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Authors

Kaushal, Khushboo

Belachew, Wossen

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CLINICAL VIGNETTE

“Whodunit”: Urinary Tract Infection by *Pasteurella canis*

Khushboo Kaushal, MD and Wossen Belachew, MD

Case Presentation

A 63-year-old male with hepatitis C cirrhosis, end-stage renal disease, status post liver kidney transplantation with renal graft failure, on hemodialysis, and recurrent urinary tract infections presented with malaise and generalized weakness. The patient's medical history also includes blindness, type II diabetes, hypertension, benign prostatic hyperplasia, recent COVID hospitalization and urethral condyloma requiring numerous resections and complicated by urethral stricture disease. His procedures included a two-stage Johansson and several Blandy urethroplasties after which he developed recurrent panurethral stricture disease involving a seven-centimeter segment of the urethra, requiring repeat urethroplasty and buccal mucosal ventral onlay graft for penile/bulbar urethra. He continued to have difficulty urinating and a urethrogram revealed another pendulous urethral stricture. He again underwent buccal graft urethroplasty but has recurrent strictures now managed with cystoscopy and dilation every six to twelve months and in this context has recurrent urinary tract infections.

The patient was in his usual state of health until the morning of admission. He underwent hemodialysis with 2.5 liters removed and afterwards developed fevers up to 101 degrees Fahrenheit, chills, malaise, loss of appetite, nausea and generalized weakness. The patient was started on ertapenem given his history of extended spectrum beta-lactamase *E. coli* urinary tract infections. Urology and transplant infectious disease were consulted. The urine culture grew *Pasteurella canis* which was pan-sensitive with the exception of erythromycin. He tolerated timed voids three times per day with normal post void residuals. Urology discussed perineal urethrostomy which the patient deferred. He improved clinically on ertapenem and was transitioned to levofloxacin to complete a seven-day course. At the time of follow up with urology he completed the course of antibiotics and was without urinary complaints.

Discussion

Pasteurella are gram-negative coccobacilli and are known to be part of the normal oral flora of dogs and cats.¹ *Pasteurella* species (including *P. multocida*, *P. canis*, *P. dagmatis* and *P. stomatis*) are known to cause skin and soft tissue infections in humans.² Infections in humans are usually secondary to animal bites or scratches though there are also reports of infections caused by licks. Though rare, there are case reports of *P. canis* causing a variety of infections including bacteremia, osteomyelitis, keratitis, peritonitis and pneumonia.³ A literature

review also revealed cases of urinary tract infections caused by *P. multocida* though there are no reported cases of urinary tract infections caused by *P. canis*.⁴

We present a case of a urinary tract infection secondary to *P. canis*. Prior case reports for *P. multocida* urinary tract infections suggested that preexisting urinary pathology (including bladder carcinoma, pelvic radiotherapy, prostate adenocarcinoma, transurethral resection of the prostate, self-catheterization, and ileovaginal fistula) predisposed patients to urinary tract infections.⁴ These patients were successfully treated with antibiotics. Treatment commonly included penicillins, aminoglycosides and trimethoprim/sulfamethoxazole.

Our patient had several predisposing factors including history of liver and kidney transplantation and urethral condyloma status post multiple urologic procedures and recurrent strictures. Frequent urologic procedures and instrumentation increased his risk for urinary tract infections. Careful history taking revealed that this patient had long-term exposure to a chihuahua. Though he was not bitten or scratched by his chihuahua, exposure to the dog's secretions likely increased his risk of infection. The patient was counseled regarding thorough hand hygiene and close follow up with urology was arranged.

Conclusion

Pasteurella is associated with a variety of infections in addition to skin and soft tissue infections. Patients with urologic abnormalities or who are immunocompromised and with exposure to dogs or cats should practice good hand hygiene.

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