



Case report

A rare case of perineal abscess caused by aerococcus urinae



Lawrence Ha*, Negin Niknam, Siddhi Mankame, Robin Koshy

Northwell Health, North Shore University Hospital, United States

ARTICLE INFO

Article history:

Received 20 October 2016

Received in revised form 1 November 2016

Accepted 1 November 2016

Keywords:

Aerococcus urinae

Perineal abscess

ABSTRACT

Aerococcus urinae, a previously misidentified pathogen, has become increasingly recognized to cause severe and even fatal infections. *Aerococcus*-related perineal abscess infections have not previously been reported in the literature. Most reported cases of infections caused by *Aerococcus* are urinary tract infections, bacteremia, and even rare cases of endocarditis. We report an unusual case of a perineal abscess caused by *Aerococcus urinae*.

© 2016 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

Aerococcus is a gram positive organism that has been emerging as an important human pathogen, including *Aerococcus urinae* and *Aerococcus sanguinicola* [1–3]. *Aerococcus urinae* in particular has been associated with urinary tract infections [1,4,5], bacteremia [6–8] and rarely has been reported to cause endocarditis [8–12]. *Aerococcus* historically has been previously misidentified, and with more widespread use of improved diagnostic tools, such as matrix-assisted laser desorption ionization-time of flight mass spectrometry, there has been an increase in the identification of this pathogen [1,6]. Abscess infections due to *Aerococcus* species are exceedingly rare. To date, there is one case of a hip abscess due to *Aerococcus urinae* [13] and another case of a para-aortic abscess formation post-heart transplantation with *Aerococcus viridians* [14]. We report an unusual case of a perineal abscess where the causative pathogen isolated was *Aerococcus urinae*.

Presentation of case

We present a case of a 54 year-old male with a history of autism, bipolar disorder, intellectual disability, and urinary incontinence that presented to the emergency department with scrotal swelling for the past day. In the emergency department, the patient was unable to provide any further history. From medical records from prior visits, the patient has had no surgeries in the past, no toxic habits such as smoking, alcohol use, or drug use, and his family history was noncontributory. His blood pressure was 131/83 and was found to be febrile with a temperature of 101.2F with a maximum temperature of 103F, tachycardic with a heart rate of 111

beats/min, and respiratory rate was 16 breaths/min saturating at 100% on room air. On physical exam, the patient was awake, but disheveled, disoriented and not following commands. Cardiac, respiratory, and gastrointestinal exam was unremarkable. The scrotum was noted to have swelling and erythema. Laboratory results were remarkable for a leukocytosis of 20k/uL (neutrophil predominance of 74% and bandemia of 5%). The patient was also found to have acute renal injury with a creatinine of 1.38 mg/dL and lactatemia of 1.8 mmol/L. Urinalysis was remarkable for pyuria with WBC >50 cells/hpf, leukocyte esterase concentration large, and RBC 10–25 cells/hpf. Blood and urine cultures were sent from the emergency department.

The patient was started on empiric intravenous vancomycin and piperacillin/tazobactam. Ultrasound of the testicles revealed diffuse scrotal wall thickening. The right testes measured 3.8 × 1.3 × 2.5 cm and the left testes measured 3.6 × 1.7 × 2.4 cm with normal echogenicity and echotexture with no masses or areas of architectural distortion with normal blood flow pattern. There was no hydrocele or varicocele on ultrasound, however, there was a distended urinary bladder. An ultrasound of the kidneys was obtained and showed moderate hydronephrosis of the right kidney. In order to better characterize the genitourinary tract, a CT abdomen and pelvis was performed. The CT was remarkable for abscess at the base of the penis measuring 3.8 × 5.2 × 5.2 cm (Fig. 1) causing urinary bladder distention and bilateral hydronephrosis, right side greater than left. While on the medicine floor, the patient went into septic shock and was transferred to the medical intensive care unit where the patient was resuscitated and norepinephrine was initiated.

The next day, the patient went for interventional radiology guided aspiration of the perineal abscess as well as placement of a suprapubic catheter. Approximately 30 mL of purulent, sanguinous fluid was aspirated. A specimen was sent for microbiology. An

* Corresponding author.

E-mail address: lha@northwell.edu (L. Ha).



Fig. 1. CT scan of the pelvis showing a large abscess (arrow) involving the base of the penis, measuring $3.8 \times 5.2 \times 5.2$ cm.

abscessogram was performed, which demonstrated a collapsed, amorphous cavity.

On day 3 of the patient's hospital stay, the blood cultures remained negative. The cultures from the drainage were positive for gram positive cocci. On day 4, the abscess culture was identified using matrix-assisted laser desorption ionization time-of-flight mass spectrometry to be *Aerococcus urinae*. The patient was stabilized, norepinephrine discontinued and returned to the medicine floor. Five days post abscess drainage, a repeat CT of the pelvis was performed which demonstrated near-complete resolution of the peripenile abscess. However, given the persistent cavity and output, the catheter remained in place for one additional week at which time the patient returned for repeat CT and fluoroscopic guided tube check with removal of the drainage catheter. The patient failed a trial of voiding with retention of 400 mL at 10h and was suspected due to urethral strictures. The patient remained with a suprapubic catheter and was discharged to his group home with follow-up with his urologist for possible surgical intervention for suspected urethral strictures. In regards to treatment, the patient was initially found to be septic and was started on intravenous vancomycin and piperacillin/tazobactam. When the cultures resulted as *Aerococcus urinae* and after the patient was stabilized, he completed treatment with oral amoxicillin/clavulanate to complete two weeks total of antimicrobials.

Discussion

Aerococcus urinae is a gram positive coccus in pairs and chains, producing alpha hemolysis on blood agar, and has biochemical properties which include negative catalase and pyrrolidonyl aminopeptidase activity. In the laboratory, it has been difficult to identify *Aerococcus urinae* through conventional methods. Due to its colony morphology, it can be misidentified as alpha hemolytic streptococci. It also shares microscopic appearance with staphylococci, and antibiotic resistance patterns similar to enterococci [1,2]. With improvement in diagnostic tools in identifying pathogens such as matrix-assisted laser desorption ionization time-of-flight mass spectrometry, there has been an increased awareness of *Aerococcus* species causing human infections. Previously considered a contaminant, it has been established as clinically relevant, particularly in causing severe infection and death.

Aerococcus urinae was previously described in the literature as *Aerococcus*-like organism [5]. In 1997, Schurr et al. gave support to the role of *Aerococci* causing urinary tract infections, and reported that during a one year study of two laboratories in the Netherlands, the incidence of *Aerococcus urinae* urinary tract infections ranged

between 0.31 and 0.44% for the two laboratories [15]. In 2000, Zhang et al. reported *A. urinae* urinary tract infections were seen mostly in elderly males with a median age of 73 with underlying medical conditions such as prostatic disease and diabetes [4].

In reviewing the literature, abscess due to *Aerococcus* species is exceedingly rare. In 2013, Goetz et al. report a case report of a 38 year old male that presented with constitutional symptoms such as lightheadedness and chills for 2 weeks and found on computed tomography scan of the abdomen and pelvis to have a fluid/soft tissue density collection in the left hip. That patient underwent incision and debridement and the causative pathogen was found to be *A. urinae*. It was determined that the *A. urinae* was unlikely to be a contaminant and most likely seeded the hip from a bladder source [13]. In 2002, Park et al. report a case of a 48 year old male with superior vena cava syndrome caused by a para-aortic abscess that was found to have *Aerococcus viridans* after the patient underwent orthotopic heart transplantation. This was the first report of *A. viridans* causing abscess in an organ transplant recipient [14]. Lastly, Babaeer et al. in 2015 reported a case of a 49 year old male that presented with hematuria and pain in the shaft of his penis and found to be in septic shock. A computed tomography found gas in the corpus spongiosum and it was determined the patient had necrotizing urethritis caused by *Aerococcus urinae*. In this patient, the infection was most likely acquired through a sexual encounter where his partner was on intravenous antimicrobials which might have disrupted her vaginal flora. Also, this patient slept with his condom in place and could have contributed to the development of infection [16].

Aerococcus have been found to be sensitive to antibiotics such as beta-lactams. However, *A. urinae* has been found to be intrinsically resistant to sulfonamides and reports of resistance to trimethoprim. Also, it has been observed that *A. urinae* has low MICs for nitrofurantoin [1,17,15]. Clinical breakpoints for *aerococcus* have not been established. Benzylpenicillin or ampicillin seems to be the treatment of choice for *A. urinae* and *A. sanguinicola* based on MIC values. For allergies such as to penicillin, vancomycin could be used. *A. urinae* and *A. sanguinicola* also display low MICs for piperacillin/tazobactam, imipenem, vancomycin and rifampin as well. In one study, most patients empirically treated with cefotaxime with favorable results, indicating that cefotaxime may be used for treatment as well [6]. In this same study, it was found that *A. urinae* and *A. sanguinicola* had high MICs to ciprofloxacin and clindamycin.

Conclusion

In this case report, we acknowledge the first case of perineal abscess caused by *Aerococcus urinae*. *Aerococcus urinae* has been associated with urinary tract colonization, and thus, has been recognized as a pathogen implicated in causing urinary tract infections as well as bloodstream infections, and infectious endocarditis. Abscess formation caused by *A. urinae* is rarely seen and increased awareness of its potential to cause abscess should be considered.

Conflicts of interest

None.

References

- [1] Rasmussen M. *Aerococci* and aerococcal infections. *J Infect* 2013;66(6):467–74.
- [2] Cattoir V, Kobal A, Legrand P. *Aerococcus urinae* and *Aerococcus sanguinicola*, two frequently misidentified uropathogens. *Scand J Infect Dis* 2010;42(10):775–80.

- [3] Shelton-Dodge K, Vetter EA, Kohner PC, Nyre LM, Patel R. Clinical significance and antimicrobial susceptibilities of *Aerococcus sanguinicola* and *Aerococcus urinae*. *Diagn Microbiol Infect Dis* 2011;70(4):448–51.
- [4] Zhang Q, Kwok C, Attorri S, Clarridge 3rd JE. *Aerococcus urinae* in urinary tract infections. *J Clin Microbiol* 2000;37:1703–5.
- [5] Christensen JJ, Vibits H, Ursing J, Korner B. *Aerococcus*-like organism, a newly recognized potential urinary tract pathogen. *J Clin Microbiol* 1991;29(5):1049–53.
- [6] Senneby E, Göransson L, Weiber S, Rasmussen M. A population-based study of aerococcal bacteraemia in the MALDI-TOF MS-era. *Eur J Clin Microbiol Infect Dis* 2016;35(5):755–62.
- [7] Lee MY, Kim MH, Lee WI, Kang SY, Jeon YL. A case of sepsis in a 92-year-old korean woman caused by *aerococcus urinae* and identified by sequencing the 16S ribosomal RNA gene. *Lab Med* 2016;47(2):e15–7.
- [8] Jong MFCD, Soetekouw R, Kate RWT, Veenendaal D. *Aerococcus urinae*: severe and fatal bloodstream infections and endocarditis. *J Clin Microbiol* 2010;48(9):3445–7.
- [9] Siddiqui B, Chaucer B, Chevenon M, Fernandes D, Rana M, Nfonoyim J. *Aerococcus urinae* associated aortic and tricuspid valve infective endocarditis. *IDCases* 2016;4:30–1.
- [10] Melnick S, Nazir S, Hingorani R, Wexler P. *Aerococcus urinae*, a rare cause of infective endocarditis. *BMJ Case Rep* 2016.
- [11] Kass M, Toye B, Veinot JP. Fatal infective endocarditis due to *Aerococcus urinae*—case report and review of literature. *Cardiovasc Pathol* 2008;17(6):410–2.
- [12] Slany M, Freiburger T, Pavlik P, Cerny J. Culture-negative infective endocarditis caused by *Aerococcus urinae*. *J Heart Valve Dis* 2007;16(2):203–5.
- [13] Goetz LL, Powell DJ, Castillo TA, Adkins L, Klausner AP, Gater DR. Hip abscess due to *Aerococcus urinae* in a man with paraplegia: case report. *Spinal Cord* 2013;51(12):929–30.
- [14] Park JH, Kim YS, Kim M-N, Kim J-J. Superior vena cava syndrome caused by *aerococcus viridans* para-aortic abscess after heart transplantation. *Transplantation* 2002;74(10):1475–6.
- [15] Schuur PM, Kasteren ME, Sabbe L, Vos MC, Janssens MM, Buiting AG. Urinary tract infections with *Aerococcus urinae* in the south of The Netherlands. *Eur J Clin Microbiol Infect Dis* 1997;16(12):871–5.
- [16] Babaeer AA, Nader C, Iacoviello V, Tomera K. Necrotizing urethritis due to *Aerococcus urinae*. *Case Rep Urol* 2015;2015:1–3.
- [17] Senneby E, Petersson AC, Rasmussen M. Epidemiology and antibiotic susceptibility of aerococci in urinary cultures. *Diagn Microbiol Infect Dis* 2015;81(2):149–51.