Case report

Contaminant, or no contaminant, that is the question

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A 50-year-old male presented acutely to hospital with palpitations of 6 h duration. Electrocardiogram (ECG) showed a supra-ventricular tachycardia and he was treated successfully with intravenous adenosine and discharged thereafter. Three weeks later, he re-presented with intermittent fever over the preceding 4 days. Past medical history included a bicuspid aortic valve with mild regurgitation. On examination, he was tachycardic (122 bpm), normotensive (116/82 mmHg), pyrexial (39.8°C) and there was a soft early diastolic murmur on auscultation. He was clinically euthyroid and urinalysis was within normal limits. ECG showed a sinus tachycardia and was otherwise unremarkable. Initial laboratory investigations included haemoglobin 13.5 g/dl (normal range (NR) 13.0–18.0), leucocyte count 12.6 × 10⁹/l (NR 4.0–10.0), urea 5.2 mmol/l (NR 3.3–8.8), creatinine 98 μM/l (NR 40–110) and C-reactive protein (CRP) 151 mg/L (NR 0–10). Trans-thoracic echocardiogram confirmed a bicuspid aortic valve, mild aortic regurgitation and no vegetations were noted. Six blood samples for culture were taken over 48 h, all of which proved positive for Corynebacterium species. Treatment with intravenous teicoplanin and gentamicin was instituted at this time, 3 days post-presentation, with resultant improvement in leucocyte count and CRP titre over the following 7 days. However, follow-up trans-oesophageal echocardiogram, performed 12 days post-admission, revealed a vegetation on the non-coronary cusp of the aortic valve (Figure 1) with mild regurgitation and no evidence of abscess formation. Five weeks later with treatment ongoing, the patient developed an acute severe headache and became unresponsive within 1 h. Urgent cranial computed tomography (CT) showed an extensive subarachnoid haemorrhage and the patient was transferred to the neurosurgical unit at our institution. A subsequent CT cerebral angiogram excluded an intra-cranial aneurysm and his level of consciousness improved with supportive therapy over the following 72 h. Furthermore, the patient developed acute pulmonary oedema during his neurological recovery and was transferred to the Coronary Care Unit where his condition was stabilized with aggressive pharmacological therapy. Repeat echocardiography revealed severe aortic regurgitation with no evidence of abscess formation; however, the left ventricle was now dilated with an end-diastolic dimension of 69 mm (NR 35–57) and an end-systolic dimension of 55 mm (NR 25–41). Adjunctive oral rifampicin was commenced. Definitive treatment with aortic valve replacement (AVR) was planned by the multi-disciplinary team, with careful consideration given to the timing of surgery in the context of the recent intra-cranial bleed and the potential risk of perioperative intra-cranial haemorrhage secondary to anticoagulation. This was performed 25 days after his subarachnoid haemorrhage without complication. Using molecular sequencing, the causative organism was classified as Corynebacterium striatum. Oral rifampicin and intravenous teicoplanin were continued for 6 weeks post-AVR, during which time the patient made a complete neurological recovery. Invasive cerebral angiogram thereafter excluded any intra-cerebral pathology and he was discharged on warfarin therapy.

Corynebacterium species are aerobic gram-positive bacilli that constitute a large part of the
normal skin and mucous membrane flora. As a consequence they are frequently isolated in blood cultures as contaminants. However, they have been reported to cause various infections including endocarditis, septicaemia, peritonitis, soft-tissue infection, conjunctivitis and chorioamnionitis.\textsuperscript{1} Endocarditis due to \textit{Corynebacterium} species is uncommon, accounting for 0.2–0.4\% of native valve endocarditis.\textsuperscript{2} It carries a poor prognosis and is associated with an increased incidence of neurological complications secondary to embolic phenomena.\textsuperscript{1,2} Of particular note, \textit{Corynebacterium striatum} endocarditis is more commonly associated with nosocomial risk factors when compared to that caused by other \textit{Corynebacterium} species.\textsuperscript{2} In this case, intravenous cannulation 3 weeks prior to presentation with fever was the only nosocomial risk factor identified.

In summary, careful attention should always be paid to skin preparation during invasive procedures and \textit{Corynebacterium} species isolated from blood cultures may not always represent a contaminant.

\textit{Conflict of interest}: None declared.

\textbf{References}
