A 50-year-old man with blistering skin lesions on both feet

David W Cowart,¹ Bijan N Moradi,² Navin S Arora²

¹DOHET, Tripler Army Medical Center, Honolulu, Hawaii, USA
²Department of Medicine, Tripler Army Medical Center, Honolulu, Hawaii, USA

Correspondence to

Dr David Cowart,
 david.w.cowart@us.army.mil

DESCRIPTION

A 50-year-old man presented with blistering skin lesions on both feet that have progressively worsened over the previous month. Symptoms include pain, burning, itching and persistent drainage. His medical history includes chronic kidney disease stage III and hypertension. Two months prior to this visit he was diagnosed with tinea pedis and treated with topical lamisil, with moderate resolution of his foot pruritus. The patient did not have a history of diabetes.

Cutaneous examination revealed a malodorous exudative oedematous foot. Extensive bullae, some intact, other ruptured revealing ulceration at the proximal toes and interdigital web spaces (figure 1). Extending to the distal forefoot are grouped vesicles on an inflamed base (figure 2). There are bilateral dystrophic toenails with scaling on the lateral feet. Pertinent laboratory values including a complete blood count and a chemistry panel are within normal limits.

Figure 1 Intact and ruptured bullae with ulceration at the proximal toes and interdigital web spaces.

Figure 2 Grouped vesicles on an inflamed base extending to the distal forefoot.

Learning points

- ▶ The key clinical feature is recognition of a bacterial super-infection in the setting of long-standing tinea pedis. Dermatophytosis causes erosions of the stratum corneum, allowing a secondary bacteria and yeast proliferation. Mixed Gram-negative bacterial infections represent a secondary infection, due to the underlying tinea pedis.¹ Trauma, depressed host resistance, as in diabetes mellitus or HIV disease, may also predispose individuals to the infection. Of note, our patient was not a diabetic.
- ▶ Over time, in the setting of moisture and maceration, fungal and bacterial organisms may proliferate. Gram-negative bacteria gain access to the bloodstream through foci of infected tissue or possibly from heavy colonisation progressing to cellulitis of the leg and eventually sepsis. In a multivariate analysis, disruption of the cutaneous barrier (ie, traumatic wound, toe-web intertrigo, excoriated leg dermatosis and plantar squamous lesions) and leg oedema were found to be independently associated with erysipelas of the leg.²
- ▶ For our patient, *Pseudomonas aeruginosa* was found to be the causative pathogen based on bacterial culture. Often together with other Gram-negative bacteria, it is the most common aetiological agent.³ In all symptomatic toe web infections, the presence of Gram-negative bacteria, such as *P. aeruginosa*, should be investigated to avoid bacterial resistance, treatment failures and more severe local or systemic complications. In our case, successful treatment was achieved with oral ciprofloxacin, along with topical domeboro soaks and mid-potency topical steroid to reduce inflammation. Once the course of ciprofloxacin was completed, the patient's condition significantly improved, allowing treatment of his underlying onychomycosis and tinea pedis.
- ▶ Ultimately, timely detection and culture directed treatment of a Gram-negative toe web infection is essential in the prevention of leg cellulitis, its subsequent sequelae, and potential sepsis.

To cite: Cowart DW, Moradi BN, Arora NS. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-200850

Contributors DC, BNM and NSA were all involved in the drafting of the manuscript.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned externally peer reviewed.

REFERENCES

- 1 Leyden JJ. Progression of interdigital infections from simplex to complex. *J Am Acad Dermatol* 1993;28(5 Pt 1):S7–11.
- 2 Semel JD, Goldin H. Association of athlete's foot with cellulitis of the lower extremities: diagnostic value of bacterial cultures of ipsilateral interdigital space samples. *Clin Infect Dis* 1996;23:1162.
- 3 Aste N, Atzori L, Zucca M, *et al.* Gram-negative bacterial toe web infection: a survey of 123 cases from the district of Cagliari, Italy. *J Am Acad Dermatol* 2001;45:537–41.

Copyright 2013 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow