

## CLINICAL IMAGES

## Rat-bite fever

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A 28-year-old previously healthy woman presented to the emergency department with a rash that had lasted 2 days. The rash had started on the patient's hands (Figure 1) and feet, then progressively spread to her torso (Appendix 1, available at [www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.121704/-/DC1](http://www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.121704/-/DC1)). The patient's palms and soles were also affected. Four days before the onset of the maculopapular exanthem, the patient had a fever, pharyngitis and severe oligoarthritis.

Initially, we suspected hand-foot-and-mouth disease because of an ongoing epidemic in the community; however, given the patient's oligoarthritis, we ordered cultures of her blood. Within 12 hours, our laboratory reported growth of *Streptobacillus moniliformis*, the causative agent of rat-bite fever. We recalled our patient to hospital to receive treatment with penicillin G intravenously for 48 hours. While in hospital, she spoke of hand-feeding a pet rat, but she could not recall any recent scratches or bites. On discharge,

she was given penicillin V to be taken orally for a total of 21 days of treatment. The patient made a full recovery.

Most cases of rat-bite fever reported in North America and Europe involve *Streptobacillus moniliformis* (*Spirillum minus* is the more common cause in Asia).<sup>1</sup> The organism is normal nasopharyngeal flora of wild, laboratory and pet rats. Rodent bites and scratches are common routes of transmission to humans, but simple handling can also lead to infection.<sup>2</sup> Human-to-human transmission has never been documented.

Rat-bite fever is a rare systemic febrile illness. The classic symptom triad comprises fever, rash and polyarthritis. The rash has been described as petechial, purpuric or maculopapular, although it may present with hemorrhagic pustules.<sup>3</sup> The differential diagnosis includes Rocky Mountain spotted fever, enterovirus exanthem and secondary syphilis. Although the infection is typically self-limited, numerous complications have been described, including endocarditis and meningitis.<sup>1</sup> Diagnosis requires identification of *Streptobacillus moniliformis* through blood culture or polymerase chain reaction. Our hospital used standard media, but *Streptobacillus moniliformis* can be difficult to culture, and communication with the microbiology laboratory is advisable in suspected cases.

Penicillin is recommended as first-line therapy, although tetracycline may be used for patients with an allergy to  $\beta$ -lactam antibiotics.<sup>1</sup> Untreated, the disease can persist for weeks or months and has a reported mortality of 7%–13%.<sup>2</sup>

## References

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Figure 1: Maculopapular exanthem on the hand of a 28-year-old woman. The rash was caused by disseminated *Streptobacillus*.