Polymicrobial tenosynovitis with Pasteurella multocida and other Gram negative bacilli after a Siberian tiger bite

P A Isotalo, D Edgar, B Toye

Abstract
Mammalian bites present a considerable clinical problem because they are often associated with bacterial infections. Pasteurella multocida is a microorganism that commonly infects both canine and small feline bites. Zoonotic infections developing after large feline bites have been recognised, although their reports are limited. We describe a 35 year old man who was bitten by a Siberian tiger and who developed infectious tenosynovitis secondary to P multocida, Bergeyella (Weeksella) zoohelcumin, and Gram negative bacteria most like CDC group EF-4b and comamonas species. The latter three bacteria have not been isolated previously from large feline bite wounds.

Keywords: animal bite; zoonotic infection; Pasteurella multocida; Bergeyella zoohelcumin

Zoonotic infections developing after cougar, lion, and tiger bites have been recognised, although their reports are limited.1-3 Bites of small and large felines have predominantly been associated with Pasteurella multocida infection,1-3 although other bacteria have also been identified as pathogens of tiger bite wounds.1,2 We report the case of a patient who was bitten by a tiger and who developed a polymicrobial tenosynovitis.

Case report
A 35 year old, previously healthy man was bitten once on his left palm by an adult Siberian tiger (Panthera tigris altaica) that he was training. The tiger had been raised in Canada and had no previous disease. The patient’s medical history was unremarkable, except for a day history of un complicated upper respiratory tract infection. He presented to the emergency department of a rural hospital 7.5 hours after sustaining the feline bite. Because of concerns about tendon involvement he was transferred to our tertiary care centre, where he complained of severe pain, especially on flexion of his left fourth and fifth fingers. On examination, he had a tympanic temperature of 38.3°C. His wound was cultured and then irrigated with normal saline and dressed with Polysporin and Kerlix mesh. The patient was given intravenous (IV) cefazolin at 1g/8 hours and gentamicin 80 mg/8 hours for a total of 72 hours. After three days of IV antibiotic treatment, the swelling and tenderness of his left hand decreased substantially and he regained almost full flexion and extension of his fourth and fifth digits. He was discharged on a 10 day course of amoxicillin-clavulanic acid 500 mg orally three times a day.

Blood cultures were negative, but aerobic cultures from the wound grew P multocida, Bergeyella (Weeksella) zoohelcumin, and two other Gram negative bacilli. These were subsequently identified as most like CDC group EF-4b and comamonas species by the national laboratory for bacteriology, Laboratory Centre for Disease Control in Ottawa, Canada on the basis of biochemical reactions and cellular fatty acid composition data. Sub speciation of the P multocida isolate was not performed. Anaerobic cultures of the wound were not obtained.

Discussion
Pasteurella multocida has been isolated as part of the normal fang flora of many large felines.1 Thus, it is not surprising that previously published reports of wound infections after large feline bites have emphasised this pathogen. Such infections also tend to be polymicrobial and other organisms that have been reported from large feline bite wounds have included: Acinetobacter spp, Escherichia coli, Moraxella spp, Pasteurella spp (other than P multocida), Staphylococcus aureus, and viridans streptococci.1,3 However, other less com-
Short report

Although bites of large felines are rare, it is important to characterise their oral flora and to identify bacterial pathogens from bite wounds to provide guidelines for appropriate antimicrobial treatment. There appears to be a similarity between the bacteriology of large feline bites and that reported for small felines. Although *P. multocida* is a common pathogen, the polymicrobial nature of large feline bite wounds necessitates more than penicillin as empirical treatment. Our patient was treated with IV cefazolin and gentamicin. However, first generation cephalosporins, especially the oral agents, are not recommended for bite wound infections caused by *P. multocida*. The higher blood concentrations of parenteral cefazolin might have been sufficient to treat our patient, but the adequacy of this treatment cannot be guaranteed for all *P. multocida* isolates. Vigorous wound irrigation might also have contributed to our patient’s response. Although susceptibility testing of the isolates cultured from our patient was not performed, it would appear that recommendations for the empirical treatment of cat bites with agents such as a β-lactam/β-lactamase inhibitor combination would also be a reasonable approach to the treatment of large feline bites.

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