

Aorto-right atrial fistula due to complicated prosthetic valve endocarditis

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In December 2008 a 51-year-old woman with a history featuring aortic valve replacement (ATS 22) in 2007 due to radiation-induced severe aortic stenosis, presented at our emergency department with protracted fever, involuntary loss of weight and malaise. Physical examination showed a poor general state, high fever, blood pressure 100/65 mm Hg, heart rate 95 bpm, systolic flow murmur across the prosthetic valve (PV) and signs of microembolism in the fingers. Laboratory examination revealed a mildly elevated leukocyte count ($10.5 \times 10^9/l$) and a markedly elevated CRP (195 mg/l). Four of six blood cultures grew *Staphylococcus aureus*.

To confirm the diagnosis of prosthetic aortic valve endocarditis (PVE) the patient underwent transthoracic (TTE) and transoesophageal (TEE) echocardiography, which revealed a minute mobile vegetation in the posterior region of the PV ring. At this time there were no signs of peri- (or para-) prosthetic involvement (fig. 1).

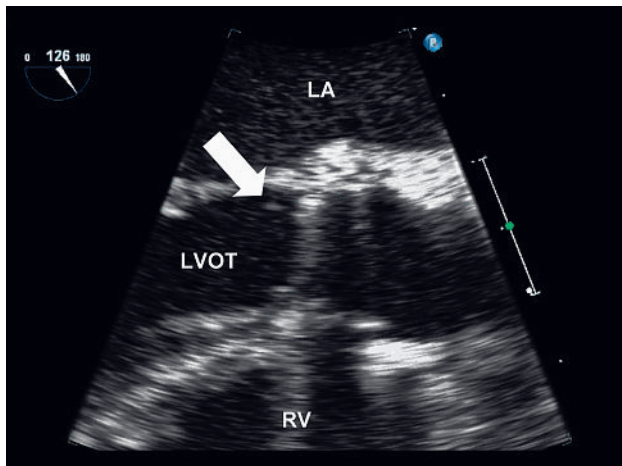


Figure 1
Mid-oesophageal long axis view (zoom). The arrow shows a small vegetation in the posterior region of the prosthetic valve ring prolapsing into the left ventricular outflow tract.
LVOT = left ventricular outflow tract; RV = right ventricle; LA = left atrium.

The authors have no conflict of interest to disclose.

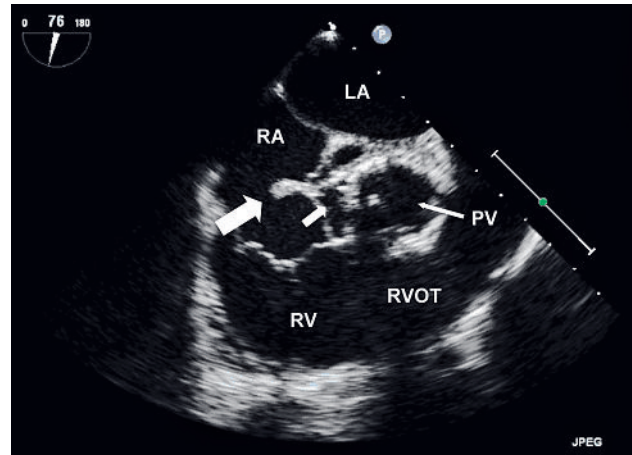


Figure 2
Mid-oesophageal short axis view of the aortic valve prosthesis. It shows abscess formation in the aortic root (small arrow), with a large vegetation extending from the aortic root into the right atrium (large arrow).
RV = right ventricle; RVOT = right ventricular outflow tract; PV = prosthetic valve; LA = left atrium; RA = right atrium.

Antibiogram-based standard antibiotic treatment was initiated and continued for 6 weeks. The patient's clinical state improved, the fever resolved and the laboratory findings returned to normal values within 10 days of treatment. A control TTE at this time ruled out silent complications.

Surprisingly, after completion of antibiotic therapy prior to discharge, a second control TTE showed a highly mobile mass in the region of the right atrial wall adjacent to the aortic root, with signs of aorto-right atrial shunting. TEE confirmed the diagnosis of a periprosthetic abscess complicated by aorto-right atrial fistula with development of a left-to-right shunt and

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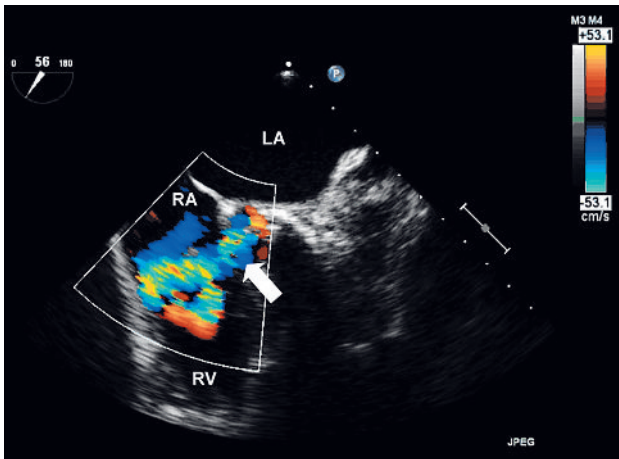


Figure 3
Mid-oesophageal short axis view of the aortic valve prosthesis. Colour Doppler overlay illustrating an aorto-right atrial fistula with a left-to-right shunt (large arrow).
RV = right ventricle; RA = right atrium; LA = left atrium.

formation of a large right atrial vegetation (fig. 2 and 3).

The patient underwent urgent repeat aortic valve replacement using an equine xenograft (Perimount Magna Ease 21 mm), reconstruction of the left ventricular outflow tract (LVOT) with a pericardial patch and direct closure of the shunt. The further course was uneventful and follow-up blood cultures were sterile.

Perivalvular extension and abscess formation is associated with excess mortality in patients with infective endocarditis. In a retrospective series of 233 patients with perivalvular abscesses associated with PVE, a mean 3-month survival of 75% of the patients was reported [1]. Outcomes were independently worse in older patients and in those with staphylococcal PVE and concomitant fistula formation [1]. Development of an aorto-cavitary fistula is considered to be a rare but important complication. It is estimated to account for 6% of all cases with PVE [2].

The present case raises the question whether patients with staphylococcal PVE should be followed more closely by routine echocardiography, or whether these patients should be managed by an early surgical approach rather than conservative treatment [3].

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