Leclercia adecarboxylata folliculitis in a healthy swimmer—An emerging aquatic pathogen?

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INTRODUCTION

The ubiquitous bacteria *Leclercia adecarboxylata* has rarely been identified as a pathogenic etiology for disease in immunocompromised patients. However, in recent years, there have been a growing number of reports of this organism causing cutaneous infection in immunocompetent hosts exposed to an aquatic environment. Here, we describe the first report of *L adecarboxylata* folliculitis in an otherwise healthy child. This bacterium's ability to cause common skin disease, including abscesses and folliculitis, highlights the importance of performing a bacterial culture on even routine infectious cutaneous presentations that do not respond to a normal treatment regimen.

CASE REPORT

A 12-year-old healthy boy presented with a 2-month painful acneiform eruption. On examination, erythematous follicular papules and pustules were scattered over the bilateral shoulders and back (Figs 1 and 2). These surfaces were moderately tender to light palpation; the patient complained that even clothing in contact with his skin elicited pain. Doxycycline 75 mg orally once daily for 10 days was prescribed to cover common *Staphylococcus aureus* folliculitis. Due to the atypical presentation of significant pain, a bacterial culture was collected.

Culture yielded heavy isolated growth of *L adecarboxylata*. Bacterial isolates showed susceptibility to tested β-lactams, quinolones, aminoglycosides, and folate pathway inhibitors. Empiric therapy was switched to a more targeted regimen of ciprofloxacin 500 mg orally for 21 days. At the 3-week follow-up, the patient reported resolution of pain, and the

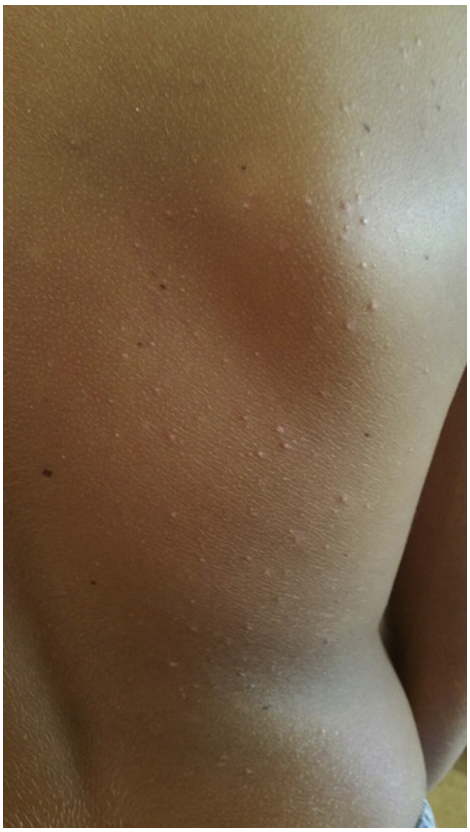

Fig 1. Numerous erythematous follicular-based papules and pustules scattered over the back and bilateral shoulders. These were tender to palpation.

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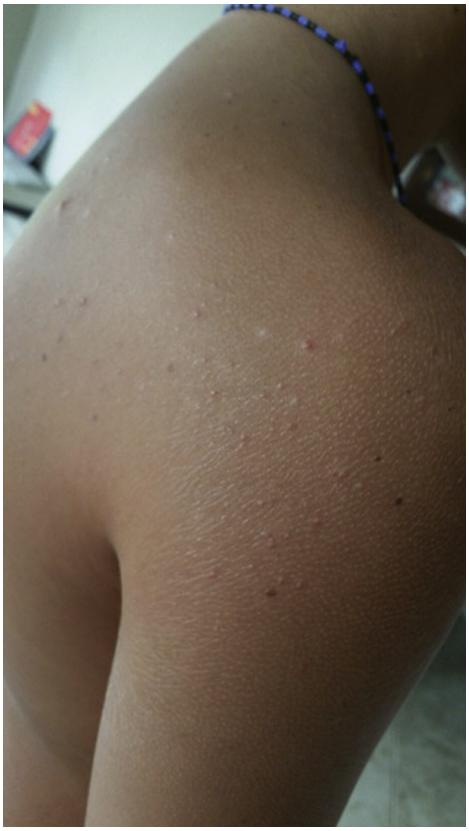

Fig 2. Culture revealed *Leclercia adecarboxylata* bacterial folliculitis, a rare pathogen increasingly reported to cause cutaneous disease in immunocompetent patients exposed to aquatic environments.

folliculitis had almost completely dissipated. Results of repeat cultures during the treatment period were negative.

DISCUSSION

L adecarboxylata is a motile, aerobic, Gram-negative rod first identified in 1962.[1] Since that time, there have been rare worldwide reports of this bacteria acting as a human pathogen. It is a ubiquitous microorganism found in food, water, soil, and the gut flora of animals. In human clinical specimens, *L adecarboxylata* has seldom been discovered as pathogenic flora from sputum, blood, feces, peritoneal fluid, cerebrospinal fluid, cardiac valve vegetations, and cutaneous infections.[2] It is most often pathologic in patients with underlying immunosuppression, leading to bacteremia and sepsis.[3] Common co-contaminants include *Enterococcus* species, *Staphylococcus* species, and *Escherichia coli*. Because of the high degree of phenotypic overlap between co-contaminates and *L adecarboxylata*, it is important for microbiology laboratories to detect distinguishing features specific for this bacterium, specifically, a lack of acid production from adonitol and bromocresol agar sugar formation.[2] These tests particularly aid in differentiating it from *E coli*, which has similar findings on Gram, MacConkey, and indole media. After wound culture results, the patient presented in this case was recalled for an evaluation of comorbidities that could result in depressed immune status; none was identified.

From a dermatologic perspective, a literature review found *L adecarboxylata* reported in only 8 cases of cutaneous disease, including cellulitis, abscess, and burn wound infection.[4-10] No cases of *L adecarboxylata* folliculitis were reported. Although this pathogen is classically opportunistic in nature, of the 8 cited cutaneous-related cases, only 1 person was immunocompromised.[4] Based on the literature, there is a tendency for *L adecarboxylata* cutaneous infections to occur in immunocompetent patients exposed to marine or water environments. Keren et al[9] described a case of cellulitis in a healthy surfer after foot laceration on a surfboard fin. Tam and Nayak[10] reported lower extremity cellulitis related to cleaning up basement floodwater. The patient presented here is a swimmer who practices daily in a chlorinated public pool; none of his teammates or family members suffered the same rash.

To our knowledge, this is the first known report of *L adecarboxylata* causing folliculitis. This case is presented to raise awareness of this rare organism's ability to cause a common cutaneous disease and to aid in the appropriate diagnosis and treatment of cutaneous *L adecarboxylata* folliculitis.

REFERENCES

1. Leclerc H. Biochemical study of pigmented Enterobacteriaceae. *Ann Inst Pasteur*. 1962;102:726-741.
2. Stock I, Burak S, Wiedemann B. Natural antimicrobial susceptibility patterns and biochemical profiles of Leclercia adecarboxylata strains. *Clin Microbiol Infect*. 2004;10(8):724-733.
3. Stone JP, Denis-Katz HS, Temple-Oberle C, Mercier P, Mizzau JB, Mitha AP. Leclercia adecarboxylata: the first reported infection of cerebrospinal fluid and a systemic review of the literature. *J Neuroinfect Dis*. 2015;6(3):21385207.
4. Shah A, Nguyen J, Sullivan LM, Chikwava KR, Yan AC, Treat JR. Leclercia adecarboxylata cellulitis in a child with acute lymphoblastic leukemia. *Pediatr Dermatol*. 2011;28(2):162-164.
5. Hurley EH, Cohen E, Katarincic JA, Ohnmacht RK. Leclercia adecarboxylata infection in an immunocompetent child. *R I Med J*. 2015;98(4):41-44.
6. Grantham WJ, Funk SS, Schoenecker JG. Leclercia adecarboxylata musculoskeletal infection in an immune competent pediatric patient: an emerging pathogen? *Case Rep Orthop*. 2015;2015:160473.

7. Allawh R, Camp BJ. Isolation of Leclercia adecarboxylata from a patient with a subungual splinter. *Dermatol Online J*. 2015; 21(8):26437172.
8. Dalamaga M, Pantelaki M, Karmaniolas K, Daskalopoulou K, Migdalis I. Isolation of Leclercia adecarboxylata from blood and burn wound after a hydrofluoric acid chemical injury. *Burns*. 2009;35(3):443-445.
9. Keren Y, Keshet D, Eidelman M, Geffen Y, Raz-Pasteur A, Khetam H. Is Leclercia adecarboxylata a new and unfamiliar marine pathogen? *J Clin Microbiol*. 2014;52(5): 1775-1776.
10. Tam V, Nayak S. Isolation of Leclercia adecarboxylata from a wound infection after exposure to hurricane-related floodwater. *BMJ Case Rep*. 2012;2012:23109419.