

Bioprosthetic Aortic Valve Endocarditis in Association with *Enterococcus durans*

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Enterococci are common organisms associated with endocarditis, but infection by *Enterococcus durans* is very rare. To our knowledge, only 3 cases have been reported in the medical literature, and all 3 have involved native valves. Here we publish the first reported case (to our knowledge) of *E. durans* endocarditis in association with a bioprosthetic aortic valve. After the organism and its antibiotic susceptibility were identified, the 74-year-old male patient was treated successfully with teicoplanin and gentamicin, over a course of 6 weeks. (Tex Heart Inst J 2016;43(2):165-7)

Enterococcus *durans* endocarditis is a very rare infection. We describe what we believe is the first reported case of bioprosthetic aortic valve endocarditis caused by *E. durans*. After *E. durans* was isolated and identified, the patient was successfully treated with a combination of teicoplanin and gentamicin.

Case Report

In September 2014, a 74-year-old man was admitted to our institution with a 2-month history of intermittent fever, malaise, weight loss, and anorexia. He had a long history of hypertension controlled successfully with angiotensin-converting enzyme inhibitors and diuretic agents. Nine months earlier, the patient had undergone aortic valve replacement with a Trifecta™ aortic pericardial valve (St. Jude Medical, Inc.; St. Paul, Minn) for the treatment of severe aortic valve stenosis. About one month before his current admission, the frequency of his fever increased and amoxicillin (2 g/d) was administered without benefit. The physical examination upon current admission revealed an axillary temperature of 37.1 °C, a blood pressure of 130/80 mmHg, and an oxygen saturation of 98% on ambient air. The patient had no Janeway lesions or Osler nodes. Cardiac auscultation revealed a diastolic murmur at the right sternal border. Laboratory test results were as follows: 6.9 leukocytes/mL (neutrophils, 70%); hemoglobin, 8.5 g/dL; platelets, 101/mL; C-reactive protein, 12,458 mg/dL; and an erythrocyte sedimentation rate of 115 mm/hr. Renal function and hepatic enzyme levels were normal. Urine culture results were negative.

Chest radiographs and ultrasonograms of the abdomen showed no abnormal findings. A transthoracic color-flow Doppler echocardiogram (TTE), performed through a poor acoustic window, revealed left ventricular hypertrophy and a large vegetation on the prosthetic aortic valve, with mild-to-moderate regurgitation (Fig. 1). A transesophageal echocardiogram (TEE) confirmed that the prosthetic aortic valve was 9 mm in diameter at the noncoronary cusp (Fig. 2). On the basis of the presence of fever and a vegetation on the aortic bioprosthetic valve, together with the characteristics of the laboratory results, our primary diagnosis was infective endocarditis.

On the day of our patient's admission, we drew blood for 3 sets of cultures and began empirical intravenous treatment with the antibiotic ceftriaxone (2 g/d). After 72 hours, all 3 blood cultures yielded *E. durans*, which antibiotic susceptibility testing showed was susceptible to teicoplanin (minimal inhibitory concentration [MIC]=1 mg/dL), vancomycin (MIC=1 mg/dL), linezolid (MIC <2 mg/dL), and gentamicin (MIC <500 mg/dL). On the basis of these results, and in accordance with European Society of Cardiology guidelines on the prevention, diagnosis, and treatment of infective endocarditis,¹ we suspended treatment with ceftriaxone and substituted a combi-

Key words: Aortic valve, bioprosthetic; drug resistance, multiple, bacterial; drug therapy, combination; endocarditis, bacterial/therapy; *Enterococcus durans*/drug effects/isolation & purification; gentamicins/therapeutic use; microbial sensitivity tests; teicoplanin/therapeutic use

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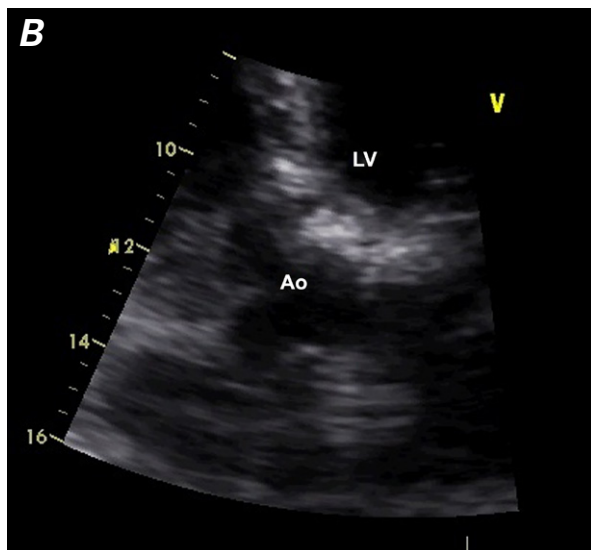
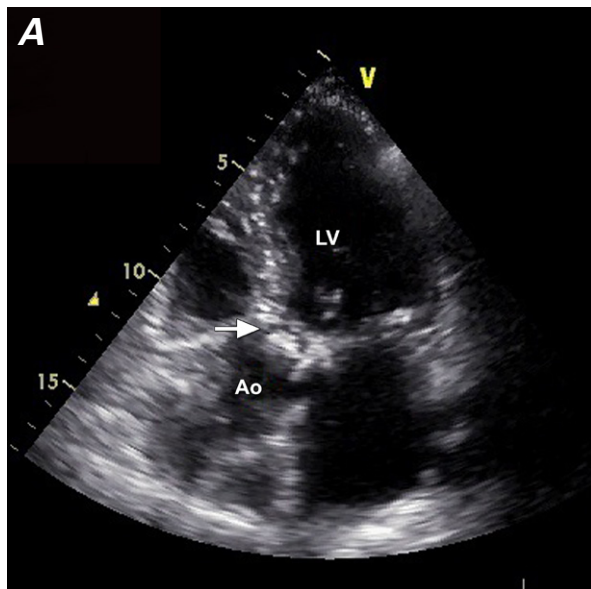


Fig. 1 Transthoracic echocardiograms (end-diastolic frames in apical 5-chamber view) show **A)** vegetation (arrow) in the prosthetic valve leaflets and **B)** no evidence of abscess.

Ao = aorta; LV = left ventricle

nation—for synergy—of intravenous teicoplanin (400 mg/d) and intravenous gentamicin (total daily dose, 3 mg/kg, divided into 2 doses) for 6 weeks.

After 2 weeks of this regimen, the patient's clinical symptoms resolved and his C-reactive protein levels gradually decreased. All repeat blood cultures were negative. At the request of the patient, we performed no further TEE, but serial TTE showed resolution of the vegetation (Fig. 3). After 6 weeks of treatment, he was discharged from the hospital. At his 3-month follow-up examination, he reported no new symptoms, and there was no clinical evidence to indicate a relapse of the infective endocarditis.



Fig. 2 Two-dimensional transesophageal echocardiogram shows the vegetation in the noncoronary prosthetic valve leaflet (arrow).

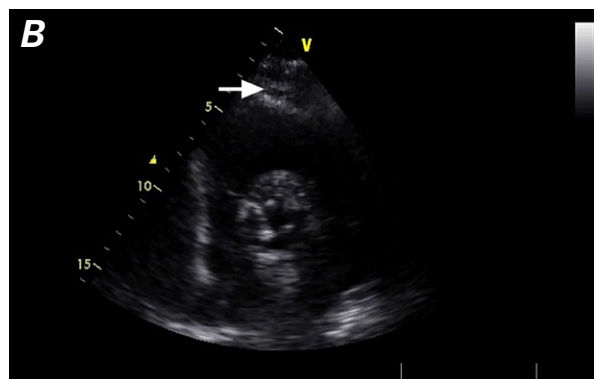
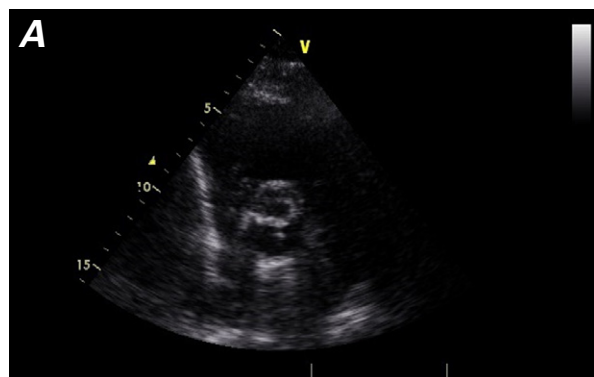


Fig. 3 Transthoracic echocardiograms (parasternal short-axis view) upon patient's hospital discharge show no residual vegetation (arrow) in the prosthetic valve leaflets either in **A)** diastole or in **B)** systole.

Discussion

Infective endocarditis is a disease possessed of high morbidity and mortality rates. Enterococci can cause a variety of infections, and endocarditis is one of the most serious.² Enterococci comprise 23 species and cause 5% to 15% of endocarditis cases.³ Most enterococcal endocarditis occurs in the elderly and is caused

by *E. faecalis* and *E. faecium*.² Infection by *E. durans* is extremely rare: to our knowledge, only 3 such cases have been reported,⁴⁻⁶ and all 3 of these have involved native valves. We report what we believe is the first published case of *E. durans* endocarditis to involve a bio-prosthetic aortic valve. Many studies have revealed that enterococci exhibit multidrug resistance in a spectrum that includes β -lactam rings and glycopeptides.⁷⁻¹⁰ In effect, the most problematic current issue in the management of enterococcal endocarditis is the selection of effective antibiotic therapy.^{11,12} Generally, 2 drugs that exhibit “synergistic killing” are necessary for effective therapy.¹¹ In the case described, *E. durans* endocarditis was successfully treated with an intravenous combination of teicoplanin and gentamicin for 6 weeks. In situations involving vancomycin-resistant enterococcus or high-level aminoglycoside-resistant enterococcal endocarditis, antibiotic treatment often fails, and surgery is indicated.¹¹ Therefore, proper identification of the enterococcus and its antibiotic susceptibility are essential for correct clinical management.

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