

# Disseminated cutaneous mycobacteria abscessus infection in a patient with chronic renal failure

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Sir,  
*Mycobacterium abscessus*, a type of non-tuberculous mycobacteria, is transmitted by inhalation, ingestion, or percutaneous penetration resulted in pulmonary, lymph node, or skin diseases. Disseminated cutaneous infection with *M. abscessus* is rare and easily misdiagnosed. Here, we described a mid-aged man with chronic renal failure presented with disseminated cutaneous nodules and abscesses.

A 53-year-old Chinese man presented to our hospital with a three-month history of disseminated cutaneous dark red nodules. These nodules were painless with a little itch. He suffered from chronic renal dysfunction and had been on hemodialysis for 9 years. Three months back, he underwent central venous catheterization in the right subclavian vein and then presented with a recurrent low-grade fever so far. He was a farmer without special contact history and family history of this disorder.

Physical examination revealed several reddish nodules, 2–4 cm in diameter, slightly elevated above the skin and scattered on trunk and limbs [Figure 1]. There were tenderness and firm on palpation. Lymph node examination was normal. Laboratory examination showed leukopenia ( $2.1 \times 10^9/L$ ) and elevated serum creatinine ( $735 \mu\text{mol/L}$ ). Serological examinations for human immunodeficiency virus (HIV) were negative. Skin biopsy from the nodule revealed a large abscess in dermal accompanied by tissue necrosis, neutrophils, lymphocytes, scattered histiocytes and multinuclear giant cells [Figures 2a and b]. Acid-fast bacilli were identified in acid-fast staining [Figure 2c]. Samples at the biopsy site were collected for culture and pinpoint colonies grew after incubation at  $37^\circ\text{C}$  for 72 h on blood agar plate. They grew to white rough colonies and approximately 0.5 mm in diameter after seven-day incubation [Figure 2d]. They also grew well on MacConkey plate and catalase testing was positive. It was

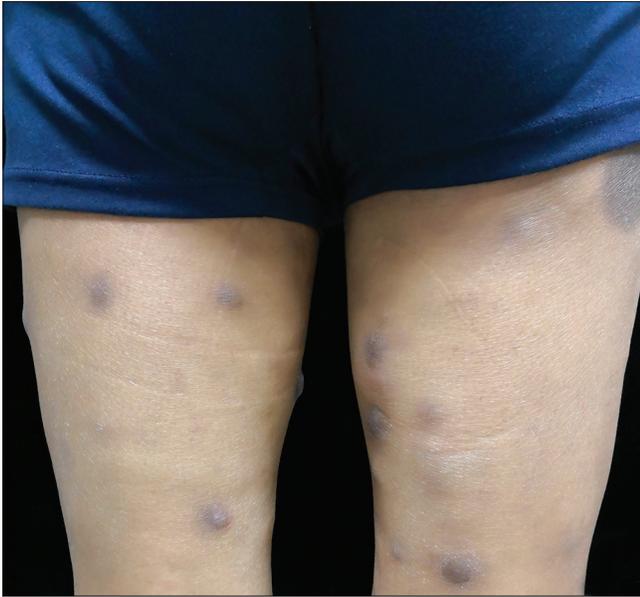
identified to be *Mycobacterium abscessus* using Hsp65 and rpoB gene sequence analysis. A diagnosis of disseminated cutaneous *M. abscessus* infection was made. Consequently, according to antibiotic susceptibility test results, this patient was under anti-mycobacterial treatment including rifampicin (450 mg/d), moxifloxacin (400 mg/d), clarithromycin (500 mg/d) and nadifloxacin cream (external use at skin



Figure 1a: Multiple dark red nodules on the right arm

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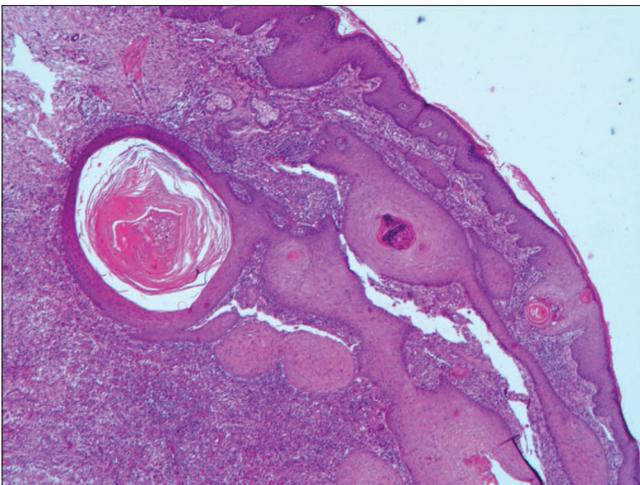
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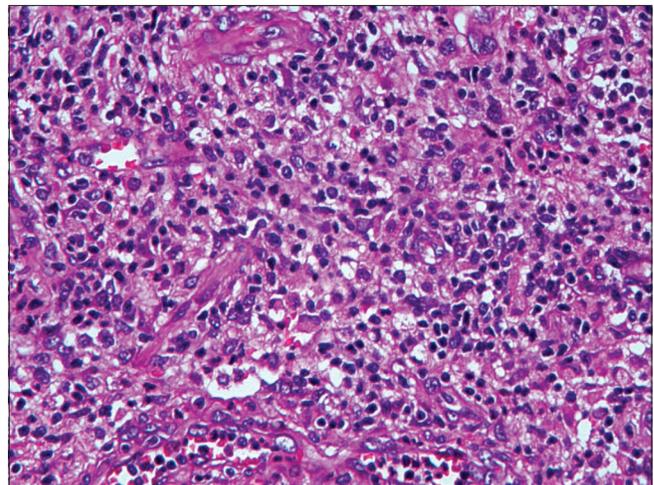
**Figure 1b:** Multiple dark red nodules on both legs



**Figure 1c:** Multiple dark red nodules on trunk and central venous catheterization can be seen in the right subclavian vein



**Figure 2a:** Histopathological examination in low-power view revealed a large abscess accompanied by tissue necrosis and inflammatory cells (H and E,  $\times 100$ )



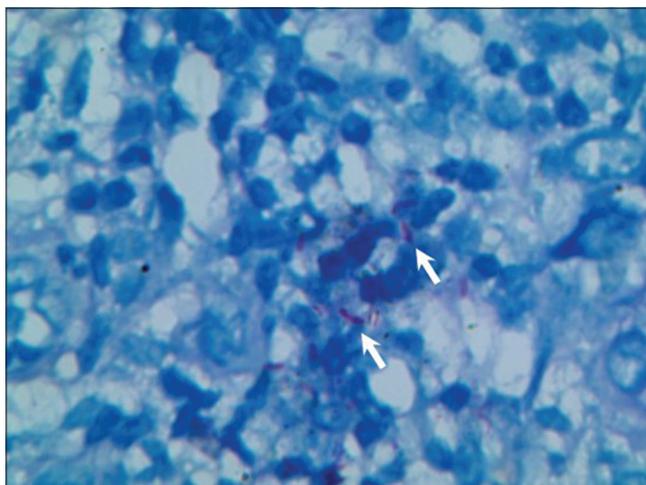
**Figure 2b:** Histopathological examination in high-power view revealed abundant neutrophils, lymphocytes, scattered histiocytes and multinuclear giant cells in lesion (H and E,  $\times 400$ )

ulcers). Blood routine examination, liver and renal function tests were monitored monthly. The lesions started resolving after eight weeks and involuted significantly after six months of treatment. This patient is still at follow-up.

*M. abscessus* was reclassified as a separate species in year, 1992. It which can contaminate inadequately sterilized medical instruments, causing serious postsurgical skin and soft-tissue infections.<sup>1</sup> Disseminated cutaneous *M. abscessus* infection is rare and particularly happens in immunocompromised or post-operative patients, usually presenting as multiple erythematous subcutaneous nodules on distal limbs or in a sporotrichoid pattern.<sup>2</sup>

*M. abscessus* infection is often concealed and chronic which is easily misdiagnosed. Clinical differential diagnosis includes

cutaneous tuberculosis, bacterial infection and systemic vasculitis. Pathological examination and repeated culture of tissue are significance to make a define diagnosis. Colonies of *M. abscessus* have two morphology types that rough type has more virulence and is easier to cause persistent infection than smooth type.<sup>1</sup> PCR detection of the 16S–23S rRNA gene internal transcribed spacer sequences can be performed to differentiate from other mycobacteria infection. Because *M. abscessus* appears to be the most resistant species to conventional anti-tuberculous drugs, drug sensitivity tests *in vitro* are important to select rational treatments.<sup>1</sup> Macrolide antibiotics such as clarithromycin or azithromycin are recommended oral drugs for long-term treatment. Excision and debridement may be required for abscesses and ulcers.



**Figure 2c:** Several reddish bacilli (arrow) were identified in tissue (acid-fast, x400)



**Figure 2d:** Tissue culture showed white rough colonies on culture plate after 1 week

**Table 1: Review of literature on *Mycobacterium abscessus* infection with cutaneous manifestations**

Gender and age	Duration of symptoms	Clinical presentations	Treatments	Responds to treatments	References
Female, 32 years old	6 weeks	A tender lump on the face	IV tigecycline and amikacin	Complete resolution of the lesions after 2 months	Grubbs and Bowen, 2019 <sup>3</sup>
Male, 75 years old	2 months	Pruritic diffuse various sized erythematous papuloplaques and pustules on the neck and chest	Clarithromycin, ethambutol	Complete resolution of the lesions after 6 months	Choi <i>et al.</i> , 2018 <sup>4</sup>
Female, 42 years old	9 months	A papule-nodular, floating injury with an erythematous surface, a little infiltrative capacity and imprecise limits on the tattoo site	Clarithromycin	Skin lesion improved after 5 months	Sousa <i>et al.</i> , 2015 <sup>5</sup>
Female, 55 years old	6 months	A rash with pink-to-red papules and nodules coalescing into plaques in a linear distribution along her incision and involving her autologous skin grafts	Cefoxitin, clarithromycin, moxifloxacin	Skin lesion improved after 6 months	Summers <i>et al.</i> , 2018 <sup>6</sup>
Female, 61 years old	2 years	A tender, 2 cm × 2 cm, fluctuant nodule over her left thigh, consistent with the clinical impression of a localized abscess	Amikacin, cefoxitin, clarithromycin	Skin lesion improved after 3 weeks	Shim <i>et al.</i> , 2018 <sup>7</sup>
Female, 23 years old	3 months	A 4 cm wide ulcer with small central pustules and raised border on the anterolateral aspect of the right thigh	Clarithromycin, levofloxacin, amikacin	Complete resolution of the lesions after 6 months	Costa-Silva <i>et al.</i> , 2018 <sup>8</sup>

IV: Intravenous

Review of literatures on *M. abscessus* infection with cutaneous manifestations is shown in Table 1.<sup>3-8</sup>

In summary, we reported a rare case of disseminated cutaneous *M. abscessus* infection presented with multiple nodules and abscesses in a patient with chronic renal failure. Since hemodialysis and central venous catheterization are necessary to these patients, it is important to be aware of immunocompromised state and the risk of disseminated infection caused by rare opportunistic pathogens.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent.

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**Conflicts of interest**

There are no conflicts of interest.

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**References**

1. Johansen MD, Herrmann JL, Kremer L. Non-tuberculous mycobacteria and the rise of *Mycobacterium abscessus*. Nat Rev Microbiol 2020;18:392-407.
2. Goldman J, Caron F, de Quatrebarbes J, Pestel-Caron M, Courville P, Doré MX, et al. Infections from tattooing. Outbreak of mycobacterium chelonae in France. BMJ 2010;341:c5483.
3. Grubbs J, Bowen C. *Mycobacterium abscessus* infection following home dermabrasion. Cutis 2019;104:79-80.
4. Choi H, Kim YI, Na CH, Kim MS, Shin BS. *Mycobacterium abscessus* skin infection associated with shaving activity in a 75-year-old man. Ann Geriatr Med Res 2018;22:204-7.
5. Sousa PP, Cruz RC, Schettini AP, Westphal DC. *Mycobacterium abscessus* skin infection after tattooing - Case report. An Bras Dermatol 2015;90:741-3.
6. Summers NA, Kempker R, Palacio F. *Mycobacterium abscessus* subspecies massiliense infection after skin graft and cholecystectomy in a burn patient. Int J Infect Dis 2018;76:29-31.
7. Shim HH, Cai SC, Chan W, Low JGH, Tan HH, Ling KL. *Mycobacterium abscessus* infection during ustekinumab treatment in crohn's disease: A case report and review of the literature. J Crohns Colitis 2018;12:1505-7.
8. Costa-Silva M, César A, Nuno PG, Azavedo F. *Mycobacterium abscessus* infection in a spa worker. Acta Dermatovenerol Alp Pannonica Adriat 2018;27:159-60.