Volume 19 Number 7
July 2013

Case Presentation

Pseudomonas folliculitis in arabian baths

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Dermatology Online Journal 19 (7): 3

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Abstract

A 35-year-old man presented with a painful cutaneous skin eruption that was localized on the upper trunk. He stated that the previous weekend he had attended an Arabian bath. The physical examination revealed multiple hair follicle-centered papulopustules surrounded by an erythematous halo. A clinical diagnosis of pseudomonas folliculitis was made and treatment was prescribed. Afterwards *Pseudomonas aeruginosa* was isolated from a pustule culture. Pseudomonas folliculitis is a bacterial infection of the hair follicles. The most common reservoirs include facilities with hot water and complex piping systems that are difficult to clean, such as hot tubs and bathtubs. Despite adequate or high chlorine levels, *Pseudomonas aeruginosa* can grow within a biofilm.

Introduction

Pseudomonas folliculitis, which is also referred to as “hot tub folliculitis,” is a community-acquired skin infection that arises secondary to bacterial infection in the hair follicles. The skin colonization occurs after the skin is exposed to contaminated water. Arabian baths are a popular type of hot tub facility in the south of Spain, where baths constructed from the Muslim period have been restored and are currently functional.

Case synopsis

A 35-year-old man presented with a painful cutaneous skin eruption that was localized on the upper trunk and had persisted for 36 hours. After the onset of the rash, he suffered from a fever, reaching a temperature of 37.5°C-38°C, as well as headache and malaise. The patient had no history of serious or chronic disease, recent travel abroad, or contact with animals and he was not taking any medication. The patient was employed as an informatics engineer. The previous weekend, he had attended an Arabian bath with his wife, but she had no apparent skin lesions.

Upon physical examination, multiple hair follicle-centered papulopustules surrounded by an erythematous halo were observed (Figure 1). The rash was located predominantly on the chest, although scattered lesions were present on the limbs and back. The face, palm, soles, buttocks, and genital area were unaffected. The patient was in good condition and had an blood pressure of 126/82 mmHg and a temperature of 37.6°C. No signs of severe illness or malignancy were detected.

The differential diagnosis included: acne, insect bite, staphylococcal folliculitis, *Pseudomonas aeruginosa* folliculitis, malassezia folliculitis, and folliculitis caused by chemical irritants. Serial blood samples and the contents of a fresh pustule were collected for

microbiological investigation. The clinical diagnosis of Pseudomonas folliculitis was made, and twice-daily 500-mg doses of oral ciprofloxacin for 7 days and 0.1% topical chlorexidine were prescribed.

Figure 1. Scattered erythematous papulopustules

Figure 2. Close up of follicular pustule

The blood cultures were negative, although *Pseudomonas aeruginosa* was isolated from a pustule culture. The sensitivity results revealed sensitivity to ciprofloxacin, amikacin, ceftazidime, and meropenem.

The diagnosis of pseudomonas folliculitis was confirmed. At the follow-up visit 7 days later, only a discrete sensation of pain of the skin lesions was detected and no systemic symptoms were present. The patient's temperature was also normal. Some of the pustules had developed into crusts and the surrounding erythema had decreased. Ciprofloxacin treatment was discontinued and complete resolution of the lesions was achieved in 14 days.

Discussion

Pseudomonas folliculitis is a bacterial infection of the hair follicles. The most common reservoirs include facilities with hot water and complex piping systems that are difficult to clean, such as hot tubs and bathtubs. However, the ubiquity of *Pseudomonas aeruginosa* has led to cases that originated in swimming pools, water slides, and seawater as well as from the use of contaminated bathing objects, such as sponges and inflatable pool toys. Despite adequate or high chlorine levels, *Pseudomonas aeruginosa* can grow within a biofilm [1]. Moreover, Arabian baths, which represented the clinical source of infection in our case, satisfy these characteristic conditions for *Pseudomonas aeruginosa* contamination [2].

The elementary lesion is composed of erythematous macules that evolve into papules with follicle-centered pustules. Itching, pain, and burning sensations are common with this condition. Typically, the skin lesions appear suddenly on the exposed skin between 8 hours and 5 days after being exposed. The skin lesions generally lead to a disseminated eruption with a predilection for intertriginous areas or areas covered by bathing suits [3]. Even when they are exposed, the soles, palms, face, and neck are typically uninvolved. Systemic involvement may concur with the skin eruption and the most common general findings include malaise/fatigue, headache, low-grade fever, breast tenderness (infection of the Montgomery glands in the nipple, which can result in mastitis), nausea/vomiting, diarrhea, earache, and sore throat. In immunosuppressed individuals, the folliculitis can evolve into the development of ecthyma gangrenosum, subcutaneous nodules, or cellulitis [4]. The patient in this case satisfied numerous epidemiological criteria for infection with pseudomonas folliculitis, including prolonged exposure to a crowded hot water environment. Additionally, the clinical appearance of the lesions and their abrupt onset at 48 hours after exposure are characteristic of this type of infection. Systemic symptoms are infrequent, although knowledge of this infection is important to

avoid unnecessary procedures and treatments. In the presented case, the patient’s fever and headache led to the blood culture sampling and the use of ciprofloxacin.

The differential diagnosis for pseudomonas folliculitis should include other infectious causes of folliculitis, such as staphylococcus and malassezia, folliculitis caused by chemical irritants, and localized insect bites. A bacterial culture generated from a fresh pustule or contaminated water typically confirms the diagnosis. If a skin biopsy is performed, an intense follicular inflammatory response with follicle disruption and neutrophil infiltration into the pilar canal may be observed. In the case presented here, the pustule culture grew *Pseudomonas aeruginosa*. Typically, the utility of blood cultures is poor even when fever is present because these infections are nearly always limited to the skin [5].

This eruption generally clears spontaneously within 2-15 days. Scarring is infrequent, although residual hyperpigmentation can occur. For symptomatic relief, compresses containing 5% acetic acid can be applied for 20 minutes between 2 and 4 times daily. The use of antibiotics is not indicated for uncomplicated infections and does not alter the course of the skin infection. Only in the presence of mastitis, immunosuppression, persistent infections, or systemic spread is a 7-10-day course of 500 mg oral ciprofloxacin advised [5,6]. An exhaustive cleaning of the bathing facility followed by an adequate chlorination of the water is necessary to prevent recurrences and to protect others from infection. The patient in this case had no indication for antibiotic use, and the infection course was not modified. The rash cleared slowly and led to the presence of discrete, residual hyperpigmentation. The local preventive medicine and public health services were informed and an inspection of the Arabian baths was performed to collect water samples, evaluate the levels of *Pseudomonas aeruginosa,* and determine the chlorine levels.

In conclusion, we herein reported a case of pseudomonas folliculitis with moderate systemic involvement that developed following exposure to a particular type of hot tub facility. This case highlights the importance of clinical knowledge concerning the course of pseudomonas folliculitis infection, the potential complications of infection, and the proper use of diagnostic or therapeutic procedures. Moreover, periodic examinations of the chlorine levels and the presence of *Pseudomonas aeruginosa* contamination should be performed in Arabian baths and other hot water facilities.

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