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A case report on bullous cellulitis due to *Roseomonas gilardii* infection

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ABSTRACT

Bullous cellulitis is most often caused by beta-hemolytic streptococci and rarely by other bacteria such as *Roseomonas gilardii*. We described a case of a 75-year-old female who acquired bullous cellulitis secondary to *R. gilardii* bacteremia. She presented with multiple, raised skin lesions all over her body. She was afebrile. Her physical examination revealed leucocytosis predominant granulocytes count. She also had anemia (9.4 g/dL) and raised C-reactive protein. During admission, she was treated with intravenous ampicillin/sulbactam and subsequently changed to oral ciprofloxacin following discharge. She fully recovered in two weeks.

Introduction

Bullous cellulitis is initially characterized by erythema and rapid development of bullae, which can become hemorrhagic and cause skin necrosis (1). It is a soft tissue infection most often caused by beta-hemolytic streptococci (2). *Roseomonas gilardii,* a Gram-negative pink-pigmented coccobacillus belonging to species of genus *Roseomonas* is associated with low human pathogenicity (3). Thus, the clinical experience with *Roseomonas* infection, particularly *R. gilardii,* is relatively limited (4). Only a few case reports and case series have been published on this infection. Moreover, most of them were from western countries, dating back to the 1990s and early 2000s (3,5-7). We here described a patient who developed bullous cellulitis linked to *R. gilardii* bacteremia. Written informed consent was obtained from the patient to publish this case report anonymously.

Case Presentation

A 75-year-old Malay female presented with nonitchy, multiple, raised skin lesions all over her body for one week. She did not remember being bitten before the onset of the lesions. Her medical history was positive for hypertension and ischemic heart disease. She reported a right, below-knee amputation ten years ago due to necrotizing fasciitis. Her medication list included antihypertensives and cardiovascular agents but no antibiotics on admission.

The patient was conscious and afebrile on physical examination. There were multiple, raised skin lesions involving

bilateral lower land upper limbs and the back of her torso. One large hemorrhagic blister was noticed over the left anterior knee (Figures 1, 2). The next day, she complained of increased swelling in the right leg with the blister. Extensive erythema was observed on her leg.

Blood tests showed leucocytosis (17.2x109/L) with a predominant granulocyte count (78%). She also had anemia (9.4 g/dL) and elevated C-reactive protein (>200 mg/L). On admission blood culture was positive for *R. gilardii,* while swab culture from the skin lesion was negative. Her renal profile and liver function test came back as unremarkable.

She was diagnosed with bullous cellulitis due to *R. gilardii* bacteremia. Treatment with intravenous ampicillin/sulbactam was started and the clinical improvement was obtained by the sixth day. The treatment was subsequently switched to oral ciprofloxacin after antibiotic sensitivity testing. The patient was discharged home after seven days of hospitalization. After two weeks, she was fully recovered and her laboratory tests returned to normal during the follow-up.

Discussion

Roseomonas species are found in the environment, including soil, water, and air. However, the mechanism of infection and the clinical significance is not well understood (8). They are known opportunistic, whereby only 60% of isolates cause significant infection in humans (4). The infection can occur in immunocompromised states, such as acquired immunodeficiency syndrome, chronic renal disease on dialysis, diabetes mellitus, or malignancy (5,9). Comorbidities of hypertension and ischemic heart disease might have made vulnerable our geriatric patient to *R. gilardii* infection, similar to the case reported by Shokar et al. (3). Furthermore, necrotizing fasciitis history may also be associated with the increased risk of acquiring such infections.

Published cases of *R. gilardii* infection in the literature suggest episodic fever as the initial symptom (3,5). Interestingly, our patient remained afebrile throughout the course of the illness. Although rare, Dé et al. (5) reported one case of multiple episodes of *R. gilardii* bacteremia with no documented fever at any time. Additionally, Lewis et al. (7) noted that two of their seven patients did not experience fever. However, we were unable to compare the findings of the blood tests since there were no details of the whole blood count in previous publications.

Roseomonas spp. are slow-growing bacteria, which often takes up to 5 days for any growth in the culture. As in our patient, the organism is isolated from the blood. Wounds are rare sites of isolation apart from the respiratory tract and peritoneum (3). The slow growth of the organism could explain why antibiotic sensitivity testing was unavailable during the hospitalization of our patient.

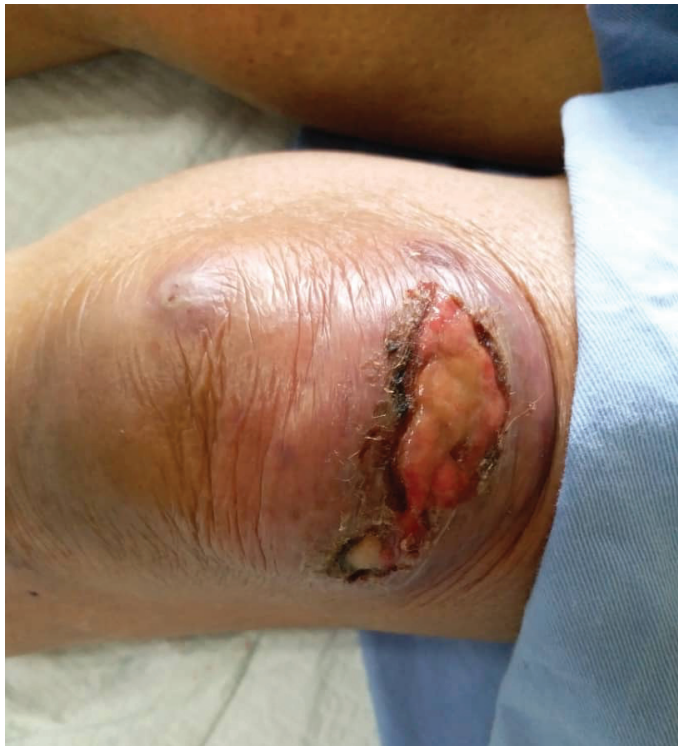

Figure 1. Haemorrhagic blister over left anterior knee

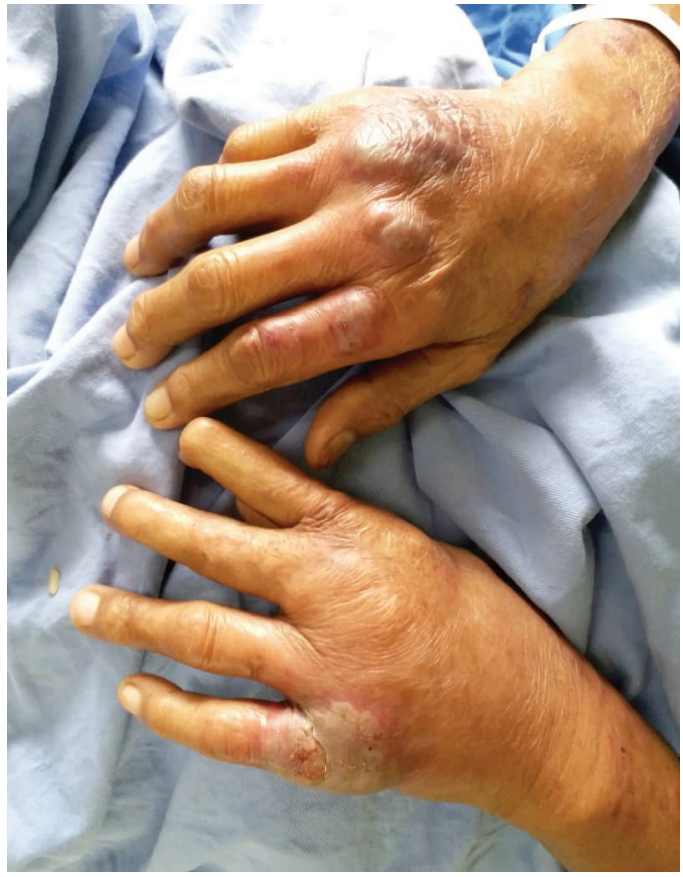

Figure 2. Multiple raised skin lesions over hands

Roseomonas spp. are susceptible to amikacin, followed by imipenem and ciprofloxacin, which explain the recovery of our patient (5,9). However, these organisms are resistant to several antibiotic classes, particularly beta-lactam antibiotics, extended-spectrum cephalosporins, and colistin (10). While waiting for the blood culture result in our patient, our patient was treated empirically with intravenous ampicillin/sulbactam. The isolate was susceptible to ciprofloxacin. Although treatment with intravenous ampicillin/sulbactam was found successful previously (7), later studies showed that *Roseomonas* spp. were probably resistant to this option (4,11). Nonetheless, there were reported cases of *Roseomonas* spp. infection in the pediatric population, which recovered following treatment with ampicillin/sulbactam (12).

Conclusion

The diagnostic differential of bullous cellulitis may be challenging. Apart from the time course, past drug exposure, and systemic features, blood culture is indispensable to delineate the cause. Although uncommon, *R. gilardii* infection should be remembered in patients with underlying debility. To the best of our knowledge, the current patient represents the first case of bullous cellulitis due to *R. gilardii* in Asia. Empirical therapy during hospitalization with intravenous ampicillin/sulbactam, followed by oral ciprofloxacin resulted in the resolution of the bullous cellulitis. Relevant phenotype and genotype should be explored in future studies to further characterize the *Roseomonas* reservoir, as the infection could be due to the patient's skin microbiota.

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Ethics

Informed Consent: A written informed consent was obtained from the patient to publish this case report anonymously.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: W.N.A.Ar-M.W.J., Concept: W.N.A.Ar-M.W.J., Design: W.N.A.Ar-M.W.J., N.L.A., Data Collection or Processing: W.N.A.Ar-M.W.J., Analysis or Interpretation: W.N.A.Ar-M.W.J., N.L.A., Literature Search: N.L.A., Writing: N.L.A.

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