Tularemia is an uncommon infection caused by the bacterium Francisella tularensis. The nonspecific presentation and infrequency with which it is encountered make it a diagnostic challenge. A rare and scarcely reported mode of tularemia inoculation is a cat bite to the hand. We report a cat bite hand infection in a 66-year-old woman. She underwent treatment for presumed polymicrobial cellulitis. Over the next 5 days, the symptoms progressed to fever, malaise, and fluctuant lymphadenitis with nodules along draining lymphatics. Cultures grew *F. tularensis* and antibiotics were switched to doxycycline, which resolved the infection. The patient remained symptom-free after the doxycycline was discontinued. The purpose of this case study is to alert treating providers to consider tularemia infection when a hand infection persists, particularly in the context of an animal bite.

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improvement of the hand infection and nodular lymphangitis. Antibiotics were continued for 30 days. The hand wounds healed completely and the patient was otherwise asymptomatic.

Discussion

Tularemia, also known as rabbit fever, is a zoonotic disease caused by Francisella tularensis. Francisella is an aerobic, highly infectious, gram-negative coccobacillus. Although distributed worldwide, most cases of tularemia are reported in the Northern Hemisphere. Tularemia has been reported in every state except Hawaii. From 2007 to 2017, 1,958 cases were reported to the Centers for Disease Control and Prevention. Kansas, Missouri, Oklahoma, Arkansas, and South Dakota accounted for 55% of all cases during that period. The patient in this case report contracted the infection and presented in South Dakota.

Few intracellular bacterial pathogens have as broad a host range as Francisella. Tularemia has been reported in over 250 different species. Despite its broad host range, transmission is limited by geographic region. In cases of known exposure, 63% of tularemic patients reported tick bites and 23% had exposure to rabbits. Tularemia from cat scratches or bites, as described in this patient, is rare and accounts for less than 2% of all tularemia cases.4

Clinical presentation of tularemia may be diverse and depend on patient characteristics and transmission route. Transmission may occur through a break in the skin, inhalation, or contact with mucus membranes. The most common type of presentation is ulceroglandular tularemia, which accounts for approximately 80% of cases. Patients with ulceroglandular disease typically report recent tick or animal exposure. Initially, an erythematous papule or localized ulcer occurs at the site of inoculation, and the location of the ulcer depends on the route of transmission. Fever and malaise are common. Tender lymphadenopathy is also common, especially in axillary and epitrochlear nodes, as seen in the patient in this report. Lymphadenopathy may be profound, ranging from 0.5 to 10 cm, and may persist up to 3 years. Subcutaneous nodules along draining lymphatics are usually not seen and may suggest bacterial superinfection of the ulcer. The current patient had 3 tender nodules located proximal to the wound along draining lymphatics. Pulmonary or pneumonic tularemia refers to a clinical presentation with predominately pulmonary symptoms. It develops from inhalation of aerosolized particles of Francisella or by hematogenous spread to the lung. Ulceroglandular tularemia may also progress to septicemia and pulmonary tularemia, although this was not apparent in the patient in this report.

Cat bites commonly are polymicrobial, and 30% to 60% of bites contain aerobic and anaerobic bacteria. Pasteurella spp. and Streptococcus spp. are the most common aerobic microbes transmitted from cat bites, and Fusobacterium spp. are the most common anaerobes. Multiple treatment options cover these common aerobic and anaerobic infections but are ineffective against tularemia. Diagnosis can be difficult owing to the infrequency of infection and the clinical symptomology that overlaps with more common infections. High clinical suspicion, early diagnosis, and appropriate antimicrobial therapy greatly improve the morbidity of tularemia infections. Antibiotics should be administered without delay in suspected or confirmed cases of tularemia. Francisella tularensis is generally susceptible to a wide variety of antibiotics. Aminoglycosides, specifically streptomycin and gentamycin, are well-established first-line treatments with a low likelihood of relapse. Fluoroquinolones and tetracyclines are acceptable alternatives. Relapses have been shown with tetracycline and chloramphenicol.
owing to their bacteriostatic mechanism. Therefore, to prevent relapse adequately, a 2-week minimum course is recommended when using bacteriostatic agents.\textsuperscript{1,4} Antibiotic treatment and supportive therapy are often sufficient in cases of known tularemia infection.\textsuperscript{1} However, in cases of unknown infection or draining wounds, surgical debridement is often indicated.

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