



PHOTO QUIZ FROM URGENT CARE

FINGER LICKIN' INFECTION

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CASE HISTORY

An 80-year-old man with dementia and uncontrolled type 2 diabetes presented to urgent care with an infection in his right third digit for an unknown length of time. He lived at home with his wife, and the history was obtained from his wife and daughter with many discrepancies. There had been drainage from the finger, but no pain or fever. The patient admitted to biting his fingernails completely off, and letting his dog lick his finger to help heal the wounds. The patient had a history of previous osteomyelitis of the same finger in 2018, with refusal to undergo amputation of the finger at that time.

On physical examination the vital signs were normal with no fever. The right third digit was edematous and erythematous, with an absent fingernail and fluctuance of the distal portion, but no drainage (Fig.1). An X-ray of the hand was obtained (Fig. 2).

QUESTIONS

1. Should imaging be obtained and why?
2. What does the X-ray reveal?
3. Which bacteria should we be concerned about, given the history of the dog licking the wound?
4. Should he be treated as an outpatient or inpatient?

5. Which antibiotic should be started empirically?

ANSWERS

1. Yes, to see if there is involvement of bone or just a localized skin infection. It is important to know that plain radiographs can be negative for up to two weeks after the onset of osteomyelitis. Thereafter, there may be focal loss of calcium, erosion of bone, or a periosteal reaction.

2. There is erosion of the distal phalanx of the third middle finger with overlying soft tissue swelling

3. Infections from dogs are generally polymicrobial and include aerobic and anaerobic bacteria. Osteomyelitis generally involves MRSA, *Staph aureus*, and gram negative rods including *Pseudomonas aeruginosa*. *Capnocytophaga canimorsus* is a bacterium that commonly lives in the mouths of dogs and cats and can lead to serious infections. A culture should be obtained.

4. Given the history of uncontrolled type 2 diabetes, fluctuance of the finger, and X-ray findings showing worsening osseous erosion in comparison with a previous X-ray, he should be treated as an inpatient. Surgical debridement/amputation and IV antibiotics are warranted.



Fig. 1. The right third digit was edematous and erythematous, with an absent fingernail and fluctuance of the distal portion, but no drainage.



Fig. 2. An X-ray of the hand was obtained.

5. Options for empiric treatment of bacteria in dog saliva include:

- a. Monotherapy with a beta-lactam/beta-lactamase inhibitor such as Ampicillin/Sulbactam (Unasyn) or Piperacillin/tazobactam;
- b. A third generation cephalosporin such as ceftriaxone plus an agent with anaerobic activity such as metronidazole or clindamycin;
- c. A fluoroquinolone (ciprofloxacin or levofloxacin) plus an agent with anaerobic activity (metronidazole or clindamycin);
- d. Monotherapy with a carbapenem (imipenem/

cilastatin, meropenem, or ertapenem).

DISCUSSION

Osteomyelitis in this case seems clearly non-hematogenous. The dog's licking raises particular concern because of the possible involvement of *Capnocytophaga canimorsus*, which is commonly found in the saliva and gums of healthy dogs and cats. It is a particular threat to people with poor liver function, poor spleen function, and poor immunity, and can cause severe infections including sepsis, gangrene of digits or limbs, meningitis, endocarditis, or endophthalmitis.

The diagnosis of osteomyelitis is apparent in this case on the basis of clinical and radiographic findings even without a biopsy of the affected bone, but ideal therapy consists of operative debridement and antimicrobial therapy guided by biopsy and culture of the bone. There may be a role for antimicrobial therapy alone in select patients, but it will not cure infected, necrotic bone.

This patient was initially started on IV vancomycin and ceftazidime and changed to IV cefazolin after two days. Biopsy of bone was not obtained and blood cultures had no growth after five days of incubation. Relevant blood test results included: Glucose 72, WBC 8.9, Sedimentation rate 46 (normal 0-19), and C-reactive protein 25.6 (normal 0.0-8.0). Both orthopedic surgery and infectious disease consultants recommended amputation, but the patient refused.

Prior to discharge, the infectious disease consultant changed the antibiotics to oral Keflex 500mg Q eight hours due to improvement. Due to this patient's chronic osteomyelitis, uncontrolled diabetes, and likely microvascular disease, the goal for this patient's infection is suppression, as there is little hope for microbiologic cure.

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