INFECTIVE ENDOCARDITIS DUE TO BARTONELLA QUINTANA IN A PATIENT WITH BIOLOGICAL AORTIC PROSTHESIS

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Abstract

Background: *Bartonella quintana is a facultative intracellular bacterium and the causative agent of trench fever. The disease was reported during the World Wars in pre-antibiotic era and is associated with louse infestation and poor hygiene conditions. Bartonella bacteraemia may result in endocarditis mostly in people with existing heart valve abnormalities.*

Case Report: *We report a case of endocarditis caused by B. quintana in a 77-year-old woman with previous valvulopathy. This active endocarditis case was characterized by aortic root involvement 5 years after surgical aortic valve replacement. Although the initial serological tests had induced to a presumptive diagnosis of Q fever, B. quintana infection was confirmed by PCR and sequencing. Detection of Bartonella DNA in valvular and abscess specimens was determinant to confirm Bartonella infection in the absence of other associated risk factors.*

Conclusions: *Bartonella infection should be considered in patients with pre-existing valvular disease and with a blood culture-negative endocarditis.*

INTRODUCTION

Bartonella quintana was first described as the agent of trench fever during World War I. Subsequent studies demonstrated that humans are hosts for this bacterium transmitted by Pediculus humanus corporis.[1-2] The risk factors for B. quintana infections include poor living conditions and chronic alcoholism.[2] In the case described, the patient did not present any of the risk factors.

CASE REPORT

We present a case of a 77-year-old woman with previous history of hypertension, type 2 diabetes mellitus, paroxysmal atrial fibrillation under oral anticoagulation and symptomatic severe aortic stenosis. In 2012 the patient underwent surgical aortic valve replacement, with implantation of a biological prosthesis.

During a follow-up transoesophageal echocardiogram, an image compatible with a pseudoaneurysm was noted in an anterior position next to the right Valsalva sinus, a severe perivalvular leak next to the ostium of the right coronary artery and a mild perivalvular leak at 12 o'clock. An extensive abscess involving the prosthetic annulus was also located between 11 and 3 o'clock (Figure 1). The CT angiography revealed the pseudoaneurysm was associated with the leak near the origin of the right coronary artery (Figure 2).

Since the patient had repeated negative blood cultures, serological testing for Coxiella burnetii was requested. The results showed positive phase II antibodies titres and empirical treatment with doxycycline was initiated. One month later, the patient was admitted for surgical replacement of the aortic root. Extensive debridement of the perivalvular abscesses was undertaken with implantation of a complete porcine aortic root (Figure 3).

The explanted specimens and an EDTA-blood sample was sent to the National Institute of Health (INSA) for diagnosis confirmation. The results of molecular detection by realtime Polymerase Chain Reaction (PCR), culture and serological testing for specific antibodies against C. burnetii were all negative. Serological analysis for Bartonella by immunofluorescence (IFA) showed a titer higher than 128 for IgG. The PCR testing was positive and sequence analysis showed 100% identical to that of B. quintana.

After surgery, the patient recovered with no complications, except for a brief period of junctional rhythm. The patient completed two weeks of gentamycin, five weeks of ceftriaxone and rifampicin. After bacteriological confirmation, the antibiotic was changed to doxycycline.

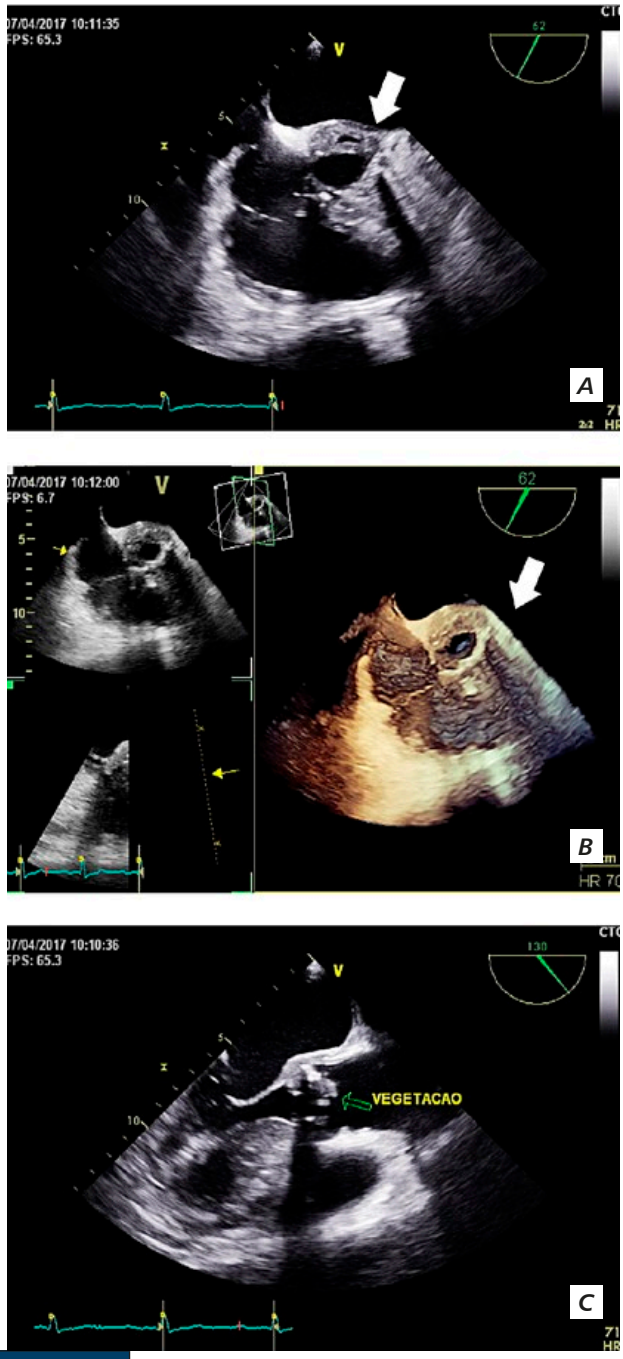

Figure 1 *Transoesophageal echocardiogram images showing: **A** - Paravalvular abscess (arrow); **B** - 3D reconstruction of the perivalvular leak (arrow); **C** - Vegetation in the right coronary leaflet of the aortic valve (marked as VEGETACAO).*

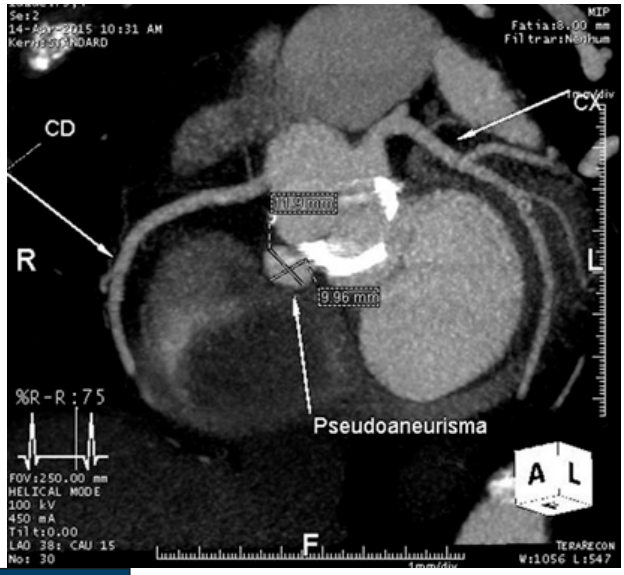

Figure 2 *Computed Tomography Angiography image showing the root pseudoaneurysm in close connection with the prosthetic valve.*

DISCUSSION

Clinical manifestations include trench fever, chronic bacteraemia and bacillary angiomatosis.[1] Bartonella infection is also considered a rare cause of blood culture-negative endocarditis (BCNE), being reported in only 3% of cases.[3] B. quintana and B. henselae have been associated with more than 95% of BCNE due to Bartonella.[4]

The algorithm for BCNE diagnosis recommends Bartonella testing along with other agents more commonly implicated in this infection and that might be excluded first.[3] However, serological cross-reactions are known to occur among Bartonella spp. and non-related agents such as C. burnetii and Chlamydia contributing to false-positive results.[5] PCR-based tests on cardiac valvular tissue remains the most accurate and rapid tools for laboratory diagnosis of BCNE, even in the setting of prior antibiotic use.

Bartonella infection is described to occur in people with pre-existing valvular abnormalities promoting the development of infective endocarditis with significant destruction of the affected valve. Therefore, valvular surgery is required in more than 90% of cases, which is higher than that required for patients with endocarditis caused by other pathogens.[6]

B. quintana is highly susceptible to a range of different antibiotics that include beta-lactams, aminoglycosides, tetracyclines, macrolides, rifampin, fluoroquinolones and cotrimoxazole. Studies demonstrated that only aminoglycosides have a bactericidal effect and that patients that are treated with a regimen including these antibiotics are more likely to survive, especially if treated for at least 14 days.[7]

CONCLUSION

This report highlights that Bartonella infection in patients with pre-existing valvular disease and blood culture-negative endocarditis even in the absence of other risk factors. It is important to consider this agent in the differential diagnosis of BCNE given its virulent potential and clinical and surgical implications.

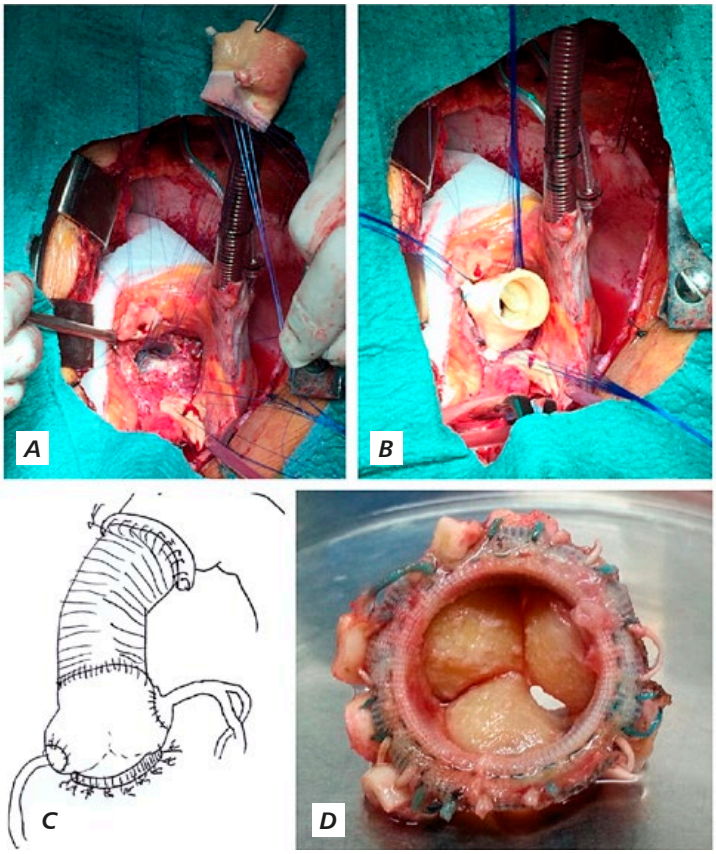

Figure 3 *Images of surgical replacement of the aortic root: **A** and **B** - implantation of the Freestyle prosthesis; **C** – schematic representation of the final result on the aortic root reconstruction; **D** – explanted aortic valve.*

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