

UC Davis

Dermatology Online Journal

Title

Botryomycosis associated with retained hair piece and accompanying ethnic hair considerations

Permalink

<https://escholarship.org/uc/item/48h4z941>

Journal

Dermatology Online Journal, 30(5)

Authors

Conner, Anna
Musiek, Amy
Barnes, Ethan
[et al.](#)

Publication Date

2024

DOI

10.5070/D330564440

Copyright Information

Copyright 2024 by the author(s). This work is made available under the terms of a Creative Commons Attribution-NonCommercial-NoDerivatives License, available at <https://creativecommons.org/licenses/by-nc-nd/4.0/>

Peer reviewed

Botryomycosis associated with retained hair piece and accompanying ethnic hair considerations

Anna Conner¹ BBA, Amy Musiek² MD, Ethan Barnes BA, Nupur Singh¹ BA, Zachary Nahmias⁴ MD FAAD

Affiliations: ¹College of Medicine, University of Tennessee Health Science Center, Memphis, Tennessee, USA, ²Division of Dermatology, Washington University, St Louis, Missouri, USA, ³University of Alabama at Birmingham Heersink School of Medicine, Birmingham, Alabama, USA, ⁴Northeast Arkansas Baptist Memorial Hospital, Jonesboro, Arkansas, USA

Corresponding Authors: Anna Conner, College of Medicine, The University of Tennessee Health Science Center, 910 Madison Avenue, Memphis, TN 38104, Tel: 618-409-2288, Email: annanconner@icloud.com; Zachary Nahmias, MD FAAD, Northeast Arkansas Baptist Memorial Hospital, 4800 East Johnson Avenue, Jonesboro, AR 72405, Tel: 901-848-0694, Email: dr.zachary.nahmias@gmail.com

Keywords: botryomycosis, haircare, hairpiece

To the Editor:

Botryomycosis is a rare, chronic, granulomatous infectious disease primarily resulting from *Staphylococcus aureus*, but the condition can be attributed to other bacterial species. We describe a patient who presented to the emergency department with a severe case of botryomycosis of the scalp. Physical examination showed a severely deteriorated glued-in hair piece with a foul exudate and ulcerated tracts.

A woman with in her 60s with cognitive impairment presented to the emergency department with a fluctuant, draining plaque under a deteriorated hair piece (**Figure 1A**) on the left occipital scalp. According to the patient, her condition appeared 6-months prior, but symptoms worsened the week prior to presentation. Intense pain in the area prevented her from lying down or sleeping.

Physical examination revealed a glued hair piece in a state of severe deterioration with exudate, foul odor, and ulcerated tracts on the scalp. White granules were abundant and sent for ova and parasite evaluation by the hospital pathologist, which returned negative. The patient was admitted from the emergency department to the medicine floor. Lukewarm hydrogen peroxide and saline wraps were applied to the patient's scalp for approximately 8 hours. In addition, the patient was started on intravenous vancomycin at the time of her arrival on the floor by the inpatient medicine team for

adequate methicillin resistant *Staphylococcus aureus* coverage.

After soaking, the hairpiece, which had softened from the soaking regimen, was removed piece by piece until fully detached (**Figure 1B**). The removal was not painful or bothersome for the patient. During this procedure, more ulcerated tracts were uncovered. A bacterial culture of the ulcerated tracts was performed. *Staphylococcus aureus* sensitive to trimethoprim/sulfamethoxazole was identified through the culture. Based on the identification of *Staphylococcus aureus* and the clinical examination, a diagnosis of botryomycosis was made. Subsequently, the patient transitioned from vancomycin to *Staphylococcus aureus* sensitive to trimethoprim/sulfamethoxazole to complete a two-week course of systemic antibiotics. When she was discharged 48 hours later, she was stable on oral medication with her condition improving. Significant clearing was exhibited at her next



Figure 1. A) Hairpiece glued into place on the scalp. **B)** Partial removal of hairpiece in the lower panel.

appointment (**Figure 2**). The patient expired one year later from an unrelated condition. It was clear to the medical team that the deteriorating condition of the patient's scalp in the context of a glued-in hairpiece complicated by botryomycosis had progressed for a prolonged period (at least 6 months) without medical attention.

Botryomycosis is a rare, chronic, granulomatous infectious disease most commonly caused by *Staphylococcus aureus*, but the condition can be attributed to other bacterial species [1,2]. It can also result from *Pseudomonas aeruginosa* (20%) or other microorganism classes like *Escherichia*, *Proteus*, *Bacillus*, and *Actinobacillus* [2]. The disease is uncommon, with approximately 140 cases reported in the literature [2].

Strains causing botryomycosis are typically of low virulence and require inciting trauma or laceration to the skin. There is no age prevalence; however, the immunocompromised and those with comorbidities of diabetes mellitus, liver disorders, and cystic fibrosis are at greater risk [2]. Bacteria in botryomycosis will group in clustered granules and



Figure 2. Scalp after complete removal of retained hairpiece.

use fibrin, dead tissue, and an antigen-antibody complex to form a ringed eosinophilic matrix, called the Splendore-Hoeppli phenomenon, which acts to prevent phagocytosis by host immune cells [1,2]. Although the exact mechanism is not fully characterized, it is believed to be the result of a localized immune response and this allows low-virulence bacteria to create a chronic, smoldering infection [3].

Occurrences of botryomycosis are cutaneous or visceral, with our case being an example of the more common cutaneous form. Manifestations in the skin include ulcers, subcutaneous nodules, and sinus tracts [4]. Such presentations can often give a seropurulent exudate with granules of bacteria. Infection sites often occur on the extremities but may also be located on the tongue, forehead, and scalp, as in our patient's case [5]. Treatment for botryomycosis includes anti-staphylococcal antibiotics used in this case as well as tetracyclines and fluoroquinolones [3]. Surgical debridement, skin grafts, and other strain-specific antibiotics can be utilized for treatment. Botryomycosis of the head and neck region can be difficult to treat owing to the region's anatomy, functions, and cosmetic appearance; successful cases utilize long-term medical therapy in lieu of surgical intervention [6,7].

Consideration should be given to the circumstances for our patient that permitted the progression of botryomycosis without medical intervention. Her condition was a result of years of hairpiece deterioration in the setting of neglect. She had multiple risk factors that may have contributed to disease progression: barriers to healthcare access, a reduced cognitive capacity, and limited knowledge of ethnic hair variations among physicians.

Potential conflicts of interest

The authors declare no conflicts of interest.

References

1. Padilla-Desgarenes C, Vázquez-González D, Bonifaz A. Botryomycosis. *Clin Dermatol*. 2012;30:397-402. [PMID: 22682187].
2. Chintaginjala A, Harshavardhan K, Kumar AS. Cutaneous botryomycosis: A rare case report. *Indian J Dermatol*. 2016;61:126. [PMID: 26951776].

3. Hussein MR. Mucocutaneous Splendore-Hoeppli phenomenon. *J Cutan Pathol.* 2008;35:979-988. [PMID: 18976399].
4. Pradhan S, Sirka C, Dash G, et al. Cutaneous botryomycosis in immunocompetent patients: A case series. *Indian Dermatol Online J.* 2019;10:311. [PMID: 31149580].
5. Dewitt JP, Stetson CL, Thomas KL, Carroll BJ. Extensive Cutaneous Botryomycosis With Subsequent Development of Nocardia-Positive Wound Cultures. *J Cutan Med Surg.* 2018;22:344-346. [PMID: 29366337].
6. Yench MW, Walker CW, Karakla DW, Simko EJ. Cutaneous botryomycosis of the cervicofacial region. *Head Neck.* 2001;23:594-598. [PMID: 11400249].
7. Ellerbe DM, Parsons DS, Cook PR. Botryomycosis: improved therapy for a difficult infection. *Int J Pediatr Otorhinolaryngol.* 1997;41:363-369. [PMID: 9350495].