg for week, and finally 10mg for one week).

The patient had rapid improvement after starting prednisone and was discharged five days after admission with a treatment regimen of oral doxycycline, amoxicillin and clavulanate, topical mupirocin, aluminum sulfate and calcium acetate soaks, and prednisone taper. At one month follow up, mupirocin, amoxicillin and clavulanate, and the soaks were discontinued. The patient remained pain-free but had significant scarring resulting in restriction of neck movement, to include neck extension as well as bilateral flexion and rotation. He also had multiple areas of alopecia throughout the beard and scalp (**Figure 3**). Doxycycline was continued to mitigate the risk of relapse while on systemic corticosteroids.

Case Discussion

Sycosis barbae is a rare, severe form of folliculitis that is observed almost exclusively in men who shave [7]. The prominent risk factors for infectious folliculitis vary by the responsible pathogen. Prolonged oral antimicrobial therapy predisposes to gram-negative folliculitis and immunosuppression predisposes to viral and fungal folliculitis. It worth noting that a history of shaving is consistently documented in published cases of sycosis barbae [5,7]. We suspect our patient was particularly at risk owing to the mechanical challenges of shaving over chronic pseudofolliculitis papules, increasing his risk for abrasions and shaving-related trauma. Additionally, our patient had type II diabetes mellitus which likely further increased his risk of infection [3]. Although our patient's presentation was atypical in that it involved his occipital scalp, we hypothesize that this could be attributed to his use of the same clippers on both his beard and scalp, creating a favorable environment for bacterial entry into shaved areas. Given that shaving is a widespread practice, it is imperative for physicians to be aware of sycosis barbae. Additionally, further studies are needed to investigate the relationship between shaving and the risk for sycosis barbae.

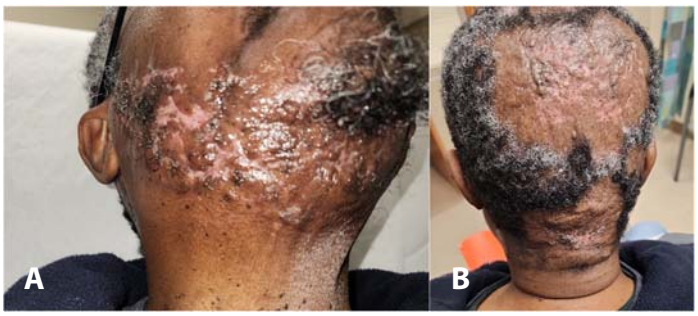

Figure 3. ***A)*** *Four weeks after* **Figure 1A**. *Areas of hypopigmentation and pink patches, and slightly atrophic pink plaques throughout the beard. Restriction of movement noted with head extension on the central part of the neck in area of scar.* ***B)*** *Four weeks after* **Figure 1B**. *Areas of hypopigmentation and pink patches, and slightly atrophic pink plaques throughout the frontal, vertex, and occipital scalp. Very few minimal yellow/brown crusted plaques that are tightly adherent scales.*

At present, there are no standardized treatment guidelines for SB. A few case reports describe the treatment with antibiotics, namely doxycycline, and one case report describes the successful use of fractional radiofrequency microneedling in an outpatient with localized SB refractory to antibiotics [8]. The optimal antibiotic therapy for this patient should have been guided by culture results from his initial presentation to the ED. However, cultures were not collected at that time and likely this delayed effective treatment. Our treatment approach was based on several factors, including the severity of symptoms, suspected underlying causes, morphology of the condition, and results from diagnostic tests [7]. The patient presented with systemic symptoms and severe inflammatory plaques and nodules with honey-colored crust, consistent with a deep bacterial folliculitis despite negative blood and wound cultures. We suspect these negative cultures were, at least in part, related to antibiotic and chlorhexidine use prior to obtaining specimen for culture. Studies have shown that antimicrobial therapy before specimen collection can decrease the sensitivity of Gram stain by almost 50% [9]. Additionally, we believe that the infectious nidus was deeper within the follicular structure,

beyond the reach of the sampled wound culture. This likely further confounded the culture results. If cultures had been collected at the patient's initial visit, a more targeted antibiotic therapy could have been selected, informed by pathogen identification and antibiotic sensitivity testing, potentially resulting in a more efficient and shorter treatment course [9]. The decision to continue antibiotics was based on a positive clinical response to prior antibiotic therapy and an ongoing concern for an infectious process despite negative cultures.

Although antibiotics played an important role in the treatment, systemic corticosteroids were crucial to our patient's eventual clinical improvement. The administration of systemic corticosteroids led to notable improvement of the patient's scalp and facial skin, as well as symptomatic relief from pain. This is likely related to the ability of corticosteroids to blunt the response of epidermal and dermal immune cells, in addition to their systemic anti-inflammatory effects. Although it may seem counterintuitive, the use of corticosteroids in conjunction with antimicrobial therapy has been described in many infectious disease processes, such as COVID-19, gram-negative toe-web infection, and kerion [10-12]. The presumed mechanism is that corticosteroids reduce the systemic inflammatory response that can cause further tissue injury [11]. Additionally, we also considered that the pathogenesis of many dermatological conditions involves a complex interplay between infection, inflammation, and the aberrant response of the immune system, such as that which occurs in acne vulgaris, dissecting cellulitis, kerion, or hidradenitis suppurativa [11,13,14]. For example, in dissecting cellulitis, as similarly described in hidradenitis suppurativa, there is likely a component of follicular dysfunction in addition to an aberrant inflammatory response to commensal bacteria [10]. In the case of kerion, treatment includes antifungals and often requires systemic corticosteroids, addressing both the underlying fungal infection and the associated inflammatory response [14]. The addition of corticosteroids is beneficial in reducing inflammation and minimizing scarring [14]. In our case, the patient had been given multiple cycles of antibiotics with minimal improvement. In theory, it is possible that his immune response to the deep-seated infection of the hair continued, even in the context of multiple rounds of oral, even IV antibiotics, owing to aberrant, or over-activation of his immune system. Given this patient's history of poorly controlled PFB, it is likely that chronic inflammation was already present before the infectious insult, potentially contributing to the severity of his presentation. This theory is supported by his dramatic response to the addition of corticosteroids. Although, it is important to note the patient received concurrent oral antibiotic coverage throughout his corticosteroid taper.

Severe debilitating sycosis barbae, can have serious short- and long-term impacts on the lives of patients. In the short-term, our patient required inpatient hospitalization and then close outpatient follow up. Furthermore, long-term follow-up is essential for SB patients to monitor for potential recurrence and scarring [7]. Patients should be educated to regularly clean grooming tools as these are potential sources for colonization. Moreover, adequate control of concomitant skin conditions, such as PFB in our patient, may play a role in preventing disease flares. The development of severe restrictive scarring and alopecia, as seen in our patient (**Figure 3**) can be a potential long-term sequela. For simplification of terminology of any further reports in the literature, we propose the term, *sycosis barbae fulminans* for the disease our patient experienced.

Conclusion

Systemic corticosteroids should be considered, in addition to antibiotics, in the treatment of SB, particularly when chronic inflammation from a concomitant condition may have contributed to disease severity. Although the treatment was successful, our patient experienced significant scarring and alopecia. Providers should closely monitor patients for disease recurrence, skin hygiene practices, and manage disease sequela.

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Potential conflicts of interest

The authors declare no conflicts of interest.

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