

## CLINICAL VIGNETTE

# *Aerococcus* Bacteremia in a Patient with Prostate Cancer

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### Case Description

A 65-year-old male with metastatic prostate cancer to the thoracic and lumbar spine presented to the Emergency Department with several days of malaise and fevers. Prior medical history includes chemotherapy and radiation therapy, obstructive uropathy with post right nephrostomy tube placement. Other problems include depression, hypertension, hyperlipidemia, fatty liver disease and osteopenia. Four days prior to presentation, his right nephrostomy tube was exchanged. The valve was initially placed in the wrong direction and the tube did not drain for six hours. The patient developed flank pain which resolved after he changed the valve position with subsequent adequate drainage. The following day, he developed fevers, nausea, fatigue and decreased oral intake.

He saw his primary care physician for preoperative evaluation for spinal metastasis surgery. He was noted to have rigors, vomiting and presyncope and blood and urine cultures were collected and he started on bactrim. Blood and urine cultures both grew gram positive cocci in clusters and speciated to *aerococcus urinae*. The patient was sent to the Emergency Department for further evaluation and was admitted on vancomycin and ceftriaxone. Infectious diseases and urology were consulted.

Ultrasound showed the right nephrostomy tube was patent with no hydronephrosis. Transthoracic echocardiogram (TTE) was without evidence of valvular vegetations though valvular structures were poorly visualized and there was noted to be a small to moderate circumferential pericardial effusion. Results of the TTE were discussed with the patient and decision was made not to pursue transesophageal echocardiogram (TEE) to assess for infective endocarditis given low pre-test probability of endocarditis and per patient's preference. The patient's DENOVA score was at most one. Blood and urine cultures were pan-sensitive and repeat blood cultures were without growth. The patient clinically improved on ceftriaxone. He was discharged on a two-week course of intravenous ceftriaxone. On follow up in clinic, the patient completed the course of antibiotics and had no symptoms to suggest ongoing infection.

### Discussion

*Aerococcus* is a gram positive, catalase-negative bacteria which consists of eight species (*A. viridians*, *A. urinae*, *A. sanguinicola*, *A. christensenii*, *A. urinaehominis*, *A. urinaeequi*,

*A. suis* and *A. vaginalis*).<sup>1</sup> Given that *Aerococcus* grows in clusters and displays alpha hemolysis when grown on blood agar, it shares common characteristics with staphylococci, streptococci and enterococci.<sup>2</sup> It was previously considered to be a nonpathogenic contaminant though now it is thought to be a source of infection. *Aerococcus* has more commonly been found with urinary tract infections, especially in patients with urinary tract abnormalities such as bladder cancer, benign prostate hypertrophy and prostate cancer. It is usually susceptible to penicillin, vancomycin and cephalosporins, and resistant to sulphonamides.

Tai et al published a retrospective study of all blood cultures growing *Aerococcus* species at Mayo Clinic Hospitals between January 2005 to July 2020.<sup>1</sup> In patients with *Aerococcus* bacteremia without endocarditis, two-week treatment with daily intravenous penicillin or ceftriaxone was effective with susceptible strains. Ceftriaxone was the most common intravenous antibiotic on discharge. Some patients were treated with oral antibiotics including amoxicillin/clavulanic acid and levofloxacin, without recurrence of bacteremia.

Some cases of *Aerococcus* bacteremia are further complicated by infective endocarditis. The DENOVA score has been a helpful tool to predict endocarditis in patients with *Enterococcus faecalis* bacteremia.<sup>3</sup> The components of the DENOVA score include duration of symptoms seven days or greater, evidence of embolization, greater than or equal to two positive cultures, unknown site of origin, presence of valvular disease and auscultation of murmur. Each variable receives one point and three points or greater is indication for transesophageal echocardiogram (TEE). With this cutoff, the DENOVA score had a sensitivity of 100% and specificity of 83%. Berge et al examined whether the DENOVA score could be used in patients with *Streptococcus*-like bacteria including *Aerococcus* to determine whether TEE was needed.<sup>4</sup> They found that the DENOVA score could not effectively determine whether TEE should be obtained. In another study, Tai et al found that a DENOVA score of three or greater had a sensitivity of 100% for endocarditis and suggested that the DENOVA score can be used as a tool to help determine whether TEE is needed to evaluate for endocarditis in patients with *Aerococcus* bacteremia.<sup>1</sup>

## Conclusion

Though previously thought to be a contaminant and nonpathogenic, *Aerococcus* is now increasingly identified as a pathogen in patients with underlying urologic abnormalities and is more commonly seen in urinary tract infections. *Aerococcus* urinary tract infections can further be complicated by bacteremia and endocarditis. The DENOVA score can be used to help determine whether TEE is needed to rule out endocarditis in patients with *Aerococcus* bacteremia.

## REFERENCES

1. **Tai DBG, Go JR, Fida M, Saleh OA.** Management and treatment of *Aerococcus* bacteremia and endocarditis. *Int J Infect Dis.* 2021 Jan;102:584-589. doi: 10.1016/j.ijid.2020.10.096. Epub 2020 Nov 4. PMID: 33157289.
2. **Senneby E, Petersson AC, Rasmussen M.** Clinical and microbiological features of bacteraemia with *Aerococcus* urinae. *Clin Microbiol Infect.* 2012 Jun;18(6):546-50. doi: 10.1111/j.1469-0691.2011.03609.x. Epub 2011 Sep 6. PMID: 21895858.
3. **Berge A, Krantz A, Östlund H, Nauc ler P, Rasmussen M.** The DENOVA score efficiently identifies patients with monomicrobial *Enterococcus faecalis* bacteremia where echocardiography is not necessary. *Infection.* 2019 Feb;47(1):45-50. doi: 10.1007/s15010-018-1208-3. Epub 2018 Sep 3. PMID: 30178077.
4. **Berge A, Kronberg K, Sunnerhagen T, Nilson BHK, Giske CG, Rasmussen M.** Risk for Endocarditis in Bacteremia With *Streptococcus*-Like Bacteria: A Retrospective Population-Based Cohort Study. *Open Forum Infect Dis.* 2019 Oct 4;6(10):ofz437. doi: 10.1093/ofid/ofz437. PMID: 31667201; PMCID: PMC6814282.