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Mycobacterium fortuitum Infection after a Brown Bear Bite

A 56-year-old male was admitted to the hospital after a bear attack. A wounded brown bear (*Ursus arctos*) had attacked the patient. The patient had several bite wounds. The most serious wound was a deep penetrating bite wound in his left thigh. This wound needed immediate debridement, and ceftriaxone prophylaxis was commenced. The wound penetrated the fascial planes. All necrotic tissues and foreign material were surgically removed, and the wound was left open. The patient's wounds required redebridements on the 7th and 12th days after the patient was admitted to the hospital due to necrotic residual tissue and a hematoma. After the first operation, he received 4 g of piperacillin-tazobactam three times a day, which was subsequently changed to amoxicillin-clavunate (875 mg of amoxicillin and 125 mg of clavunate) twice a day (b.i.d.). Bacterial specimens were collected in all of the operations and cultured.

Direct examination of the specimen revealed leukocytes, but no bacteria. Cultures of bacteria from the deep wound in the thigh grew *Streptococcus sanguis* (identified by using RapID 32 Strep; bioMérieux, Marcy l'Etoile, France), *Neisseria sicca* (identified by RapID NH system; Remel, Inc., Lenexa, Kans.), and *Bacillus* spp. After 7 days of incubation, cultures on chocolate plate agar grew rough, white colonies. Gram staining revealed acid-fast gram-positive rods. The bacterium was identified as *Mycobacterium fortuitum* by PCR (GenoType Mycobacterium; Hain Lifescience GmbH, Nehren, Germany). The strain was in vitro multiply resistant. It was not susceptible to all cephalosporins, pyrazinamide, streptomycin, trimethoprim-sulfamethoxazole, rifabutin, and tetracyclines tested. The strain was susceptible to clarithromycin (MIC of 0.25 μg/ml), ciprofloxacin, levofloxacin, amikacin, tobramycin, meropenem, and vancomycin.

The patient was treated with clarithomycin (500 mg b.i.d.) and ciprofloxacin (500 mg b.i.d.) orally once the culture results were available. The wound was covered with autologous split thin skin grafts. The bacterial sample taken before the application of skin grafts was still *M. fortuitum*. The patient tolerated the medication well with no major adverse events. The wound in the thigh healed within 2 months. Medication was continued for 6 months.

The bacteriology of a grizzly bear bite was recently published (3). The cultures grew *Serratia fonticola*, *Serratia marcescens*, *Aeromonas hydrophila*, *Bacillus cereus*, and *Enterococcus durans* but no anaerobes and no atypical mycobacteria. Atypical mycobacterial infections after animal bites are probably rare.

M. fortuitum is an atypical mycobacterium. It is classified as a rapid-growing mycobacteria (Runyon group IV). It has been found in sewage and also in natural waters (1). Atypical mycobacteria are environmental bacteria that rarely cause infections in immunocompetent hosts. Clinical infections, mostly skin and soft tissue infections, have been reported after surgery or trauma, particularly after cardiothoracic surgery (2). To our knowledge, this is the first report of an atypical mycobacterial infection after a bear bite.

Optimal treatment of *M. fortuitum* infections is still not defined. *M. fortuitum* is usually resistant to all standard antituberculosis drugs. Surgical revision of infected areas has been traditionally necessary. However, a recent case implied that minor soft tissue infections can successfully be treated conservatively without surgery (4). In our case, several operations were needed to treat the deep penetrating wound. There were still mycobacteria in the wound when split thin skin grafts were applied, but nevertheless grafts attached well and no further operations were necessary. The combination of ciprofloxacin and clarithromycin was well tolerated and effective.

This report underlines the importance of microbiological cultures when treating animal bites. Atypical infections can arise after bite wounds of wildlife animals, and microbiological cultures and collaboration of microbiological laboratory and clinicians are required.

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