

A Suspected Case of Fabuloso® Associated Pseudomonas Cellulitis

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Abstract *Pseudomonas aeruginosa* and *Pseudomonas fluorescens* are gram-negative bacilli that are ubiquitous in the environment and are known to cause folliculitis, pneumonia, and otitis externa typically in immunocompromised patients. *Pseudomonas* spp. are rarely associated with cellulitis. We present a case of a 47-year-old woman who presented to the emergency room with left lower leg edema and erythema after being exposed to the multi-purpose cleaning product, Fabuloso®. Recently, a recall regarding multiple lots of this cleaner was made as some of the products have been found to grow both *Pseudomonas aeruginosa* and *Pseudomonas fluorescens*. Physical exam revealed a warm, erythematous, and lower left leg lesion that was tender to touch. A computerized tomography of the lower left leg indicated a soft tissue infection with no abscesses or collections. Antibiotics were administered to cover against bacterial causes of nonpurulent cellulitis. The lesion continued to spread, and only began to decrease in size when antimicrobial coverage was broadened to target *Pseudomonas* spp. This case demonstrates the importance of detailed history taking including environmental exposures as well as rapid recognition of antimicrobial failure.

Keywords: cellulitis, *Pseudomonas aeruginosa*, *Pseudomonas fluorescens*, Fabuloso®

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this study is to describe a case of possible *Pseudomonas* spp. cellulitis and its clinical presentation.

1. Introduction

Pseudomonas aeruginosa (*P. aeruginosa*) and the lesser studied *Pseudomonas fluorescens* (*P. fluorescens*) are gram negative bacilli that are found mainly in water or soil. *P. aeruginosa* infections are most common in immunocompromised hosts and are known to cause folliculitis, pneumonia, otitis externa, and life-threatening bacteremia. It has the capability to form biofilms and can cause infections in those with catheters or indwelling medical devices [1]. Other common manifestations of *P. aeruginosa* skin infection include green nail syndrome, toe web infection, and hot hand-foot infection [2]. *P. fluorescens* is a low virulence organism and does not typically cause infection [3]. There have been a few case reports noting bacteremia in patients infected with *P. fluorescens*, however, many of those patients were found to have an impaired immune response [3]. *Pseudomonas* spp. do not typically cause cellulitis; the most common cause of non-purulent cellulitis is *Streptococcus pyogenes* infection, and the most common cause of purulent cellulitis is *Staphylococcus aureus* infection [4]. Herein, we present a case of a 47-year-old woman with lower left leg erythema and edema after being exposed to the cleaning product, Fabuloso®, which was recently recalled due to possible contamination with *P. aeruginosa* and *P. fluorescens* [5]. The primary aim of

2. Case

A 47-year-old female with a past medical history of osteoporosis, unilateral renal agenesis and partial uterine agenesis presented with three days of progressive left lower extremity pain. On the first day of symptoms, she experienced burning pain with subjective fevers. Acetaminophen provided relief at that point. The following morning, she noticed that her left leg was erythematous and swollen from the ankle up to the knee, which prompted her to go to the emergency department (ED). She denied recent trauma to her leg, insect bites, skin breaks, hot tub use, intravenous (IV) drug use, or recent travel. On arrival to the ED, she was febrile with a max temperature of 101.6°F. Physical examination revealed a circumferential, erythematous lesion on the left leg expanding from the ankle to knee without clear border demarcation (Figure 1). Desquamation was also noted in the anterior aspect of the left shin. An additional erythematous lesion that measured 7 cm x 6 cm was also present on the anteromedial left knee. Upon inspection, no fluid collection, open wounds, or abscesses were noted. The lesions were tender and warm to palpation with no crepitus. Bloodwork was significant for a creatinine of 1.3 (baseline 0.6) and white blood cell count of 14,100/ μ L.

with neutrophilic predominance (85.5%). A left lower extremity ultrasound duplex was negative for deep vein thrombosis. Computerized tomography (CT) of the left leg showed signs of focal soft tissue swelling, circumferentially of the left lower extremity and along the medial aspect of the thigh, with no collection or abscess. Additionally, a small deep vein thrombosis was noted in the left medial gastrocnemius vein and the patient was started on apixaban. Infectious workup included two sets of blood cultures and methicillin-resistant *Staphylococcus aureus* (MRSA) nares screening. The patient received one dose of broad-spectrum antibiotics, vancomycin and cefepime, and was admitted for further management of cellulitis.



Figure 1. Skin and soft tissue infection of left lower extremity as evidenced by circumferential swelling and erythema of the left leg when compared to the right

After admission, no further febrile episodes were noted, and blood cultures did not exhibit any growth. The antibiotic regimen was de-escalated to cefazolin given the low suspicion of MRSA causing a nonpurulent cellulitis. However, during the following two days, the erythema had expanded beyond the demarcated lesion borders. Upon further eliciting of history and possible environmental exposures, the patient endorsed she had used Fabuloso® on the day of symptom onset. This popular multi-purpose cleaning product had recently been recalled due to concerns regarding contamination with both *P. aeruginosa* and *P. fluorescens* [5]. During admission the patient's MRSA nares screening also resulted as positive. Due to concern of exposure to *Pseudomonas* spp. and MRSA colonization, antibiotics were broadened to vancomycin and cefepime. Over the course of the next few days, her cellulitis began to improve, and she was discharged on linezolid and ciprofloxacin. It was requested that the patient bring in the cleaning agent she used to her follow up appointment; however, she disposed it upon her discharge.

3. Discussion

We present a unique case of a suspected *Pseudomonas* spp. cellulitis due to exposure to the cleaning product Fabuloso®. As of date, there have been no other documented cases of *Pseudomonas* spp. attributed to the exposure of this agent. Due to risk of possible exposure through breaks in the skin, inhalation, or through the eyes, the company recalled 4.9 million units of the product [5].

In this case, despite appropriate antibiotic coverage for non-purulent community-acquired cellulitis, the infection began to expand. The patient's cellulitis was then managed with vancomycin and cefepime, appropriately responding to the new regimen promptly. It is important to mention that even though the patient's MRSA-nares were positive, the positive predictive value of MRSA-nares screening in association with a MRSA-positive wound site culture is low, at 34.2% [6]. In this case there were no culturable lesions on the patient's left leg that could have been sent for MRSA screening.

Pseudomonas spp. typically have low virulence. Patients infected with *Pseudomonas* spp. are typically elderly, immunocompromised, have recent history of antimicrobial therapy, or have a central venous catheter or urinary devices at increased risk for infection [7]. There have been case reports of *Pseudomonas* spp. cellulitis in patients who do not have any of these risk factors. Some cases have been fatal [8]. Despite low virulence, *Pseudomonas* associated cellulitis can still progress to bacteremia. The possibility of clinical deterioration increases, along with risk of mortality, without proper treatment. Additionally, *Pseudomonas* spp. are difficult to treat because of the ease with which they can acquire antibiotic resistance [9]. Quick identification of *Pseudomonas* spp. and observation of clinical course are imperative to proper treatment.

4. Conclusions

P. aeruginosa and *P. fluorescens* are rarely associated with cellulitis infections, with most cases occurring in immunocompromised patients. However, this case demonstrates the possibility of *Pseudomonas* spp. skin and soft tissue infection in an immunocompetent patient after having been directly exposed to a product contaminated with the bacteria. This case presents a unique microbial source of cellulitis and demonstrates how detailed history taking can elucidate exposure to infectious agents or risk factors that may increase susceptibility to rarer causes of cellulitis. Additionally, it emphasizes how rapid recognition of antimicrobial failure and broadening coverage is imperative to treatment and recovery.

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