

# Fatal course of perivalvular extension of infective endocarditis in a patient after aortic valve replacement treated with immunosuppressive drugs

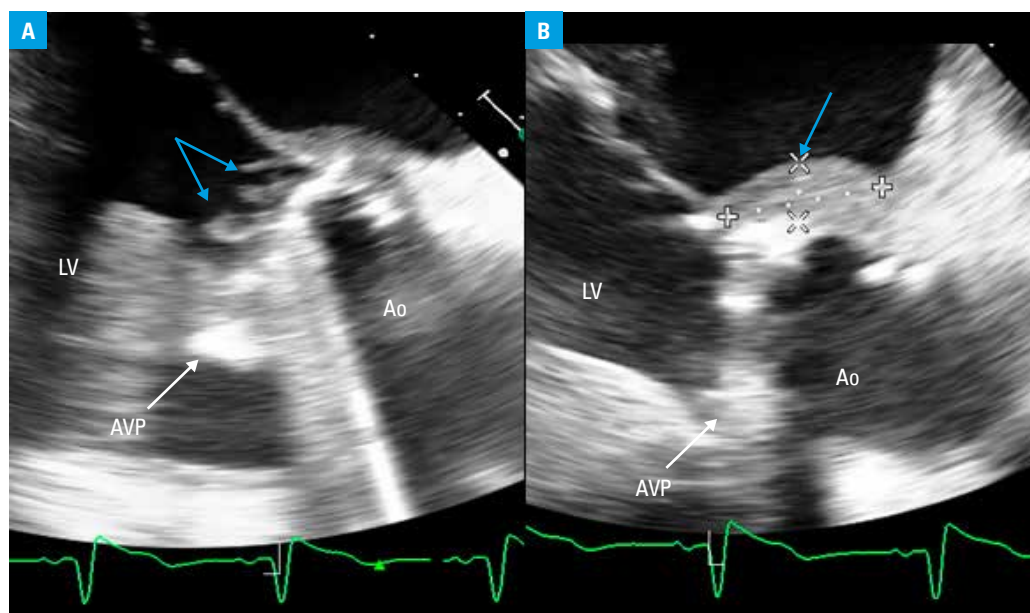
Katarzyna Kurnicka<sup>1</sup>, Michał Ciszek<sup>2</sup>, Barbara Lichodziejewska<sup>1</sup>,  
Olga Zdończyk<sup>1</sup>, Piotr Pruszczyk<sup>1</sup>

<sup>1</sup> Department of Internal Medicine and Cardiology, Medical University of Warsaw, Warsaw, Poland

<sup>2</sup> Department of Immunology, Transplantology and Internal Medicine, Medical University of Warsaw, Warsaw, Poland

A 57-year-old woman after 2 kidney transplants, chronically treated with immunosuppressive drugs (mycophenolate mofetil, tacrolimus), and after mechanical aortic valve replacement (AVR) (Medtronic Hall Easy-Fit, Medtronic Inc., Minneapolis, Minnesota, United States) 6 years earlier due to severe stenosis was admitted to the hospital with recurrent fever, dyspnea on exertion, and elevated levels of inflammatory markers. Trans-thoracic echocardiography (TTE) revealed a high

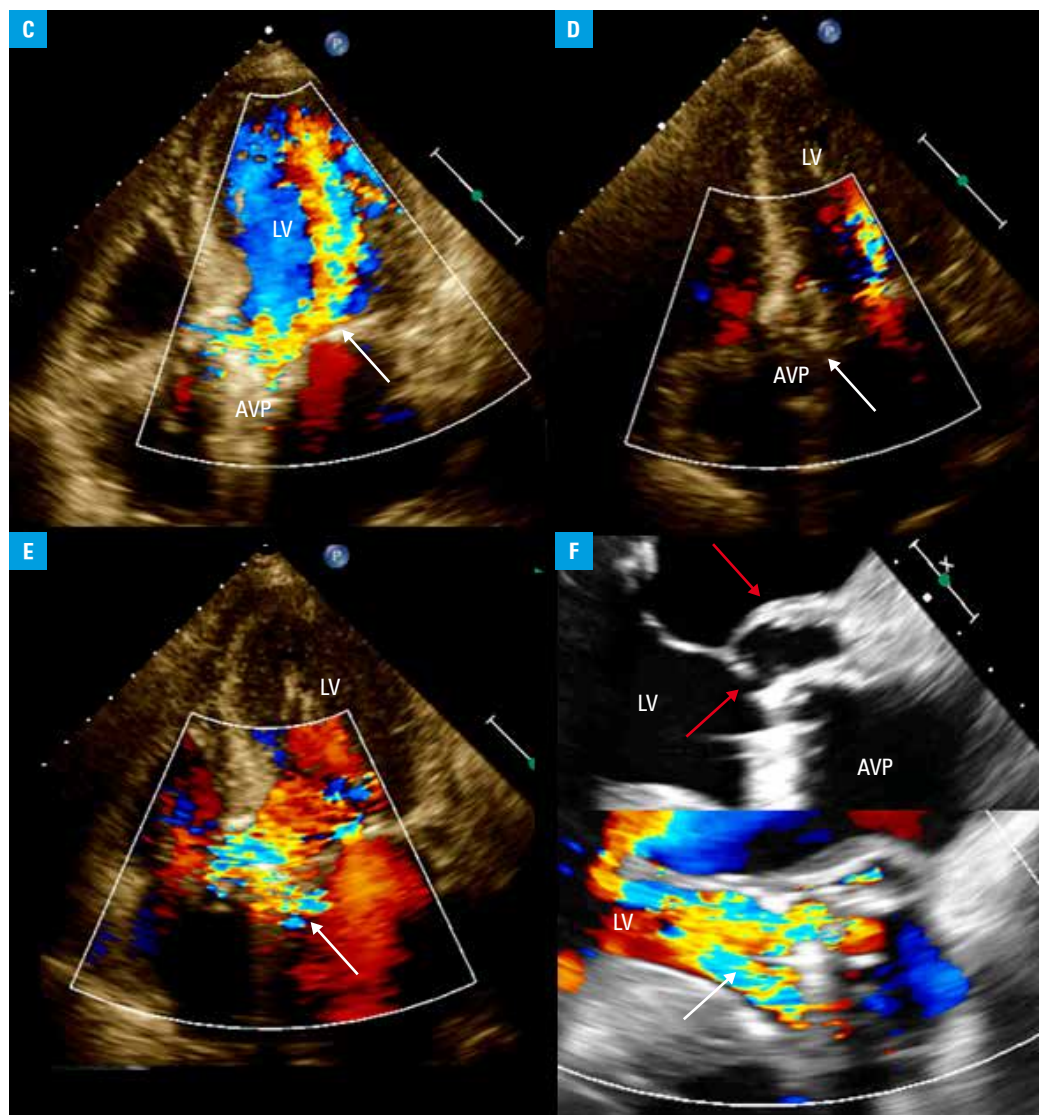
prosthetic mean gradient (83 mm Hg), indicating valve obstruction. Transesophageal echocardiography (TEE) showed mobile structures attached to the prosthesis, typical for bacterial vegetations (FIGURE 1A) and inflammatory infiltration (22 × 8 mm) at the level of the non-coronary sinus of Valsalva, involving the aortic and mitral curtain (FIGURE 1B). An evident perivalvular abscess or leak was not found.



**FIGURE 1** Echocardiographic imaging of prosthetic aortic endocarditis; **A** – bacterial vegetations attached to the mechanical prosthesis (blue arrows); **B** – inflammatory infiltration at the level of the non-coronary sinus of Valsalva (blue arrow); TEE, long-axis view  
Abbreviations: see the next page

Correspondence to:  
Katarzyna Kurnicka, MD, PhD,  
Klinika Chorób Wewnętrznych  
i Kardiologii, Warszawski Uniwersytet  
Medyczny, ul. Lindleya 4,  
02-005 Warszawa, Poland  
phone: +48 22 502 11 44,  
email: kkurnicka@yahoo.pl  
Received: October 13, 2017.  
Revision accepted:  
December 7, 2017.  
Published online:  
December 21, 2017.

Conflict of interest: none declared.  
Pol Arch Intern Med. 2017;  
127 (12): 882-884  
doi:10.20452/pamw.4173  
Copyright by Medycyna Praktyczna,  
Kraków 2017



**FIGURE 1** Echocardiographic imaging of prosthetic aortic endocarditis; **C** – a wide jet of a significant perivalvular leak directed to the left ventricle (arrow); TTE, 4-chamber view, color Doppler; **D** – the echo of aortic mechanical bileaflet prosthesis (SJM Regent; arrow) with a trace regurgitation, without perivalvular leak; TTE, 4-chamber view, color Doppler; **E** – severe perivalvular regurgitation of aortic prosthesis (SJM Regent; arrow); TTE, 4-chamber view, color Doppler; **F** – valvular aneurysm with communication to the left ventricular outflow tract (blue arrows) and significant perivalvular leak (white arrow); TEE, long-axis view, 2-dimensional and color Doppler  
Abbreviations: Ao, aorta; AVP, aortic valve prosthesis; LV, left ventricle; TEE, transesophageal echocardiography; TTE, transthoracic echocardiography

The initial treatment included ciprofloxacin and ceftriaxone, which were upgraded to meropenem and vancomycin. Due to increasing C-reactive protein levels, gentamicin and rifampicin were additionally administered. The sequential blood cultures were negative. Control TTE/TEE after 8 weeks showed no vegetations. The perivalvular infiltration seemed to be more fibrous and the prosthetic gradient was normal. Eighteen months after the diagnosis of infective endocarditis (IE), the patient was readmitted with tachycardia, dyspnea, and hemolytic anemia (hemoglobin, 6.5 g/dl). Urgent TTE/TEE revealed significant perivalvular leak (PVL) in the area of previously detected infiltration (**FIGURE 1C**). The patient underwent another AVR (SJM Regent, St. Jude Medical, Saint Paul, Minnesota, United

States) with clinical improvement. The postoperative and control TTE confirmed normal valve function (**FIGURE 1D**). Interestingly, the cultures of the removed prosthesis were negative.

Unfortunately, 10 months after the second AVR, the patient presented with signs of heart failure (New York Heart Association class III) and hemolysis. TTE showed severe PVL with the risk of prosthesis dehiscence (**FIGURE 1E**). TEE revealed pulsatile perivalvular echo-free space, with a systolic expansion and diastolic collapse typical for valvular aneurysm, which was communicated with the left ventricular outflow tract and resulted in severe PVL (**FIGURE 1F**). A complex treatment with vancomycin, imipenem, and rifampicin was used. Because of hemodynamic instability, the third AVR was urgently performed

with an aortic homograft implantation. Unfortunately, the patient required reoperation and died a few days later.

Kidney transplant recipients are especially susceptible to IE, which increases the mortality rates and the risk of graft loss; immunosuppressive therapy is the most important predisposing factor.<sup>1</sup> It should be emphasized that prosthetic valve endocarditis is the most severe form of IE.<sup>2</sup> Patients with valve prostheses and previous IE, especially those on immunosuppressive treatment, have a very high risk of IE, and more often develop complications.<sup>2,3</sup> In addition, immunosuppressive therapy in kidney transplant recipients may lead to an increase in the rate of other complications, such as liver and brain abscess.<sup>1</sup>

Importantly, not only vegetations but also new periprosthetic regurgitation found on TTE suggest IE and their cause must always be identified, even in the absence of positive blood cultures. Perivalvular abscess can develop into serious complications, including PVL, fistula, or pseudoaneurysms.<sup>3,4</sup> PVL may cause clinically significant hemolysis and signs of heart failure, which contributes to high in-hospital and 1-year mortality rates also in renal transplant recipients.<sup>1,2</sup>

The sensitivity of TTE and TEE for the diagnosis of perivalvular abscesses is about 50% and 90%, respectively.<sup>3,5</sup> However, small abscesses may be difficult to identify even by TEE, and multislice computed tomography or positron emission tomography-computed tomography are helpful in the diagnosis.<sup>2</sup> To detect and manage possible complications in patients with valve prostheses and a history of IE, especially in those receiving immunosuppressants, frequent echocardiographic follow-up is recommended. Patients with severe perivalvular damage require surgery; however, the hospital mortality rates remain high.<sup>2</sup>

## REFERENCES

- 1 Moshkani Farahani M, Rostami Z, Einollahi B, et al. Infective endocarditis after renal transplantation. *Nephrourol Mon.* 2014; 6: e12326.
- 2 Habib G, Lancellotti P, Antunes MJ, et al. 2015 ESC Guidelines for the management of infective endocarditis. The Task Force for the Management of Infective Endocarditis of the European Society of Cardiology. *Eur Heart J.* 2015; 36: 3075-3128.
- 3 Sahan E, Gül M, Sahan S, et al. Pseudoaneurysm of the mitral-aortic intervalvular fibrosa. A new comprehensive review. *Herz.* 2015; 40 (Supl 2): 182-189.
- 4 Pereira VH, Guardado J, Fernandes M, et al. Prosthetic aortic valve: a bone in the system. *Rev Port Cardiol.* 2015; 34: 137.e1-4.
- 5 Habib G, Badano L, Tribouilloy C, et al. Recommendations for the practice of echocardiography in infective endocarditis. *Eur J Echocardiogr.* 2010; 11: 202-219.