

## AN UNUSUAL CASE OF URINARY TRACT INFECTION CAUSED BY *AEROCOCCUS VIRIDANS*

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### SUMMARY

*Aerococcus viridans* is generally a saprophytic bacterium. The bacterium has been reported as a rare pathogen in humans and it is generally considered as a contaminant in clinical cultures. Infections caused by *A. viridans* have been seldomly reported. To date, there are only four reported cases of urinary tract infections caused by *A. viridans* worldwide, and here we present the fifth case involving a pregnant woman. A 30 year-old pregnant woman with normal signs of four months pregnancy had the complaints of malaise, dysuria and increased urination frequency for the last three days. Also, she had tenderness at the right part of abdomen during palpation. The urine culture yielded the growth of  $>10^5$  cfu/ml of *A. viridans* as the only organism. The patient was orally treated with ampicillin because of pregnancy, which resulted in alleviation of the symptoms over the next six days. To our knowledge, this is the first case of urinary tract infection caused by *A. viridans* in a pregnant woman. Our report shows that even though *A. viridans* is rarely associated with human infections, it could be a causative agent of urinary tract infection.

**Keywords:** *Aerococcus viridans*, pregnancy, urinary tract infection

### ÖZET

#### *Aerococcus viridans*'ın Neden Olduğu Nadir Bir Üriner Sistem İnfeksiyonu Olgusu

*Aerococcus viridans* genellikle saprofit olduğu bilinen bir bakteridir. Bakteri insanlarda nadiren patojen olarak bildirilmiştir ve genellikle kültürlerde kontaminasyon olarak değerlendirilir. Literatürde bugüne kadar *A. viridans*'ın neden olduğu dört üriner sistem infeksiyonu olgusu bildirilmiştir. Bu çalışmada bir gebe kadında saptanan beşinci olgu sunulmuştur. Son 3 gündür sık idrar yapma, idrar yaparken yanma ve kırgınlık şikayetleri olan 30 yaşındaki 4 aylık gebe kadında normal gebelik bulguları ve batin palpasyonunda sağda hafif hassasiyet saptanmıştır. İdrar kültüründe saf kültür halinde  $>10^5$ cfu/ml *A. viridans* üremiştir. Hasta gebeliğinden dolayı ampisilinle tedavi edilmiş ve altı günde şikayetleri kaybolmuştur. Bilgilerimize göre bu olgu, bir gebe kadında görülen *A. viridans*'ın neden olduğu ilk üriner sistem infeksiyonu olgusudur. Bu olgu, insanlarda infeksiyona nadiren neden olmasına rağmen, *A. viridans*'ın üriner sistem infeksiyonlarında bir etken olarak düşünülebileceğini göstermektedir.

**Anahtar sözcükler:** *Aerococcus viridans*, gebelik, üriner sistem infeksiyonu

### INTRODUCTION

*Aerococcus viridans* is known as a saprophytic bacterium, and considered as a rare pathogen in humans<sup>(5,9,11)</sup>. *A. viridans* has been reported to comprise 5-10 % of the bacterial flora of air and dust in occupied rooms. It is widely dis-

tributed in the hospital environment and commonly found on raw or processed vegetables<sup>(5,6)</sup>. *A. viridans* can be found in very small numbers in the upper respiratory tract and on the skin of healthy persons. The bacterium is generally considered as a contaminant in clinical cultures<sup>(11)</sup>.

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Aerococci appear to be of low virulence and may be normally pathogenic only in patients with vulnerable conditions. *A. viridans* has been associated with some human infections including bacteremia, septic arthritis, infectious endocarditis, meningitis, urinary tract infection (UTI), osteomyelitis, and wound infection<sup>(2,5,9,11)</sup>.

To our knowledge, there are three cases of UTI caused by *A. viridans* in 1967<sup>(3)</sup>, and a case of UTI with bacteremia caused by *A. viridans* in an 87 year-old male nursing home resident in 2004 have been reported thus far<sup>(5)</sup>. Here we describe not only the fifth case of UTI caused by *A. viridans*, but also the first case of UTI caused by *A. viridans* in a pregnant woman.

### CASE PRESENTATION

A 30 year-old pregnant woman, housewife, was admitted to Education and Research Hospital of Mustafa Kemal University, Turkey. She had complaints of malaise, dysuria and increased urinary frequency for three days. She had no previous history of UTI or chronic illness in the past 12 months. There was no history of urinary catheterization or other genitourinary procedures. On examination, she had normal body temperature, heart rate of 88 beats/minute, and blood pressure of 110/55 mm Hg. She had a little right sensitiveness in abdomen palpation. Cardio-respiratory exam was unremarkable. No other abnormalities were identified. She had normal signs of four months pregnancy. She was using only a multivitamin pill owing to pregnancy.

Laboratory investigations revealed the following values: haemoglobin 11.4 g/dl, leukocyte count 11,300 cells/m<sup>3</sup>, platelets 319,000 cells/m<sup>3</sup>, SGPT 12 IU/L and SGOT 20 IU/L, urea 16 mg/dl, creatinine 0.7 mg/dl. Urinalysis showed more than ten white cells/HPF.

The mid-stream urine sample of the patient was inoculated on Columbia agar + 5 % sheep blood and eosine methylene blue agar (bioMérieux, Marcy l'Etoile-France), and incubated at 37°C for 24 h. Bacterial identification was based

on biochemical method (API 20 STREP, bioMérieux, Marcy l'Etoile-France). Gram stain, catalase, growth in 6.5 % sodium chloride broth, esculin hydrolysis, and pyrrolidonyl aminopeptidase (PYR) tests were performed. Following the incubation of urine culture plates, >10<sup>5</sup> cfu/ml *A. viridans* was isolated as pure culture. The isolate was negative for catalase, and positive for PYR and 40 % bile esculin reactions and for the growth in 6.5 % sodium chloride.

To determine the antimicrobial susceptibility profile of the organism, disk diffusion method was performed following the guidelines recommended by CLSI (formerly NCCLS) for nonpneumococcal *Streptococcus* category<sup>(8)</sup>. The results showed that the isolate was susceptible to vancomycin (30 mcg), cefoperazone-sulbactam (75+30 mcg), imipenem (30 mcg), ampicillin (10 mcg), and intermediate-resistant to amoxicillin-clavulanate (20+10 mcg), and resistant to cefotaxime (30 mcg), cefazolin (30 mcg), cefuroxime (30 mcg), ciprofloxacin (5 mcg), and gentamicin (10 mcg).

Because of pregnancy, the patient was treated orally with ampicilline 500 mg tablet, four times a day. Followed-up, she reported improvement in her complaints over the next six days, had normal urination and culture-negative urine sample.

### DISCUSSION

*A. viridans* has a world-wide distribution, is mainly a pathogen of lobsters, and has rarely been involved as a cause of human infections<sup>(2,3,5,9)</sup>. The bacterium may be often overlooked due to its selective growth requirements. The sparse documentation of this organism from human clinical infections may be due to its microbiologic similarity to alpha-hemolytic streptococci and enterococci and potential misinterpretation of aerococci in culture specimens<sup>(5)</sup>. If a special attention is not given to the microscopic morphology, the member of the genus *Aerococcus* with a strong tendency toward tetrad formation (not chains) could be confused as a *Streptococcus*<sup>(4,5)</sup>. Because of the fastidious

nature of the organism, increased awareness may contribute to comprehending its possible role in humans.

*A. viridans* has been associated with some human infections that included bacteremia, septic arthritis, infectious endocarditis, meningitis, UTI, osteomyelitis, and wound infection<sup>(2,5,9,11)</sup>. There are limited data in the literature on the antimicrobial susceptibility of *A. viridans* as this organism has been infrequently associated with human infections.

Antimicrobial susceptibility patterns of *A. viridans* have been rapidly changed. In 1987, Kern and Vanek<sup>(7)</sup> reported that two *Aerococcus* strains isolated from blood cultures were sensitive to penicillin G and piperacillin but resistant to fluoroquinolones and netilmicin. In 1996, Swanson et al.<sup>(10)</sup> reported a case of penicillin-resistant *A. viridans* bacteremia in a child who was receiving prophylactic penicillin. In another study in 1994, Augustine et al.<sup>(1)</sup> reported a case of endocarditis caused by *A. viridans* with multidrug resistance, i.e., resistance to penicillin, ampicillin, cefotaxime, gentamicin, and intermediate resistance to ciprofloxacin. In 2002, Uh et al.<sup>(11)</sup> reported a case of *A. viridans* bacteremia associated with granulocytopenia, with resistance to penicillin, erythromycin, clindamycin and ceftriaxone, and susceptible to vancomycin and chloramphenicol. Gopalachar et al.<sup>(5)</sup>, in 2004, reported a case of urinary tract infection with bacteremia caused by *A. viridans*, but they could not perform sensitivity testing due to the fastidious nature of the organism. In our case, the *A. viridans* strain obtained from urine specimen was susceptible to vancomycin, cefoperazone-sulbactam, imipenem, ampicillin, and intermediate resistant to amoxicillin-clavulanate, and resistant to cefotaxime, cefazolin, cefuroxime, ciprofloxacin, gentamicin.

Aerococci appear to be of low virulence and may be normally pathogenic only in patients with vulnerable conditions<sup>(7,10)</sup>. *A. viridans* has been commonly isolated from blood culture and has been associated with granulocytic bacteremia and endocarditis bacteremia, especially in the presence of chronic immunocompromised states, malnutrition, or urinary tract patho-

logy<sup>(5,12)</sup>. Our case was a pregnant woman and she had no other apparent illnesses. In this case, pregnancy may have contributed to occurrence of UTI by *A. viridans*.

In conclusion, this is the first case of urinary tract infection caused by *A. viridans* in a pregnant woman. The report shows that even though *A. viridans* is rarely associated with human infections, it could be a causative agent of urinary tract infection.

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