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Rat-bite fever with bacteremia and lower limb abscess formation caused by *Streptobacillus moniliformis*



KEYWORDS

Abscess;
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Dear Editor,

Rat-bite fever is a rare disease caused by pathogens transmitted via rodent bites. The gram-negative and facultative anaerobic bacteria *Spirillum minus* and *Streptobacillus moniliformis* can cause this infection.^{1,2} Here, we present a case of rat-bite fever caused by *S. moniliformis* in central Taiwan. Furthermore, the disease progressed to abscess formation in the left lower limb.

A 55-year-old businessman was admitted with left lower leg cellulitis, left knee swelling, erythema, and pain. There was swelling and pain in his right index finger where he was bitten by a rodent 7 days before admission. He reported left knee swelling, erythema, and pain 2 days after the rodent bite but did not experience fever, skin rash, abdominal pain, or other discomfort. He visited the emergency department because of symptom progression.

Physical examination revealed swelling and erythema of the right index finger and left knee with a normal range of motion. Laboratory analyses revealed the following results: white blood cell count, 11600/ μ L; neutrophil count, 90.1%; high-sensitivity C-reactive protein level, 23.40 mg/dL; and erythrocyte sedimentation rate, 64 mm/h. He was admitted to the general ward, and 1000 mg ceftriaxone was administered every 12 h.

Two sets of blood cultures were obtained using the BACTEC™ FX blood culture system (Becton–Dickinson Microbiology Systems, Sparks, MD, USA). The colonies had a grayish “cotton ball” appearance on 5% blood agar plates after 48 h. Gram staining revealed filamentous or fusiform, tiny, nonmotile, and gram-negative bacillus (Fig. 1). Identification of the organism by the Bruker matrix-assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF MS) Biotyper system (Bruker Daltonik, Germany) revealed *S. moniliformis* with a score value of 2.22. He was diagnosed with rat-bite fever and bacteremia caused by *S. moniliformis*, and a 2-week course of 100 mg doxycycline thrice a day was initiated. The symptoms in his right index finger improved after treatment, but he developed progressive pain in his left knee accompanied by deteriorated erythema and swelling that extended to his pre-tibia region and calf (Fig. 2A). The empirical antibiotic clindamycin was added to the treatment regimen based on the diagnosis of rat-bite fever with migratory arthritis. Furthermore, lower limb computed tomography revealed abscess formation (Fig. 2B). The plastic surgeon performed fasciectomy to treat the abscess. Pus culture of the abscess yielded no growth 5 days after operation (under antibiotics for 9 days).

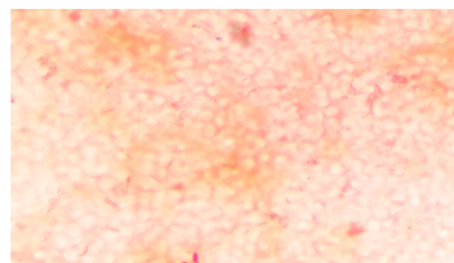


Figure 1. Gram staining of the positive blood culture revealed filamentous or fusiform, tiny, nonmotile, and gram-negative bacilli (1000X).

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Figure 2. (A) Swelling and erythematous change in the patient's left pre-tibia region and calf (B) Computed tomography of left lower limbs revealed left posterior thigh and left medial popliteal fossa to medial leg multi-lobulated lesion with peripheral enhancement (arrow).

Post-operation, administration of ceftriaxone, doxycycline, and clindamycin was continued. The patient reported fewer symptoms after treatment. The postoperative wound was cleaned and closed on postoperative day 10. The patient was discharged after 4 weeks of treatment.

Rat-bite fever is a rare but fatal, rodent-borne disease. Patients who have contracted rat-bite fever may exhibit initial symptoms of fever, chills, headache, and vomiting.¹ Some patients may develop a maculopapular, petechial, or purpuric rash, especially on the extensor surfaces of the extremities extending to hands and feet.³ Several patients develop migratory polyarthralgia involving both small and large joints.¹ However, soft tissue abscess is a rare complication associated with rat-bite fever.⁴

Early identification of pathogens causing bloodstream infection with credible modality is critical for prompt administration of appropriate antimicrobial therapy.⁵ Moreover, attention should be given to the patient's clinical course because rat-bite fever causes fatal complications.

Declaration of competing interest

The authors report no conflicts of interest.

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