Listeria monocytogenes endocarditis

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Summary: A fatal case of endocarditis due to *Listeria monocytogenes* is reported. Case reports of endocarditis due to this organism are rare but indicate a higher mortality than with many other causes of bacterial endocarditis. The size of the problem may be underestimated because the organism has a 'diphtheroid' appearance and may be incorrectly dismissed as a contaminant.

Introduction

Endocarditis due to *Listeria monocytogenes* is rare. Only twenty cases appear in the world literature to date but this is almost certainly an underestimate of the problem. We report a further case with a fatal outcome in which the initial diagnosis was delayed as the strain of *Listeria monocytogenes* was atypical.

Case report

In July 1982 a 74 year old Caucasian male with a twenty-year history of atrial fibrillation was admitted under a surgical team with a left femoral embolism. He had no known history of rheumatic fever or valvular heart disease. There had been no dental procedures within the preceding six months. Apart from signs of a femoral embolism he had no stigmata of infective endocarditis. He was treated conservatively with anticoagulation and bed-rest. Sixteen days after admission he developed fever for the first time, blood cultures were taken and he was treated empirically with cefuroxime, 750 mg intravenously eight hourly. After two days this was changed to oral penicillin 500 mg four times daily. Blood cultures were positive after 24 h with a 'diphtheroid' in three of four bottles (two sets). Forty-eight hours later the organism was identified as *Listeria monocytogenes*. The patient's fever persisted despite antibiotics.

On transfer to our care there was clinical evidence of mild mitral regurgitation and moderate mitral stenosis, confirmed by M-mode and 2-dimensional echocardiography. In view of the continuing fever,

antibiotics were stopped for re-evaluation and the fever stopped abruptly. One week later in the absence of fever, clinical signs or positive echocardiographic findings, a diagnosis of infective endocarditis was considered unlikely. He remained under supervision. Ten days later when fever recurred, multiple sets of blood cultures grew *Listeria monocytogenes* and aortic regurgitation was clinically evident. Further echocardiography now revealed flutter of the anterior mitral valve cusp in keeping with this diagnosis but no vegetations were demonstrated. On the basis of *in vitro* sensitivity testing, treatment with intravenous ampicillin 2 g six-hourly and netilmicin 150 mg 8 hourly was started, the organism being only partially sensitive to benzyl penicillin. Netilmicin was discontinued after three weeks and after four weeks the treatment was changed to oral amoxicillin, 2 g 8 hourly. All regimens gave satisfactory serum antibiotic levels and on the oral amoxicillin the antibacterial activity of the patient's serum against the organism was bacteriostatic at a dilution of 1:128 and bactericidal at 1:16. The cardiac failure was well controlled with diuretics. Antibiotic therapy was given for a total of eight weeks and the patient was well on discharge.

Ten weeks later he required emergency admission with worsening heart failure. Cardiac catheterization demonstrated severe aortic and mitral regurgitation and moderate mitral stenosis. Multiple blood cultures were sterile. He died of intractable heart failure before valve replacement could be carried out.

Discussion

Listeria are widely distributed in nature and can be found in the bowel of healthy individuals. The mode of transmission and infection is poorly understood. Listeriosis is an uncommon infection in humans but is

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probably best known as a cause of neonatal meningitis. It is also well recognized as an opportunistic infection in the elderly and in immuno-compromised patients (Samra *et al.*, 1984). Within the last 5 y there have been a total of 353 isolates reported in the cerebrospinal fluid and/or blood, 103 in patients over the age of 65 y. In this latter group 61 isolates were from blood alone and only 12 were reported to have any form of heart disease. Five of the patients had infective endocarditis and three of these infections involved prosthetic valves (Public Health Laboratory Service Communicable Disease Surveillance Centre, unpublished). The majority of non-neonatal cases of listeriosis have serious underlying pathology causing immunosuppression.

In the case reported the strain of *Listeria monocytogenes* was non-haemolytic on horse blood agar, therefore having a naked-eye appearance similar to the closely related *Corynebacteria*. The latter are often encountered as contaminants of blood cultures. On full identification the organism fulfilled all other physical and biochemical criteria for *Listeria monocytogenes*. Where *Listeria* endocarditis has been

documented, underlying rheumatic valve disease is often present, prosthetic valve infections have occurred and there is a single case report where hypertrophic obstructive cardiomyopathy was present (Pitcher and Mary, 1978). In contrast to other systemic *Listeria* infections, underlying serious pathology or immunosuppression have not been prominent features (Bassan, 1975).

Although the delay in starting treatment may have contributed to the ultimately fatal outcome in this case, *Listeria* endocarditis has a substantially higher mortality than many other bacterial causes of endocarditis, exceeding 40% (Bayer, Chow and Guze, 1977). It is interesting to speculate as to the number of cases of bacteraemia where this organism is dismissed either as a contaminant or because a rigorous search for endocarditis is not undertaken in elderly patients.

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