

Background

Bartonella quintana (*B. quintana*) is a gram-negative rod linked to trench fever during World War I.¹ Transmission primarily occurs through body lice bites but can also happen via contaminated blood transfusions or direct contact with infected fluids. While infections are often self-limiting, they can lead to severe complications in immunocompromised individuals, such as endocarditis, bacteremia, and bacillary angiomatosis. *B. quintana*, accounting for 75% of endocarditis caused by Bartonella species, is challenging to diagnose due to the subtlety of symptoms and the organism's fastidious nature, which complicates traditional culture isolation.^{1,2} *Bartonella* endocarditis is an exceedingly rare cause of culture-negative endocarditis in the United States; however, recent reports suggest growing prevalence in developing countries, emphasizing a need for a high degree of suspicion as outcomes rely on prompt diagnosis and management.

Case Presentation

A 37-year-old male with a history of intravenous drug abuse, ADHD, and prior homelessness was transferred to our facility for cardiac surgery evaluation. Two months earlier, he presented at an outside hospital (OSH) with a 1-day history of fever, dizziness, and shortness of breath. A transesophageal echocardiogram showed severely reduced left ventricular function (ejection fraction 25-30%), aortic and mitral valve vegetations, and valvular regurgitation (Fig.1).

Blood cultures obtained after 1 hour of antibiotics infusion were negative. He was treated for culture-negative infective endocarditis with vancomycin and cefepime. His hospital course was complicated by cardiac arrest, after which he was recommended cardiac surgery, which he refused and left against medical advice (AMA). He returned to OSH twice with similar issues, again leaving AMA before developing cardiogenic shock and finally agreeing to surgery, for which he was transferred to our facility.

Upon review of history, he denied needle sharing, had no foreign travel, and lived in New Jersey with his mother and a dog. He presented with a temperature of 99.6°F, appeared unkempt, and lab results showed mild leukocytosis (WBC 5.6 B/L with 61% neutrophils and 28% lymphocytes), anemia (hemoglobin 7.5 g/dL), and elevated creatinine (1.4 mg/dL). HIV Ag/Ab screen was negative. Cultures for bacteria and acid-fast bacilli were also negative. He was continued on an empiric antibiotic regimen of intravenous vancomycin and cefepime.

Serologic tests revealed positive IgG for *B. henselae* (titer 1:512) and *B. quintana* (titer 1:128, DNA detected) (Table 1). ANCA, myeloperoxidase antibodies, and proteinase-3 antibodies were negative. The patient was started on doxycycline and rifampin, while vancomycin and cefepime were discontinued.

Ultimately, he was deemed a poor surgical candidate for valve replacement due to his complicated hospital course, including cardiogenic shock and renal failure with multiple cardiac arrests, resulting in his death.

Figures and Tables

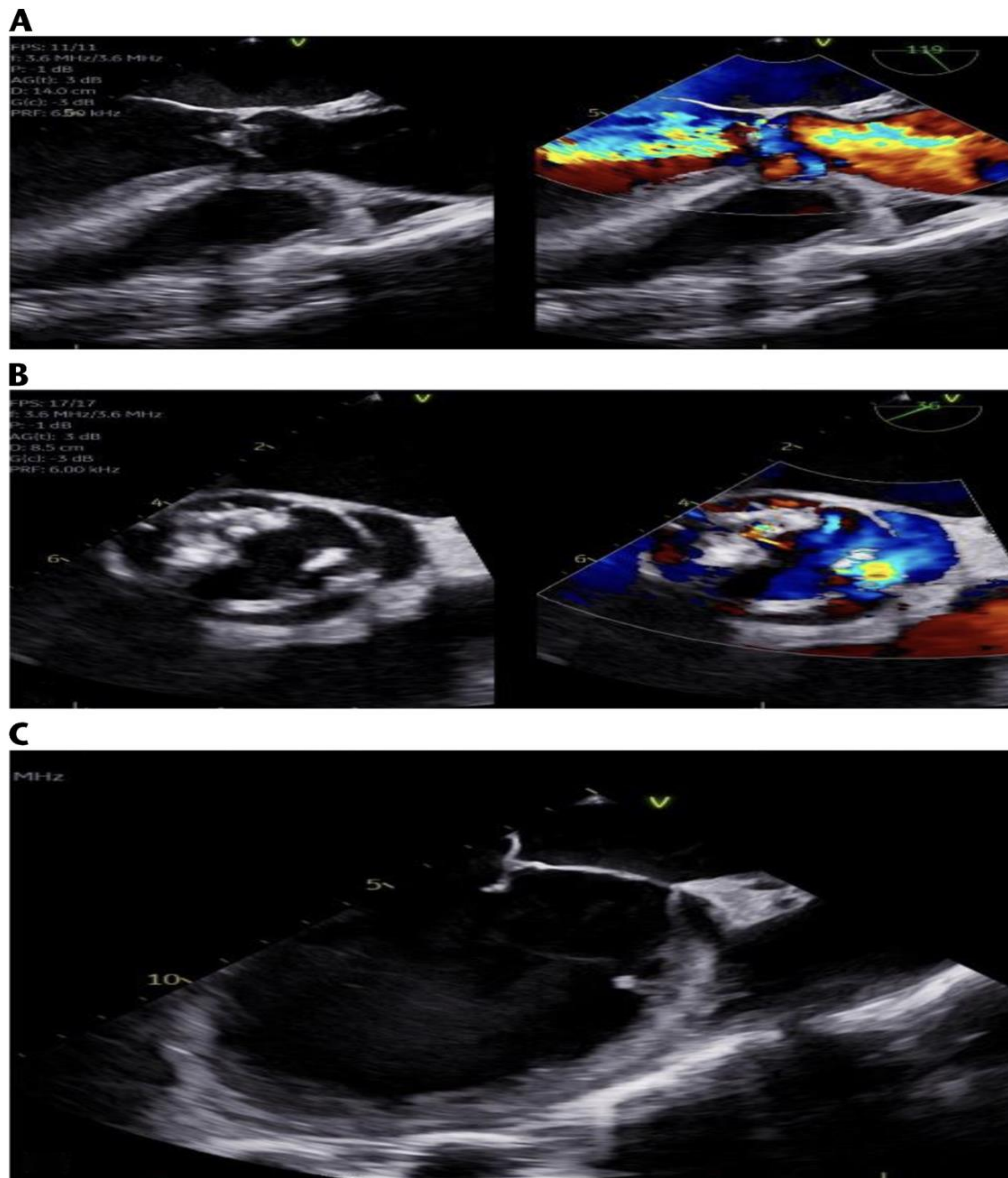


FIGURE 1. Transesophageal echocardiogram showing a bicuspid aortic valve with moderate to large mobile vegetation adherent to the noncoronary cusp and smaller mobile vegetation adherent to the left noncoronary cusp with associated severe aortic regurgitation (A, long axis; B, short axis). A small mobile vegetation adherent to the anterior mitral leaflet (C).

TABLE 1. Summary of Diagnostic Workup

Blood Cultures ×5	Negative
Fungal culture	Negative
<i>B. henselae</i> IgM	Negative
<i>B. henselae</i> IgG with reflex titer	Positive, 1:512
<i>B. henselae</i> DNA	Not detected
<i>B. quintana</i> IgM	Negative
<i>B. quintana</i> IgG with reflex titer	Positive, 1:128
<i>B. quintana</i> DNA	Detected
<i>Brucella</i> IgM	Negative
<i>Brucella</i> IgG	Positive, 2.1
<i>Coxiella burnetii</i> IgM, IgG	Negative

Discussion

The epidemiology of *Bartonella* endocarditis shows considerable variability, with men accounting for about 70% of cases.²⁻⁴ It has been observed in individuals with HIV and sporadically in solid organ transplant recipients. Key risk factors include demographic characteristics, particularly among homeless alcoholics living in infested environments.^{1,2} A significant proportion (40%-60%) of affected individuals have preexisting cardiac valvular disease, which increases susceptibility.^{2,5-7}

Patients with *Bartonella* endocarditis often present similarly to those with culture-positive infective endocarditis but may lack typical features like fever and elevated white blood cell counts.² Native valve involvement is common, but cases of prosthetic valve endocarditis, characterized by rapid disease progression, have also been reported.^{5,8,9} Additionally, some patients develop immune-complex glomerulonephritis, with a rise in cases linked to anti-PR3 antibodies.¹²⁻¹⁴

Data on *B. quintana* infection is limited, as it is not nationally reported in the U.S. A retrospective study from New York City identified six cases from 2020-2022, all involving patients recently experiencing homelessness, with high hospitalization rates and significant complications.¹⁵ Four patients with culture-negative left-sided endocarditis required surgical intervention, and some faced renal failure or death. Mental health and substance use disorders were prevalent among the patients, and no epidemiological links were found between cases.

Conclusions

B. quintana infection leads to considerable morbidity, mortality, and healthcare costs due to prolonged hospitalizations and surgeries, with actual case numbers likely underestimated due to factors such as healthcare avoidance and diagnostic challenges. Clinicians should consider patients' housing status to identify those at risk, particularly homeless individuals facing mental health or substance use issues who may be reluctant to seek preventive care. Improving diagnostic and treatment support for individuals in these conditions is essential to prevent serious medical complications, including bartonellosis resulting from body louse infestation.

It is crucial that patients with a history of unsheltered homelessness with concerning symptoms undergo testing for *B. quintana* infection using molecular diagnostic laboratory assays.

References

1. Raoult D, Fournier P-E, Vandenesch F, et al. Outcome and treatment of Bartonella endocarditis. Arch Intern Med. 2003;163(2):226-230.
2. Edouard S, Nabet C, Lepidi H, et al. Bartonella, a common cause of endocarditis: a report on 106 cases and review. J Clin Microbiol. 2015; 53(3):824-829.

For further references, please see published paper:
DOI: 10.1097/IPC.0000000000001395