



Case Report

Aerococcus urinae associated aortic and tricuspid valve infective endocarditis



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ABSTRACT

Aerococcus urinae is a rare bacteria usually associated with urinary tract infection. It is unusually associated with endocarditis. To date only 18 cases have been reported. Among these cases, the majority had aortic valve involvement. Three had mitral and aortic valve involvement, and two had mitral and tricuspid valve involvement. We present the first reported case of *A. urinae* associated aortic and tricuspid valve endocarditis. Timely recognition and appropriate treatment of this fatal infection is essential to decrease morbidity and mortality.

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Introduction

Aerococcus urinae is a bacterium that was first discovered in the 1990s as a rare cause of urinary tract infection in humans [1]. In the last few years, it has been associated with severe conditions such as endocarditis. Only 18 cases of endocarditis have been reported in the literature so far. Many of them were fatal and patients had underlying urinary pathologies. We report a fatal case of *A. urinae* endocarditis that affected both the aortic and tricuspid valve and believe it is the first report of *A. urinae* affecting these two cardiac valves at the same time. Cognizance and attentiveness to *A. urinae* endocarditis is crucial since identification of the bacterium could lead to faster management and decrease morbidity and mortality.

Case report

We report the case of a 54 year-old obese man who presented to the emergency department with right shoulder pain, shortness of breath and fatigue for one-week duration. One week prior to admission, he complained of dysuria and urinary retention. During that week, he developed a fever, fatigue and dyspnea. His past medical history is significant for diabetes mellitus type II, hypertension, urethral strictures and recurrent urinary tract

infections. He denied the use of tobacco products and drank alcohol occasionally once a month.

On initial examination, the patient had a temperature of 101.4 °F, a heart rate of 92 beats per minute, a blood pressure of 120/63 mmHg, a respiratory rate of 20 breaths per minute and a pulse oximetry of 91% at room air. He was pale, diaphoretic and appeared to be in mild distress. Cardiac examination was remarkable for an aortic diastolic murmur at the left sternal border and an elevated jugular venous pressure. No tricuspid murmur was appreciated on auscultation. Breath sounds were appreciated bilaterally. Patient did not have Osler's nodes, Roth spots or splinter hemorrhages. Abdominal examination was within normal limits.

Laboratory findings included a chemistry panel with a sodium of 133 mmol/L, potassium of 5.0 mmol/L, chloride of 100 mmol/L, bicarbonate of 24 mmol/L, blood urea nitrogen of 32 mg/dL, creatinine of 1.5 mg/dL and glucose of 148 mg/dL. Complete blood count included a white blood cell count of 12,500/μL, hemoglobin was 8.1 g/dL with an MCV of 81.8 fL, the hematocrit was 25.2% and platelets were 253,000/μL. Cardiomegaly was noted on chest X-ray. A transthoracic echocardiogram demonstrated a mildly dilated left ventricle, mild mitral and tricuspid regurgitations and moderate aortic regurgitation with a normal ejection fraction.

On the second day of hospitalization, blood cultures grew gram-positive cocci. The patient was begun on intravenous vancomycin. Urinary cultures were negative. The patient experienced urinary retention due to the urethral stricture and urethral dilation was done with subsequent placement of a Foley catheter. Over the next

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three days, his renal function and respiratory status deteriorated and required transfer to intensive care unit. The patient required intubated as well as hemodialysis. On day six, initial blood cultures grew *A. urinae*. A new holosystolic murmur was heard at the left lower sternal border and a transesophageal echocardiography demonstrated severe aortic and tricuspid incompetence with vegetations' on each of the valves. The antimicrobial therapy was changed to penicillin G and gentamicin. Blood culture became negative on day 10. The patient died before valve replacement could be done.

Discussion

A. urinae is a Gram-positive, leucine aminopeptidase (LAP) positive, vancomycin susceptible, catalase-negative coccus growing in clusters, resembling *Staphylococci* but the organisms growth characteristics and morphology are closer to that of an hemolytic *Streptococcus* [1]. It was first described in the context of urinary tract infections [2] as a rare cause of urinary infection affecting elderly men with underlying urinary tract pathology. Only a 18 cases of endocarditis have been reported so far in the literature and the majorities were fatal [3–6]. The aortic valve was the most commonly involved in these cases. Mitral and aortic valve involvement was found in three cases. Mitral and tricuspid valve

involvement was found in two cases. The estimated prevalence of *A. urinae* urinary tract infection and endocarditis is 54 and 3 per one million respectively [6]. The mechanism of high fatality is not known and virulence factors are yet to be identified. Due to the severity of this infection and the rising incidence of endocarditis, awareness of this fatal pathogen is essential. When evaluating treatment options for patients with infective endocarditis elucidating the cause of the infection guides treatment decisions. A delay in diagnosis of the microbe in question can result in increased mortality and morbidity when proper antimicrobial therapy is not initiated.

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