CASE REPORT

An unusual case of infective endocarditis

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A rare case of *Corynebacterium striatum* endocarditis on a bioprosthetic aortic valve replacement, treated medically, is reported. The presentation was subacute, and initially endocarditis screening was negative. Because of the failure of symptoms to settle further screening was performed which confirmed the organism in several sets of blood cultures. This emphasises the importance of persistent screening for endocarditis if the history raises any suspicion of this potentially serious infection, especially in the presence of prosthetic valves.

Infective endocarditis is not an uncommon condition with about 5% of the general population being at risk. Overall mortality is approximately 15% and is significantly less for penicillin sensitive organisms.¹ Predisposing cardiac lesions for endocarditis are well known and include prosthetic valves. Portals of entry include dental work of any type, urinary tract infection, respiratory infection, gastrointestinal infection, skin disease, intravenous drug abuse, surgery, and intravenous cannulation. Commonest organisms responsible usually include the *Streptococcus viridans* group, enterococci, *Staphylococcus aureus*, and *Staphylococcus epidermidis*. Other organisms have been reported rarely and include anaerobic Gram negative bacilli, *Coxiella burnetii*, chlamydia, and candida, aspergillus, and histoplasma.¹

Infective endocarditis can imitate multiple conditions due to the wide variety of clinical symptoms and signs. The importance of making the correct diagnosis is emphasised by the potentially fatal complications that can occur as a result of this condition. These include cardiac, and multiple organ, abscesses, cardiac valve destruction with acute heart failure, and dehiscence of prosthetic valves.¹

The case that is reported here is one of assumed endocarditis by a relatively rare organism that was not initially detected by routine screening methods. Repeated blood cultures did yield an organism, which was presumed to be responsible. As the patient in this case did have an aortic prosthetic valve the presence of this organism could have had potentially fatal sequelae, if left untreated.

CASE REPORT

A 62 year old woman with a previous history of bioprosthetic aortic valve replacement in September 1999, who had been noted to have an early diastolic murmur soon after surgery, was seen in the outpatient clinic five months later complaining of lethargy and malaise. She had recently been admitted with a bout of diarrhoea that had settled spontaneously. Blood cultures and endocarditis screening at that time were negative. Since discharge she had continued to feel unwell and had taken her temperature several times and noted it to raised up to 39.6°C. She had night sweats and was also anorexic. She was readmitted and temperatures of up to 39.6°C were confirmed. Examination was otherwise non-contributory. The chronic aortic systolic and diastolic murmurs, present since soon after her valve surgery, were not felt to have changed.

Four further sets of blood cultures were obtained as well as blood for full blood count, erythrocyte sedimentation rate (ESR), C reactive protein, and biochemical profile. Urinalysis was negative. Initial C reactive protein was raised at 176 mg/l and ESR was 31 mm/hour. Twelve lead electrocardiogram was unchanged and showed right bundle branch block, and trans-thoracic echocardiogram did not reveal any vegetations or change in aortic valve function. Transoesophageal echocardiogram showed no discrete vegetations or abscess formation.

Subsequently, all four blood cultures were positive for growth of *Corynebacterium striatum*, sensitive to vancomycin. All other infective screening yielded no positive results and a diagnosis of infective endocarditis was made. One possible reason that initial blood cultures were negative is that the replication time of *C. striatum* is slower than conventional organisms such as streptococcus. *Corynebacterium* strains may be common skin contaminants, but the presence of four consecutive blood cultures positive only for culture of *C. striatum* suggests that this organism was the likely pathogen. The culture system is a sealed unit with external monitoring for bacterial growth (BACT/ALERT, Biorimieux, Paris, France), to reduce contamination risk.

A Hickman line was inserted and she was given six weeks of intravenous vancomycin. Her temperature took almost a month to return completely to baseline after the start of antibiotic treatment and inflammatory parameters, which were initially raised, returned to baseline over the ensuing weeks. A radiolabelled white cell scan was initially considered but because of the significant improvement in her symptoms and signs this was not carried out. Repeat transoesophageal echocardiography failed to show any changes. She remained on antibiotic treatment for a total of seven weeks. At no point did she have any stigmata of endocarditis and because valve integrity was not affected she was treated with antibiotic treatment alone. There were no particular features of her illness that suggested infection specifically with *C. striatum*. With no recent dental treatment or infections apart from the transient diarrhoea, we are unsure as to the exact cause of the bacteraemia with *C. striatum*, which is a known skin commensal. She remains well 12 months after treatment. As far as we know this is the only reported case of probable endocarditis on a bioprosthetic aortic valve with this organism to be managed successfully with medical treatment alone.

DISCUSSION

The diagnosis is presumed in this case, as there were no other sites of infection. Further support for this diagnosis came from the subacute presentation, the presence of multiple positive blood cultures and the response to prolonged antibiotic treatment, which caused the inflammatory parameters and the temperature to slowly return to normal.

Corynebacterium species are common contaminants in culture media, but are being isolated with increasing frequency as pathogens from immunocompromised patients, intravenous drug users and patients with prostheses, including those with prosthetic cardiac valves.^{2,3} *Corynebacterium* species are responsible for approximately 9% of early and 4% of late onset

prosthetic valve endocarditis, defined as endocarditis occurring later than two months after valve replacement. The most common corynebacterium species isolated from patients with endocarditis are *C. jeikeium*, and *C. urealyticum*.^{2,3} Mortality due to prosthetic valve endocarditis is in the order of 50%. *Corynebacterium striatum* is a new species of corynebacterium with few reported cases of endocarditis in the literature, all of which were on native valves.⁴⁻⁶ It has low adhesive properties and low pathogenicity, and has a cell wall similar to that of the mycobacterium species. It is usually sensitive to vancomycin.² Our case is interesting for two reasons—firstly because this is, we believe, the first reported case of *C. striatum* endocarditis on a prosthetic aortic valve occurring so late after aortic valve replacement, and secondly because the treatment was entirely medical. It is possible that this organism may have been introduced at the time of surgery.

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Learning points

- Where blood cultures grow *Corynebacterium striatum* it is important to include endocarditis in the differential diagnosis.
- This organism can infect prosthetic and native valves.
- Endocarditis due to this agent is fatal in a significant number of patients.
- *Corynebacterium striatum* may be introduced at the time of surgery.

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