Posted on 30 Mar 2023 — The copyright holder is the author/funder. All rights reserved. No reuse without permission. — https://doi.org/10.22541/au.168014528.82668435/v1 — This a preprint and has not been peer reviewed. Data may be preliminary.

Bilateral axillary folliculitis due to Pseudomonas aeruginosa

Luis Paniagua[1], Neal Nathan[1], and Cynthia Ho[1]

[1]Kaiser Permanente Los Angeles Medical Center

March 30, 2023

Introduction

Folliculitis is inflammation of hair follicles, most commonly due to infection. Ingrown hairs and trauma from shaving or waxing promote follicular occlusion and irritation and increase risk of folliculitis.

Folliculitis is classified by depth of infection. Superficial folliculitis involves the superficial part of the hair follicle (infundibulum) while deep folliculitis involves the entire hair follicle. On examination, inflammation of superficial folliculitis is restricted to the epidermis. Deep folliculitis is distinguished by widespread erythema, edema, and tenderness involving the dermis.

Case Presentation

A 19-year-old man presented to the hospital with fever, bilateral axillary pain and swelling for four days. On presentation, temperature was 38.6°C, pulse was 105 beats per minute, and blood pressure was 142/73mm-Hg. Examination of bilateral axillae revealed papular and pustular lesions involving the hair follicles along surrounding erythema, exquisite tenderness, and fluctuant nodules (Figure 1).

Laboratory testing revealed a white blood cell count of 23.3 x 10^9/L and creatinine of 1.3mg/dL. He was treated with vancomycin and ceftriaxone and underwent incision and drainage of the fluctuant nodules with purulent yellow drainage. Over the next two days, he remained febrile with persistent leukocytosis. Gram stain of the wound drainage showed gram positive cocci in clusters. On hospital day four, wound culture grew *Pseudomonas aeruginosa.*

On further questioning, the patient denied hot tub or swimming pool exposure but reported regular use of a bath sponge when showering. He was treated with ciprofloxacin 500mg twice daily for one week with resolution of his symptoms.

Discussion

Infectious etiologies of folliculitis include bacteria, fungi, parasites, and viruses. *Staphylococcus aureus* is the most common infectious etiology of folliculitis. Gram negative folliculitis due to*Pseudomonas aeruginosa,* or "hot tub folliculitis," occurs after exposure to contaminated water from swimming pools or hot tubs. Less commonly recognized exposures include bath sponges, diving suits, and cleaning gloves. Medications such as oral contraceptives, lithium, corticosteroids, immunosuppressants, and anticonvulsants can cause non-infectious superficial folliculitis.

Superficial folliculitis is treated with cleaning the area twice daily with warm water and antibacterial soap and warm compresses. Deep or recurrent episodes of folliculitis are treated with dicloxacillin or cefalexin. Coverage for Methicillin resistant *Staphylococcus aureus* (MRSA) should be considered if there is purulence, signs of systemic infection, or risk factors for MRSA. Incision and drainage is recommended for larger pustules or abscesses. Untreated severe or recurrent folliculitis can lead to hair loss and scarring.

Posted on 30 Mar 2023 — The copyright holder is the author/funder. All rights reserved. No reuse without permission. — https://doi.org/10.22541/au.168014528.82668435/v1 — This a preprint and has not been peer reviewed. Data may be preliminary.

While folliculitis due to *Pseudomonas aeruginosa* has been well described, sepsis due to Pseudomonas folliculitis in an immunocompetent patient is rare and contributed to the diagnostic challenge in our patient. Additionally, discrepancy between Gram stain and culture results led to delay in initiating gram-negative antimicrobial coverage. Discrepancy between Gram stain and culture results occurs in 0.4% - 2.7% of cases. Interpretation of Gram stain results are subject to technician error depending on training level and experience. Recognition of potential lab error in Gram stain results is important when caring for a patient who is not responding to treatment.

References

1. Folliculitis: Recognition and Management. Am J Clin Dermatol. 2004;5(5):301–10.

2. Fisher AA. Folliculitis from the use of a "loofah" cosmetic sponge. Cutis. 1994 Jul;54(1):12–3.

3. Bottone EJ, Perez AA. Pseudomonas aeruginosa folliculitis acquired through use of a contaminated loofah sponge: an unrecognized potential public health problem. J Clin Microbiol. 1993 Mar;31(3):480–3.

4. Kitamura M, Kawai S, Horio T. Pseudomonas aeruginosa folliculitis: a sporadic case from use of a contaminated sponge. Br J Dermatol. 1998 Aug;139(2):359–60.

5. Mazza J, Borkin M, Buchholz R, Deleo V. Pseudomonas folliculitis contracted from rubber gloves: A public health concern. J Am Acad Dermatol. 2013 Aug;69(2):e93–4.

6. Samuel LP, Balada-Llasat JM, Harrington A, Cavagnolo R. Multicenter Assessment of Gram Stain Error Rates. Bourbeau P, editor. J Clin Microbiol. 2016 Jun;54(6):1442–7.