



## Case report

# Enterococcal prosthetic valve endocarditis secondary to transurethral prostatic resection



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## ABSTRACT

Prosthetic valve endocarditis (PVE) is a catastrophic complication of cardiac valve replacement, associated with high mortality rates. Staphylococci (both *Staphylococcus aureus* and *coagulase-negative Staphylococci*) are the most common cause of PVE. Diagnosis may often be difficult because of its complications and extracardiac manifestations. Positive blood and valve cultures are one of the most important diagnostic criteria for IE. Transesophageal echography should be performed without delay in all patients suspected to have PVE. As for treatment, according to the guidelines sensitive antimicrobials should be administered for 6 weeks. Surgery is recommended in case of PVE complicated by heart failure, severe prosthetic dysfunction, abscess or persistent fever. We present a case of PVE after transurethral resection of the prostate in a 63-year-old male patient with a history of mitral valve replacement. The patient was treated by appropriate antimicrobials for 6 weeks and recovered completely.

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## Introduction

Transurethral resection of the prostate (TURP) still represents the gold standard for managing benign prostatic hyperplasia. The incidence of post-TURP infection was 21.6%: urinary tract infection (19.3%) and bacteremia and/or septic shock (2.3%) [1]. Antimicrobial prophylaxis significantly decreases the incidence of bacteriuria and clinical septicemia in men with preoperative sterile urine undergoing TURP. A significant decrease in bacteriuria incidence can be achieved with a range of antimicrobial agents, including quinolones, cephalosporins, and co-trimoxazole. Short course antimicrobial protocols may be more effective than single-dose regimens [2]. The bacteremia leading to infective endocarditis (IE) may be a result of the urological procedures or a consequence of the underlying urological pathology causing recurrent subclinical bacteremias [3]. IE post TURP is uncommon. We present a case of a 63 years-old patient with a history of mitral valve replacement who developed endocarditis secondary to TURP. He was treated with a combination of amoxicillin and gentamicin for six weeks. The patient recovered completely.

## Case report

A 63-year-old male known to have hypertension underwent TURP surgery due to benign prostatic hyperplasia presented to the outpatient clinic for 3 days history of fever of 39 °C and chills associated with dysuria and frequency 10 days after the procedure. The preoperative urine analysis and culture were negative. Vancomycin was used for preoperative surgical prophylaxis. His surgical history was remarkable for a prosthetic mitral valve replacement 3 years before. The patient denied any recent sexually transmitted disease. Physical examination revealed pansystolic murmur, no jugular venous distention, normal lung breath sounds, and splinter hemorrhage (Fig. 1). The testicular examination was normal. No dyspnea, cough or lower limb edema was found. On presentation, he had a temperature of 39 °C, a heart rate of 85 beats/min, blood pressure of 110/60 mm Hg, and oxygen saturation of 98%. Laboratory examination revealed WBC of 24000/mm<sup>3</sup> with left shift (neutrophil >75% and WBC > 10,000), CRP of 210 mg/L. Urine analysis showed numerous WBC and RBC per high power field. Other blood investigations were all within their normal range. Two blood cultures from different sites and a urine culture were obtained.

The patient was started on broad-spectrum antimicrobials (meropenem, vancomycin, and gentamicin). Given strong suspicion of infective endocarditis, a transesophageal echocardiogram was performed and showed a vegetation measuring of 5 mm

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**Fig. 1.** Linear reddish-brown streaks under the nail (arrow).

attached prosthetic valve (Fig. 2). Blood culture revealed *Enterococcus faecalis*, therefore, initial empiric antibiotic therapy was deescalated to amoxicillin (200 mg/kg/day) and gentamicin (3 mg/kg/day). The urine culture was negative. The patient's condition improved within the first few days. After 48 h, he became afebrile; CRP gradually reduced. Follow-up blood cultures were negative. The patient completed 6 weeks course of antimicrobials. Regular clinical and echocardiographic follow-up during the first year were normal.

## Discussion

Prosthetic valve endocarditis (PVE) is associated with high mortality during the early and midterm follow-up despite diagnostic and therapeutic improvements; its incidence is increasing and reaches 20–30 % of all infective endocarditis episodes. *Staphylococci* (both *Staphylococcus aureus* and coagulase-negative staphylococcus) have emerged as the most common cause of PVE and are associated with a severe prognosis [4].

The microbiology of PVE is very different from that of native valve endocarditis. *Streptococci* and *enterococci* occur less frequently, while *staphylococci*, bacteria of the HACEK group (*Haemophilus*, *Aggregatibacter*, *Cardiobacterium*, *Eikenella*, and *Kingella*), and fungi are found more frequently in cases of PVE [5].

The Duke criteria for IE combine major and minor clinical criteria. Positive blood culture results for IE and evidence of endocardial involvement from echocardiography, are the two major Duke criteria. Minor criteria are fever, predisposing cardiac condition, vascular phenomena, immunological phenomena and microbiologic and echocardiogram evidence which are not fulfilling the major criterion. Duke's criteria for the diagnosis of IE was "two major" or "one major and three minor" or "5 minor criteria" are needed. Both TTE (transthoracic echocardiography) and TEE (transesophageal echocardiography) are done in many patients with IE during the initial evaluation and subsequent follow-up and provide complementary information. If clinical suspicion of IE or its complications is high (eg, prosthetic valve or new atrioventricular block), then a negative TTE will not rule out IE



**Fig. 2.** Transesophageal echocardiogram showed vegetation attached to the prosthetic mitral valve (arrow).

or its potential complications, and TEE should be performed first [6].

The best therapeutic option in PVE is still debated. Although surgery is generally considered the best option when PVE causes severe prosthetic dysfunction or heart failure. *Enterococcal* IE is primarily caused by *Enterococcus faecalis* (90 % of cases) and, more rarely, by *Enterococcus faecium* (5 % of cases) or other species. Fully penicillin-susceptible strains (penicillin MIC  $\leq$  8 mg/L) are treated with penicillin G or ampicillin (or amoxicillin) combined with gentamicin. Ampicillin plus ceftriaxone is as effective as ampicillin plus gentamicin for non-high-level aminoglycoside resistance- *E. Faecalis*. Vancomycin(30 mg/kg/day) and gentamicin(3 mg/kg/day) can be used. Patients who are initially treated medically require close follow-up because of the risk of late events. Several factors have been associated with poor prognosis in PVE, including older age, diabetes mellitus, healthcare-associated infections, staphylococcal or fungal infection, early PVE, heart failure, and stroke [7]. Other indications of surgery are large (> 10 mm), mobile vegetations, thromboembolic events with vegetations still demonstrable, sepsis persisting for more than 48 h despite effective antimicrobial treatment [5].

IE after TURP surgery is uncommon, only a few cases in the literature were reported. Watanakunakorn reported *Klebsiella oxytoca* endocarditis in an 87-year-old man after TURP. The patient was treated with a combination of cefazolin and tobramycin for six weeks [8]. Kawahara et al. reported a case of a 63-year-old man who had underwent TURP for benign prostatic hyperplasia. After 40 days of surgery, he developed a fever. A diagnosis of IE was established by cardiography which detected large vegetation at the mitral valve. After intravenous antimicrobials therapy, the possibility of valve failure was suspected, so a valve replacement was performed [9].

In this presented patient, the probable source for enterococcal bacteremia was the TURP procedure despite using appropriate antimicrobial prophylaxis before surgery. Enterococcal IE after TURP has been described in the literature in a few cases. It is important to note, as presented in our case, that the early diagnosis and the early treatment of PVE could prevent catastrophic complications and valve failure. The bacteremia leading to IE may be a result of the urological procedures.

#### Informed consent

Written and signed informed consent was obtained from the patient.

#### Ethical approval

Our institution does not require ethical approval for case reports

#### Author statement

- All authors have contributed to the manuscript.
- All authors read and approved the final version of the manuscript.

#### Author contributions

YM, MAC, MM: Case report design.

YM, MAC, MM: Manuscript preparation.

MM, MAC: Followed up the patient and revised the manuscript.

YM, MAC, MM: Approved the final manuscript.

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#### Declaration of Competing Interest

No conflict of interest was declared by the authors.

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