

INTRODUCTION

Homelessness is a growing issue in the United States and worldwide. *Bartonella quintana*, the causative agent of “Trench fever” is a well known illness among homeless populations in urban centers. While many cases are self limited, the disease can have severe presentations including endocarditis. We present a case series of three cases of *B. quintana* infective endocarditis (IE) in homeless individuals in Los Angeles.

BACKGROUND

- Homelessness is a major public health and socioeconomic crisis particularly in Los Angeles, California.
- Homeless persons are at an elevated risk for several communicable infectious diseases including most commonly HIV, hepatitis B, hepatitis C, pulmonary tuberculosis, as well as scabies/body lice associated diseases.²
- “Trench Fever” was first identified and described among British and American soldiers in 1915 during World War I. In 1917, the condition was established as a vector-borne illness transmitted via *Pediculus humanus* (human body louse).
- Bartonella quintana* is an intracellular pathogen typically causing disease in small epidemic outbreaks in high risk populations, commonly noted in homeless individuals.³
- Bartonella quintana* can have a wide range of clinical manifestations:
 - “Trench fever”: Recurring febrile illness commonly associated with headache, lymphadenopathy, and less commonly tibial bone pain and rash.
 - Bacteremia (acute or recurrent) and Infective Endocarditis
 - Bacillary Angiomatosis (immunocompromised hosts)

METHODS

- Three cases of *B. quintana* IE encountered in homeless individuals within University of California Los Angeles (UCLA) hospital system were reviewed for the case series.
- A literature review was conducted using PubMed searching for published cases of IE secondary to *B. quintana* in homeless individuals⁴⁻¹² and larger cohort studies.¹³⁻¹⁴
- Patient demographics, clinical characteristics, treatment, and outcomes were compared between our case series and established cases in the literature.

PATIENT CHARACTERISTICS

- Case 1: 39 year old male with substance use disorder presented with two weeks of lower extremity edema, exercise intolerance, and gross hematuria found to have fevers, acute renal failure due to glomerulonephritis, and aortic insufficiency (AI).
- Case 2: 47 year old male with alcohol use disorder presented with acute alcohol withdrawal complicated by acute renal failure and severe symptomatic AI.
- Case 3: 57 year old male with history of psychotic disorder presented with an eight month history of intermittent hemoptysis, progressive fatigue, and 30-40 pound weight loss found to have severe AI and an aortic root aneurysm.

Table 1	UCLA Case Series (N = 3)	Literature Review Case Series (N=13)
Age (yr)		
Median (range)	47 (39 - 57)	48 (28 - 59)
Mean (SD)	47.7 +/- 7.36	47.5 +/- 7.60
Male sex	100% (3)	100% (13)
Housing insecure/Homelessness	100% (3)	100% (13)
Alcohol use disorder	100% (3)	76.9% (10)
Prior Valvular Abnormality	0% (0)	23.1% (3)
Animal Contact	33.3% (1)	38.4% (5)
Louse Contact/Identification	33.3% (1)	7.6% (1)
Immunocompromised	0% (0)	0% (0)

CLINICAL FEATURES

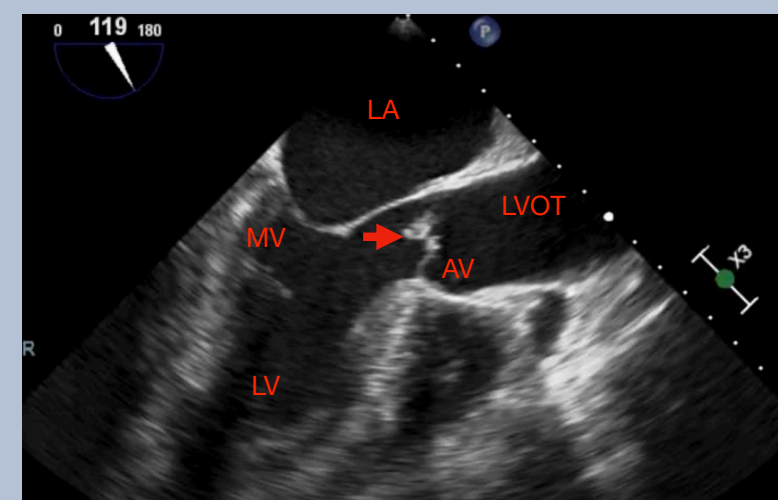


Image 1 (left) - Transesophageal echocardiogram from Case 1 depicting aortic valve vegetation. Patient diagnosed via serology with associated pauci-immune glomerulonephritis. He was treated with doxycycline and rifampin but was lost to follow up.

Image 2 (right) - Transesophageal echocardiogram confirming severe aortic insufficiency and likely perforation of aortic valve in Case 2 of *B. quintana* endocarditis. Patient later required valve surgery due to relapsed disease.

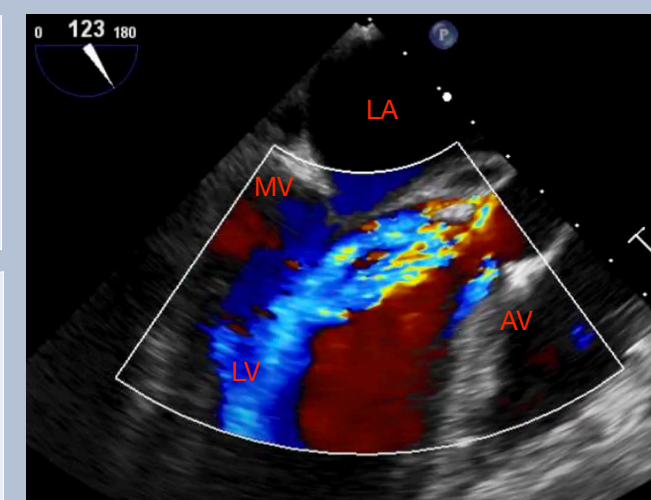


Table 2	UCLA Case Series (N = 3)	Literature Review Case Series (N=13)
Presenting Symptoms		
Constitutional	66.7% (2)	76.9% (10)
Heart Failure	66.7% (2)	69.2% (9)
Valve Involvement		
Aortic Valve	100.0% (3)	30.7% (4)
Mitral Valve	0% (0)	23.1% (3)
Aortic and Pulmonic valve	0% (0)	9.1% (1)
Aortic and Mitral Valve	0% (0)	46.1% (6)
Diagnosis		
Serology	100% (3)	100% (13)
Blood Culture	0% (0)	23.1% (3)
Valve Culture	0% (0)	0% (0)
Serum Whole Genome PCR	33.3% (1)	0% (0)
Valve PCR	50% (1)	100% (12)
Pathology	0% (0)	16.6% (2)
Surgical Valve Replacement		
Yes	66.7% (2)	92.3% (12)
No	33.3% (1)	7.6% (1)
Antibiotic Regimen		
Doxycycline	100% (3)	84.6% (11)
Rifampin	100% (3)	38.5% (5)
Aminoglycoside	66.7% (2)	69.2% (9)
Other Treatment for Culture Negative Endocarditis	0% (0)	61.5% (8)

OUTCOMES

Table 3	UCLA Case Series (N = 3)	Literature Review Case Series (N=13)
Outcome		
Survival	67% (2)	69.2% (9)
Death	0% (0)	23.1% (3)
Lost to Follow Up	33% (1)	7.6% (1)
Complications		
Disease Relapse	33.3% (1)	0% (0)
Gentamicin Associated Toxicity Leading to Discontinuation	50.0% (1)	20.0% (2)
Clinically Significant Thrombotic Vascular Disease Including Stroke	0% (0)	23.1% (3)
Pauci-immune Glomerulonephritis	33.3% (1)	9.1% (1)
Perivalvular Abscess/Aortic Root Involvement	33.3% (1)	9.1% (1)
Monoclonal gammopathy	0% (0)	9.1% (1)

DISCUSSION

- The UCLA cohort and literature review case series of homeless individuals diagnosed with *B. quintana* endocarditis suggest a high proportion of patients are male, frequently with a history of alcohol use disorder, and commonly without predisposing valvular abnormalities.
- A combination of serology and either valve/whole blood PCR testing were used to diagnose the majority of cases of culture negative *B. quintana* infective endocarditis.
- In the UCLA case series, two patients presented with renal failure limiting the use of gentamicin, which is known to be more efficacious in treatment of *B. quintana* endocarditis.¹⁴⁻¹⁵ Both patients were treated with doxycycline and rifampin with one being lost to follow up and the other relapsing requiring valvular surgery and subsequently successfully treated with doxycycline and gentamicin.
- Antibiotic treatment varied in use of added therapy for culture negative endocarditis.¹⁶
- High rates of surgical intervention for valve replacement were required in both case series while mortality did not significantly differ.
- Comparison of these case reports with larger cohorts showed similar rates of valvular surgery and mortality although other comparison is limited given inclusion of non-homeless individuals and endocarditis secondary to other *Bartonella* species.^{14 - 15}
- Our case series highlights serious complications of a known disease common among homeless individuals and reiterates the need for continued work to address the homelessness crisis.

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DISCLOSURES

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