CASE REPORT

Austrian’s triad complicated by suppurative pericarditis and cardiac tamponade: a case report and review of the literature

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Summary
Austrian’s triad is a rare complication of disseminated Streptococcus pneumoniae infection consisting of pneumonia, meningitis, and endocarditis. We report what we believe to be the first case of Austrian’s triad further complicated by purulent pericarditis and cardiac tamponade, and review the relevant literature.

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Introduction
Austrian’s triad, a rare complication of disseminated Streptococcus pneumoniae infection consisting of pneumonia, meningitis, and endocarditis, is a clinical reminder of the virulent potential of S. pneumoniae. We describe what we believe to be the first reported case of Austrian’s triad further complicated with pericarditis and cardiac tamponade.

Case report
A 49-year-old, obese, alcoholic, HIV-negative African-American woman was evaluated in the emergency department with complaints of worsening shortness of breath and fever for several days. She was felt to be in cardiac tamponade. A chest X-ray showed the presence of cardiomegaly (Figure 1). A computed tomography scan of the chest showed a large pericardial effusion with signs of cardiac tamponade, a right lower lobe infiltrate, and a small right pleural effusion (Figure 2). The pericardial effusion was confirmed by echocardiography and an emergent pericardiocentesis was performed, yielding 300 ml of purulent fluid. She was taken to the operating room and a pericardial window placed with the drainage of an additional 400 ml of purulent fluid. The pericardium was noted to be thickened with a fibrinopurulent exudate present (Figure 3). A pericardial biopsy showed fibrinovascular tissue with chronic inflammation, fibrous adhesions, and fibrinopurulent exudate. Following surgery, the patient remained hemodynamically stable with only a brief episode of mild renal insufficiency with peak creatinines of 2.2. Repeat transthoracic and transesophageal echocardiograms showed resolution of the pericardial effusions and the presence of a 1 x 1.5 cm pedunculated vegetation on the anterior mitral valve leaflet.
Blood, pericardial fluid, and pericardial biopsy cultures were all negative. Gram stain of the pericardial fluid demonstrated many neutrophils, but no organisms.

It was recognized that the patient had been discharged from the hospital 7 days previously. During the previous hospitalization she had *S. pneumoniae* meningitis, bacteremia, pneumonia, and left shoulder septic arthritis. Cultures of cerebrospinal fluid and blood had grown *S. pneumoniae* fully sensitive to penicillin, with a minimum inhibitory concentration of <0.1 µg/ml. She had received 14 days of intravenous ceftriaxone and closed left shoulder joint drainage and was discharged home ambulatory receiving oral amoxicillin.

Based on the prior hospitalization’s culture results, the patient was treated for *S. pneumoniae* endocarditis and pericarditis with a 4-week course of ceftriaxone 2 g every 12 hours plus vancomycin to maintain a trough of 15–20 µg/ml, and an initial 2 weeks of intravenous gentamicin 1 mg/kg every 8 hours. She did clinically well and after the first 2 weeks was transferred to a rehabilitation facility to complete her antibiotic therapy. A follow-up echocardiogram 8 months later showed an ejection fraction of 55% and mild nonspecific thickening of the anterior mitral valve leaflet with minimal mitral regurgitation. She was living at home, fully ambulatory, and had resumed her usual activities.

**Discussion**

Pneumococcal disease remains a significant cause of morbidity and mortality, however endocarditis and pericarditis have become rare complications of bacteremic pneumococcal disease. In Mufson and Stanek’s landmark 20-year longitudinal study of bacteremic pneumococcal pneumonia in a well-defined community, it was noted that the incidence rate in patients over 50 years of age had increased over time. The overall case-fatality rate during the 20-year period, however, declined from the initial 38.5% to 28.6% in the last 5-year interval of 1993–1997, possibly due to the combined use of a beta-lactam and macrolide antibiotics. No associated cases of endocarditis or pericarditis were reported in that study. In a prospective, multicenter, international, observational study of hospitalized patients with *S. pneumoniae* bacteremia, only five of 844 (0.6%) patients developed endocarditis and three of 844 (0.36%) developed pericarditis.

Pneumococcal pericarditis has been rarely reported since the advent of effective antimicrobial therapy. In 1964 Austrian and Gold published a review of 529 cases of pneumococcal bacteremia with no identified cases of pericarditis. A 30-year literature review of pneumococcal endocarditis in the penicillin era by Aronin et al., covering the period 1966–1996, identified a total of 197 adult cases. No cases of concomitant clinical pericarditis were noted, although four of 38 (10.5%) patients undergoing echocardiography had pericardial effusions. Taylor and Sanders reviewed the clinical spectrum of 2064 reported cases of non-meningitic invasive pneumococcal disease encompassing 30 years of published literature (1966–1997). They identified 70 isolated cases of pericarditis and five of cardiac tamponade. In the period 1980–1998 only 15 cases of pneumococcal pericarditis were reported in the literature.

The concurrence of bacteremic pneumococcal pneumonia, meningitis, and endocarditis is a rare and virulent presentation of invasive pneumococcal disease, first described by Osler and later described and published by Austrian, for whom the
Austrian’s syndrome remains rarely reported in the literature. Aronin et al. mentioned that 116 or 59% of the 197 reviewed cases of pneumococcal endocarditis had concurrent meningitis and that 29 of those had Osler’s triad. A recent report and review by Gonzalez-Juanatey et al. identified two cases of Austrian’s syndrome over a 15-year period at their institution in Lugo, Spain and reviewed an additional 16 well-defined cases from the literature. No cases of associated pericarditis or cardiac tamponade were identified. Their review reconfirmed that alcoholism or hepatic cirrhosis was a significant risk factor for invasive pneumococcal disease, occurring in eight of 16 patients. HIV was identified in one of 16 patients. The aortic valve was involved in 12 of 16 (75%) patients and valve replacement required in eight of the 12 patients. Munoz et al. reported a case of Austrian’s syndrome caused by a highly penicillin-resistant S. pneumoniae. Purulent pericarditis was encountered during emergent mitral valve replacement.

We have described what we believe to be the first reported case of Austrian’s syndrome associated with pericarditis and cardiac tamponade. This report serves as a reminder of the possibly severe clinical consequences of bacteremic pneumococcal disease. Echocardiography should be considered early in the course of illness for patients with concurrent bacteremic pneumococcal pneumonia and meningitis.

Conflict of interest: No conflict of interest to declare.

References