

Case report

Infective endocarditis associated with *Bartonella henselae*: A case series

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ABSTRACT

Organisms in the genus *Bartonella* are cause of blood culture-negative endocarditis. *Bartonella* infective endocarditis is being increasingly reported worldwide; however, reports from Japan are limited. Here, we report five cases of infective endocarditis associated with *Bartonella henselae*. All patients had a history of contact with cats or fleas; this information helped achieve an appropriate diagnosis.

Introduction

Bartonella species are constitute small Gram-negative bacilli, which were first described as causes of culture negative endocarditis in two separate reports in 1993 [1,2]. The presentation is subacute, and patients exhibit nonspecific systemic symptoms. Recently, additional cases have been reported worldwide, and *Bartonella* infective endocarditis has been recognized as a relatively common disease. However, limited reports have been presented in Japan. Here, we report five cases of infective endocarditis associated with *Bartonella henselae*.

Case presentation

The details of the five cases of infective endocarditis associated with *Bartonella henselae* are presented in Table 1. Infectious endocarditis was diagnosed based on the modified Duke criteria [3]. All patients exhibited a prolonged history of low-grade fever and fatigue with regular contact with cats or fleas. All cats were grown and not being kept indoors. Patient in case 2 had a history of being bitten by fleas. Diagnosis of *Bartonella* endocarditis was done by Warthin-Starry stain when gram stain of vegetation was negative in the patients who were suggested *Bartonella* infection by history taking. For the definitive diagnosis, we did PCR or serological assay. The IgG antibody titer was $\geq 1:800$ in case 3 and 5. Three patients needed surgery and two were managed only with anti-infectives. Cases 3 and 5 involved

prosthetic valve endocarditis associated with a mechanical valve. Initially, cases 1 and 2 received empirical treatment for culture-negative endocarditis; however, surgery was performed because of worsening of heart failure after antimicrobial use. In case 4, because of severe heart failure, surgery was performed on the day of admission. There was no obvious vegetation in case 5 but it met Duke criteria. No case had an annular abscess. Adequate antimicrobials were used from the beginning based on history taking and previous experiences in cases 3, 4, and 5. Stained sections (Warthin–Starry stain) of the valve were positive in all surgical cases (Fig. 1). *Bartonella henselae* was identified in all cases. All patients were administered antibacterials for at least 6 weeks and were discharged without any complications. Cases 3 and 5 continue to be followed-up, and there has been no recurrence.

Discussion

Between 1985 and 2017, 297 cases of infective endocarditis were experienced at our institution. Of these, 15 (5.1%) were blood culture-negative. *Bartonella* infective endocarditis accounted for 1.7% of all endocarditis cases. This is a relatively rare disease; however, according to a previous report, the number of cases has been increasing significantly since 2005 [4]. Our present study included cases that were diagnosed since 2010. This might be associated with a better understanding of the disease and interest in the disease because of improvements in diagnostic tools. Early diagnosis and quick admin-

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Table 1
Cases of *Bartonella* infective endocarditis.

Case	Age (years)/sex	Co-morbidities	Site of vegetation	Size of vegetation (mm)	WS stain	Diagnosis	Antibacterials (days)
1	43/male	ESRD HD	Aortic valve	4 × 3	+	PCR	VCM (14) + CTX (25) > DOXY (180) + GM (14)
2	33/male	Down syndrome	Aortic/mitral valve	12 × 13/12 × 18	+	PCR	CFZ (22) + CTX (22) > DOXY (180) + GM (20)
3	63/male	Aortic and mitral valve replacement	Mechanical mitral valve	7	NA	Serology	CTX (42) + DOXY (150) + REP (14)
4	55/female	HTLV-1 carrier	Bicuspid aortic valve	11 × 12	+	PCR	CTX (4) + DOXY (42) + GM (2)
5	50/male	Bentall procedure CKD	No vegetation	NA	NA	Serology	DOXY (42) + GM (21) + REP (14)

WS: Warthin–Starry; ESRD: end-stage renal disease; CKD: chronic kidney disease; HD: hemodialysis; CTX: ceftriaxone; VCM: vancomycin; DOXY: doxycycline; CFZ: cefazolin; GM: gentamicin; REP: rifampicin; NA: not available.

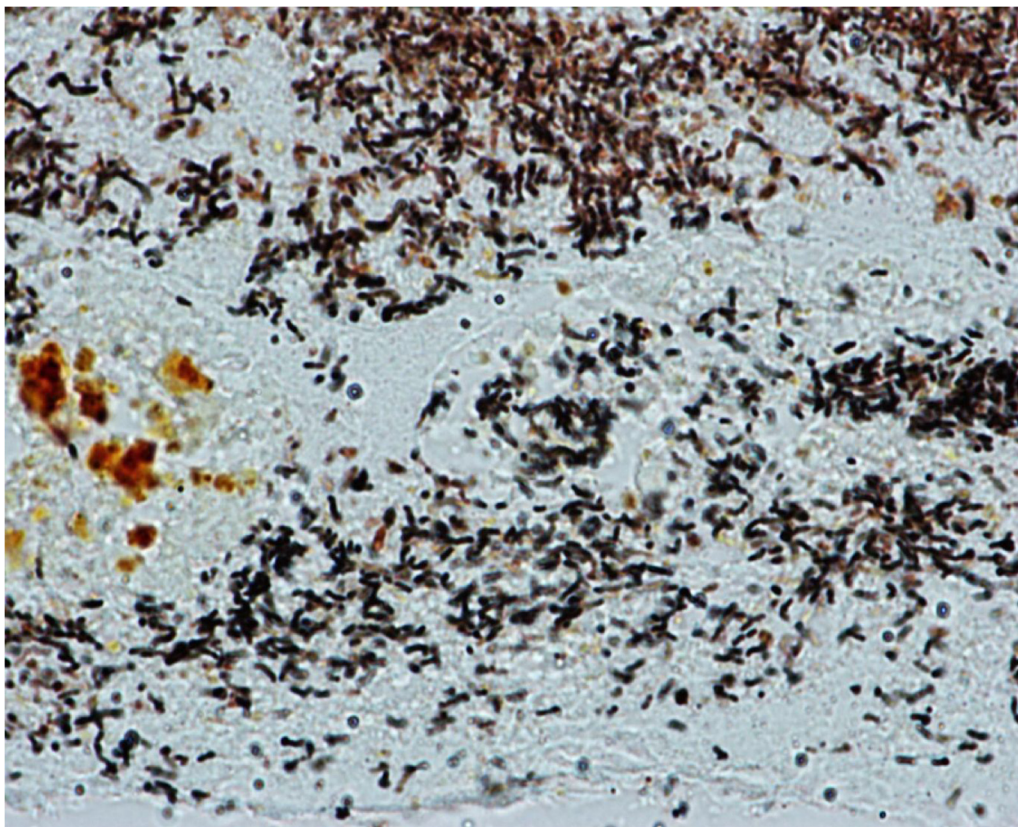


Fig. 1. Warthin–Starry staining of vegetation in the aortic valve in case 1 showing several short bacilli. Original magnification × 100.

istration of adequate antibacterials are crucial to achieve better management. Long-term incorrect therapy may contribute to the deterioration of a patient's condition and lead to destruction of valves and heart failure, as observed in case 1 and 2 of our study (Fig. 2). However, early intervention may lead to early discharge and even successful non-surgical therapy, as observed in case 3, 4, and 5

(average hospital stays: 62.5 days, case 1 and 2; 43.3 days, case 3, 4, and 5). In conclusion, the possibility of *Bartonella* infective endocarditis should be considered in patients with blood culture-negative infectious endocarditis; a history of contact with cats is helpful for the diagnosis of this condition.

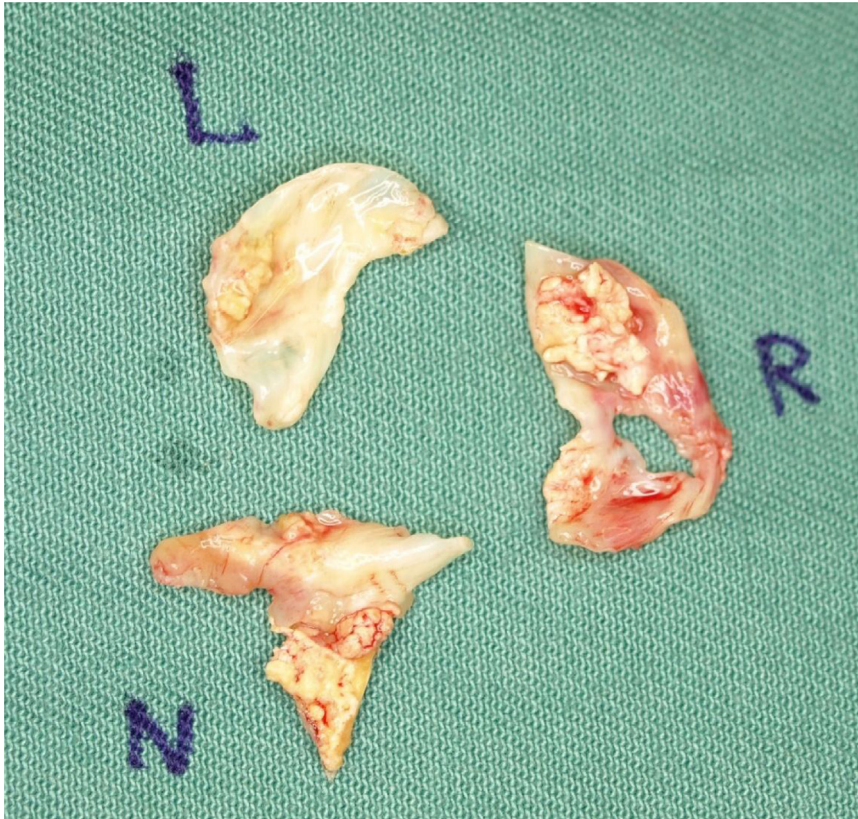


Fig. 2. All cusps were excised in the case 1. There were vegetations at all cusps and small punched hole at the right cusp.

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