Urban trench fever presenting as culture-negative endocarditis

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Summary

A young Russian man presented with increasing shortness of breath and signs of worsening aortic regurgitation. A diagnosis of infective endocarditis was made before emergency valve replacement.

A Russian itinerant builder presented with increasing shortness of breath over the preceding 3 weeks. He denied fever or sweats. He had clinical features of congestive cardiac failure with aortic valve regurgitation. There was no significant past medical history and he denied injecting drug use. His dentition was poor. Blood testing revealed a normocytic, normochromic anaemia (10.8 g/dl), a mild leucocytosis (11.2 x 10⁹/l), a raised C-reactive protein (36 mg/dl) and normal erythrocyte sedimentation rate (32 mm/h). Urine dipstick testing detected proteinuria and haematuria.

An urgent echocardiogram demonstrated severe aortic regurgitation associated with a prolapsing thickened aortic valve and 1.2 x 0.8 cm diameter vegetation (Figure 1). Three pairs of blood cultures were drawn and he was treated with benzylpenicillin 6 million U IV every 4 h plus gentamicin 5 mg/kg IV daily. Blood cultures failed to detect any significant organisms (Bactec F+ blood culture bottles incubated for 21 days) and 2 days later his benzylpenicillin was changed to ceftriaxone 2G IV daily. The gentamicin was continued.

His valve function deteriorated requiring emergency aortic valve replacement for incipient cardiogenic shock 6 days after admission. Bacterial culture of the aortic valve proved unhelpful. Histology revealed chronic inflammation with areas of calcification. Warthin-Starry staining did not reveal bacilli, however, electron microscopy demonstrated numerous structures consistent with Gram negative bacilli within the valve tissue, some of which appeared to be undergoing calcification (Figure 2).

The chlamydia antibody titre was high, consistent with acute infection. There is recognized cross reactivity between some of the serological tests for chlamydia, bartonella and coxiella species. The diagnosis of bartonella infection was made using specific serological tests (IFA, Focus Diagnostics, Cyprus, USA) and Bartonella quintana was subsequently detected in the valve tissue using PCR.

Following valve replacement, the patient was treated with gentamicin for 3 weeks, then doxycycline 100 mg PO twice daily was added. Ceftriaxone therapy was continued for 6 weeks followed by rifampicin 300 mg PO twice daily. Antibiotics were...
prescribed for a total of 3 months following surgery. He was discharged fully recovered 4 weeks following surgery and was well 12 months later when reviewed in clinic.

*Bartonella quintana* is a re-emerging pathogen. In most cases transmission occurs via the human body louse, although other vectors may play a role. The commonest presentation is a self-limiting febrile episode. It is the cause of trench fever, first described in the military in 1915. More recently, outbreaks called ‘urban trench fever’ have been described in homeless men in France and the USA. Raoult and colleagues found that 30% of homeless people presenting to hospital had antibody titres against *B. quintana* and 14% were bacteraemic. In a survey of non-hospitalized, asymptomatic homeless persons, 50 of 930 (5.4%) were bacteraemic. Roughly half of these may proceed to chronic bacteraemia. Interestingly, *B. quintana* can be found circulating within erythrocytes, a feature seen in feline chronic *B. henselae* infections, suggesting the human host is a natural reservoir.

Molecular diagnostic techniques are changing our understanding of culture negative endocarditis. Some authors suggest the use of broad-range PCR on blood or valve tissue at an early stage to identify unexpected organisms quickly. However, this approach has not yet been fully evaluated. *Bartonella sp.* do not commonly grow in routine blood culture systems but PCR-based techniques show them to be one of the commonest causes of ‘true’ culture negative endocarditis, where blood cultures remain negative in the absence of prior antibiotic therapy. The clinical course of bartonella endocarditis is frequently indolent, the patient presenting with features of cardiac valve failure rather than those characteristic of infection. In the largest reported series of 101 patients, 56 required valvular surgery, despite which 12 patients died. Aminoglycosides are an important component of the early phase of antibiotic treatment, because they are bactericidal and their use may improve survival. The use of antibiotics active against the intracellular phase of the organism such as rifampicin and tetracycline is essential to prevent relapse. Clinicians should be alert to the possibility of bartonella infection in any patient with culture negative endocarditis.

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**References**


