

## The changing face of endocarditis: report of a series of cases

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### CASE REPORT 1: PROSTHETIC VALVE

A 67-year-old man presented with a sudden onset right homonymous hemianopia associated with a swinging pyrexia and a new early diastolic parasternal murmur. He had had a Bjork–Shiley aortic valve replacement 2 years previously for symptomatic aortic stenosis with a transvalvular gradient of 80 mmHg and had been well thereafter.

Computed tomography scan of the brain showed a left occipital infarct (Figure 1), C-reactive protein was 51 mg/litre (normal <10 mg/litre), blood cultures consistently grew *Candida parafilaris*, and treatment with intravenous liposomal amphotericin and flucytocine was started the day the first positive culture was obtained. Transoesophageal echocardiography did not demonstrate vegetations, but did show a periprosthetic aortic incompetent leak.

On day 11 the aortic prosthesis was removed and replaced because of worsening aortic incompetence. Direct inspection of the prosthesis demonstrated a vegetation on the sewing ring. The immediate postoperative recovery period was complicated by complete heart block requiring insertion of a permanent pacemaker after an initial phase of pericardial pacing.

The intravenous antifungals were discontinued after 37 days of treatment and the patient commenced on lifelong oral fluconazole. At discharge on day 42 the patient was well and afebrile with C-reactive protein less than 10 mg/litre.

### CASE REPORT 2: PACEMAKER

A 79-year-old man was admitted with a 3-month history of sweats, rigors, weight loss and dyspnoea. Two years earlier he had had a dual chamber permanent pacemaker inserted for intermittent complete heart block which needed repositioning 1 year later as it had started to extrude through the skin. On examination he was sweating and pyrexial but had no stigmata of infective endocarditis. C-reactive protein was 28 mg/litre with white cell count normal. Transoesophageal echocardiography demonstrated a vegetation on the ventricular lead of the pacemaker within the ventricular and atrial cavities but no involvement of the tricuspid valve (Figure 2).

Other than a transient episode of neutropenia, the patient made a good recovery, being discharged on day 41 to complete a further week of oral antibiotics. He remains well at follow up with C-reactive protein less than 10 mg/litre.

### CASE REPORT 3: CONGENITAL HEART DISEASE

A 31-year-old woman was admitted with a 1-month history of nausea and lethargy. She had complex congenital heart disease comprising univentricular heart, dextrocardia and pulmonary stenosis with a right Blalock Taussig shunt fashioned at age 12. She had had an episode of streptococcal endocarditis aged 20 and more recently had a 3-year history of bladder detrusor instability which had caused her to be prescribed antibiotics intermittently.

On examination she was pyrexial with long-standing systolic and diastolic murmurs but no stigmata of infective endocarditis. C-reactive protein was slightly elevated (24 mg/litre) but haematological indices were normal. Sputum and urine cultures were negative. Blood cultures consistently grew *Streptococcus adjacens*. A presumptive diagnosis of shunt endarteritis was made as transthoracic and transoesophageal echocardiography were unable to provide a clear view of the shunt and failed to demonstrate any intracardiac vegetations. Treatment with intravenous gentamicin and benzylpenicillin led to gradual clinical and inflammatory marker improvement and on day 18 she was converted to a 4-week course of oral amoxicillin.

The patient remains cardiologically well at follow-up but consideration is being given to urological surgery as her ongoing bladder problems continue to pose a potential infective risk.

### INTRODUCTION

Infective endocarditis is often thought of as a complication of rheumatic valvular disease precipitated by a minor bacteraemic event. Recent years have seen the net cast onto a wider population.

The shift in aetiology is the result of a number of factors. The incidence of rheumatic fever has declined. The availability of cardiac surgery has increased and has brought with it a population with susceptible cardiac lesions. Immunosuppression, both iatrogenic and acquired, has created a further vulnerable population. New bacteraemic potential has come with the spread of intravenous drug abuse and the pro-

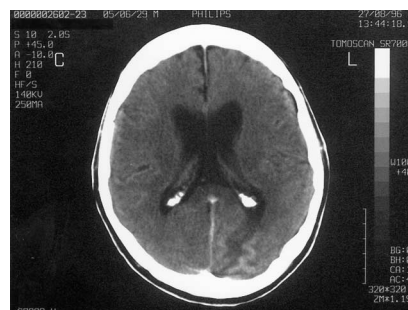


Figure 1. Computed tomograph of head showing recent left occipital infarct due to mycotic embolus.

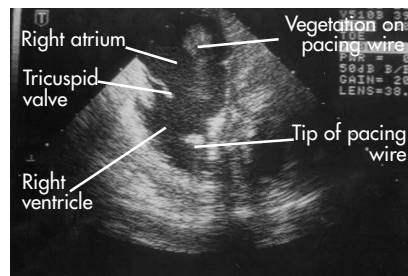


Figure 2. Transoesophageal echocardiogram: a large vegetation is seen on the ventricular pacing lead as it passes through the right atrium.

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## CASE REPORT 6: INFECTED INTRAVENOUS LINE

A 38-year-old woman was found to have developed an early diastolic murmur one day after an asystolic cardiac arrest from which she had been rapidly resuscitated followed by temporary cardiac pacing. She had end-stage renal failure and was haemodialysing via a temporary dialysis line. This had become infected and she was being actively treated for a line-associated *Staphylococcus aureus* septicaemia.

Transoesophageal echocardiography showed an aortic vegetation with aortic incompetence (Figure 5) and the antibiotic regimen was augmented before aortic valve surgery. Unfortunately she deteriorated with haemodynamic signs of increasing aortic incompetence, increasing neutropenia and development of a coagulopathy and underwent emergency aortic valve replacement on day five. Direct inspection revealed a friable tricuspid aortic valve with an abscess cavity in the interventricular septum. She deteriorated postoperatively with globally poor left ventricular function and, despite an intra-aortic balloon pump and full inotropic support, died soon afterwards.

## CASE REPORT 7: VIRULENT ORGANISMS

A previously well 25-year-old man presented with a 10-day history of sweats and malaise. There were no stigmata of bacterial endocarditis, but with a murmur of aortic incompetence noted, echocardiography was performed which showed an aortic vegetation and an aortic root abscess (Figure 6). There was no prolongation of the PR interval. Blood cultures grew *Staphylococcus aureus*. He had attempted to drain a small abscess on his inner thigh manually 2 weeks previously. He was treated with intravenous flucloxacillin for 4 weeks, thereafter converting to oral flucloxacillin.

On day 33 he showed signs of increasing haemodynamic upset developing Corrigan's and De Musset's signs and 'pistol shot' femoral pulses. The early diastolic murmur became increasingly shorter and transthoracic echocardiography showed torrential aortic regurgitation and a large abscess cavity. On day 39 he underwent aortic valve replacement surgery which revealed a friable tricuspid aortic valve and an abscess cavity with neck opening at the commissure of the right and non-coronary cusps of the aortic valve. He made an uncomplicated recovery and was discharged on day 7 postoperatively to complete a 4-week course of oral antibiotics.

The last three cases illustrate that when the organism introduced is a virulent one, such as *Staphylococcus aureus*, there need not be any predisposing susceptibility. All three patients were immunocompetent and the valves infected were morphologically normal.

### IMAGING

Superior imaging with transoesophageal echocardiography significantly increases the detection of infective endocarditis, particularly in prosthetic valve endocarditis (Lengylel, 1997) and pacemaker endocarditis (Vilacosta et al, 1993). The limitations of transoesophageal echocardiography are, however, demonstrated in cases 1 and 3 where no vegetations were detected.

It must be emphasized that visualization of a vegetation is only one of the two major criteria for diagnosis of infective endocarditis and that positive blood cultures (the other major criterion), when combined with clinical features of endocarditis, are sufficient

to make the diagnosis even in the absence of positive echocardiographic findings (Durack et al, 1994).

### CONCLUSION

Infective endocarditis has a mortality of around 30% (Verheul et al, 1993). As might be expected with such a virulent organism, *Staph. aureus* infection carries a mortality of up to 47% (Steckelberg et al, 1990). Although these figures indicate that the outcome is often unfavourable it must be remembered that untreated infective endocarditis has a mortality of 100%. Doctors must have a low threshold for suspecting endocarditis, and once considered it should be rigorously sought and vigorously treated. **HM**

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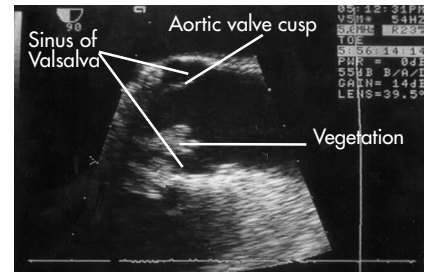


Figure 5. Transoesophageal echocardiogram showing a vegetation at the Sinus of Valsalva, arising from the aortic valve.

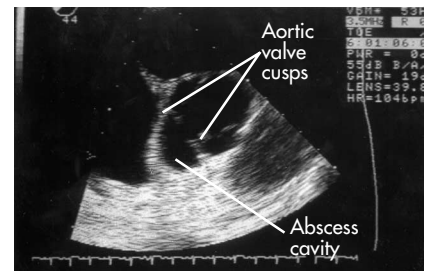


Figure 6. Aortic valve and abscess cavity seen on transoesophageal echocardiogram.

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