

Letter to the Editor

Pasteurella multocida Peritonitis: Another Risk of Animal-Assisted Therapy

To the Editor:

Pasteurella multocida is primarily a pathogen of animals but has been implicated in a range of human diseases. It has been estimated that as many as 66% of dogs and 90% of cats are colonized with this organism, typically in the respiratory and gastrointestinal tracts. The most common method of zoonotic transmission is via a bite from an infected dog or cat. Infection leads to an acute onset of redness, swelling, and pain within hours of the bite. Infection of peritoneal fluid has been described in the nephrology literature, usually as a result of a cat licking or biting the tubing of a patient on continuous ambulatory peritoneal dialysis (CAPD).¹⁻¹⁰

A 48-year-old woman presented to the emergency department with a 1-day history of fever and chills accompanied by general abdominal discomfort without nausea or vomiting. She had end-stage renal failure on maintenance peritoneal dialysis for 3 years. Her blood pressure was 89/48 mm Hg, her pulse rate was 99 beats per minute, her respiratory rate was 18 breaths per minute, and her body temperature was 38.2°C. On physical examination, her liver and spleen were normal, there was no lymphadenopathy noted, and there was no evidence of any rash, scratches, or bites. The abdomen was not distended but was diffusely tender to light palpation with diminished bowel sounds noted. There was rebound tenderness. A complete blood cell count revealed the following: white blood cell count, $16.9 \times 10^9/L$ with 93% neutrophils; hemoglobin, 15.0 mg/dL; hematocrit, 46%; and platelet count, $200 \times 10^9/L$. The peritoneal dialysis fluid was cloudy with 4,450 white blood cells/ μL

(100% neutrophils) and 150 red blood cells/ μL . Gram stain of the dialysis fluid revealed many white blood cells and no organisms.

The patient was admitted to the hospital for management of suspected peritonitis. Empiric antibiotic therapy, consisting of intraperitoneal cefazolin and gentamicin, was initiated with no improvement. *P. multocida* was isolated from the peritoneal fluid on day 4 and found to be sensitive to gentamicin, ciprofloxacin, and trimethoprim-sulfamethoxazole, and the patient responded to intravenous ampicillin.

The patient reported that she had a cat, which was, for her, an important source of psychosocial support. She admitted to frequent breaks in handwashing technique, with her cat frequently licking her hands before and during fluid cycling. The cat also displayed his curious nature by habitually investigating the tubing and fluid bags during the cycling process.

P. multocida is a gram-negative coccobacillus with bipolar staining properties. It is most frequently associated with cat and dog bites. The organism grows readily on standard laboratory media with the exception of bile-containing media such as MacConkey agar. First-generation cephalosporins, clindamycin, and erythromycin are generally regarded as ineffective in the treatment of infections caused by *P. multocida* and susceptibility should not be reported.¹¹ At a minimum, antimicrobial susceptibility testing is performed with penicillin (the drug of choice), with consideration of testing other antibiotics such as ampicillin, second-generation cephalosporins, trimethoprim-sulfamethoxazole, tetracycline, and ciprofloxacin. Given the polymicrobial nature of the typical animal bite,¹² therapy is often initiated with amoxicillin-clavulanate or cefuroxime.

This case illustrates the potential for zoonotic transmission of diseases to humans undergoing CAPD.

With the number of patients using at-home cyclers increasing and the numbers of dogs or cats in the home burgeoning, the clinician must be suspicious of a pet-acquired illness in a patient with peritonitis. Given the proximity of pets to their owners and the natural attraction of a carnivorous animal to human body fluid, it is clear that the supposedly healing touch of a dog's or cat's tongue could be fatal for a patient undergoing CAPD. This case emphasizes the importance of thorough handwashing and the exclusion of pets from the room where CAPD is performed, as there was no reported damage by the cat to the tubing or bags.

With the advent of pet therapy in many hospitals and extended-care facilities, an additional concern has arisen for patients exposed to these animals while undergoing CAPD. The patient and any caregivers who handle the animal should promptly wash their hands after doing so. Many extended-care facilities also allow a dog or cat to live permanently among the residents. Clinicians must be mindful of the possibility of zoonotic transmission in patients living in such an environment. Certainly clinicians caring for patients undergoing CAPD must weigh the risks and benefits of placing a patient in a facility with an adopted pet.

REFERENCES

1. Paul RV, Rostand SG. Cat-bite peritonitis: *Pasteurella multocida* peritonitis following feline contamination of peritoneal dialysis tubing. *Am J Kidney Dis* 1987;10:318-319.
2. Frankel AH, Cassidy MJ. *Pasteurella multocida* peritonitis in CAPD: beware of the cats. *Perit Dial Int* 1991;11:184-185.
3. London RD, Bottone EJ. *Pasteurella multocida*: zoonotic cause of peritonitis in a patient undergoing peritoneal dialysis. *Am J Med* 1991;91:202-204.
4. Kitching AR, Macdonald A, Hatfield PJ. *Pasteurella multocida* infection in continuous ambulatory peritoneal dialysis. *NZ Med J* 1996;109:59.
5. Uribarri J, Bottone EJ, London RD. *Pasteurella multocida* peritonitis: are peritoneal dialysis patients on cyclers at increased risk? *Perit Dial Int* 1996;16:648-649.

6. Loghman-Adham M. *Pasteurella multocida* peritonitis in patients undergoing peritoneal dialysis. *Pediatr Nephrol* 1997;11:353-354.
7. MacKay K, Brown L, Hudson F. *Pasteurella multocida* peritonitis in peritoneal dialysis patients: beware of the cat. *Perit Dial Int* 1997;17:608-610.
8. Joh J, Padmanabhan R, Bastani B. *Pasteurella multocida* peritonitis following cat bite of peritoneal dialysis tubing: with a brief review of the literature. *Am J Nephrol* 1998;18:258-259.
9. Musio F, Tiu A. *Pasteurella multocida* peritonitis in peritoneal dialysis. *Clin Nephrol* 1998;49:258-261.
10. Van Langenhove G, Daelemans R, Zachee P, Lins RL. *Pasteurella multocida* as a rare cause of peritonitis in peritoneal dialysis. *Nephron* 2000;85:283-284.
11. Gilbert DN, Moellering RC, Sande MA. *The Sanford Guide to Antimicrobial Therapy 2002*, ed. 32. Hyde Park, VT: Antimicrobial Therapy; 2002.
12. Talan DA, Citron DM, Abrahamian FM, Moran GJ, Goldstein EJ. Bacteriologic analysis of infected dog and cat bites. *N Engl J Med* 1999;340:85-92.

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