Corticosteroids as adjunctive treatment in Austrian’s syndrome (pneumococcal endocarditis, meningitis, and pneumonia): report of two cases and review of the literature

D du Cheyron, A Lesage, O Le Page, F Flais, R Lelecurcq, P Charbonneau


This report describes two cases of Osler’s triad of pneumococcal pneumonia, meningitis, and endocarditis, as a result of Strepococcus pneumoniae infection, also called Austrian’s syndrome. In the first patient, a 51 year old non-alcoholic man, the aortic valve was affected and needed to be replaced in an emergency operation. Both patients received corticosteroids, either dexamethasone followed by low doses of hydrocortisone and fludrocortisone, or only hydrocortisone and fludrocortisone, at the onset of the illness, and their outcome was favourable. These case reports focus on the presentation, prognosis, and therapeutic options for this severe syndrome.

In the antibiotic era, Strepococcus pneumoniae endocarditis is responsible for less than 3% of all cases of endocarditis in native valves. Nonetheless, the mortality rate remains high and the incidence of pneumococcal resistance to penicillin has increased worldwide during the past 10 years.1 An uncommon entity of S pneumoniae endocarditis associated with meningitis and pneumonia was described by Osler in 1881; this disease is also called Austrian’s syndrome, and is more prevalent in alcoholic patients.2–4 We report two rare cases of aortic and mitral endocarditis in acute Osler’s triad in non-alcoholic patients, and emphasise the importance of: (1) an early diagnosis of endocarditis in cases of pneumococcal meningitis, and (2) providing adequate medical or combined medical–surgical treatment, including corticosteroids, without delay.

“The incidence of pneumococcal resistance to penicillin has increased worldwide during the past 10 years”

CASE REPORT 1
Table 1 shows the presenting characteristics of the two patients reported here.

A 51 year old man, with chronic underlying disease, including hypertension and peripheral arteriopathy, was admitted to our intensive care unit (ICU) with fever, polyneuropathy, a Glasgow coma scale score of 8, and meningeval signs. A lumbar puncture showed the following features in the cerebrospinal fluid (CSF): glucose concentration, 0 mmol/litre with glycaemia in normal range; protein concentration, 4 g/litre; leucocyte count, 425/µl (40% neutrophils and 60% lymphocytes); and Gram positive cocci on Gram stain. Cardiac auscultation detected no abnormality, and haemodynamic status was conserved. A chest x ray showed a basal right lobe infiltrate, associated with severe hypoxaemia. He was intubated, and treated intravenously with empirical chemotherapy comprising cefotaxime, amoxicillin, and vancomycin. Twenty four hours later, he suddenly presented a grade III atrioventricular (AV) block of 10 minutes duration with transient hypotension, and a major aortic murmur was detected. Transoesophageal echocardiography was performed, and showed a large sigmoid vegetation with massive aortic insufficiency; no perivalvular abscess was seen. Within eight hours of the grade III AV block, his haemodynamic status dramatically deteriorated, and he developed multiple organ failure syndrome, despite the use of vasopressors, associated with low doses of hydrocortisone and fludrocortisone. No otitis media, sinusitis, or embolic complication was disclosed with injected computed tomography (CT). A further episode of grade III AV block required rapid valve replacement. Valve substitution by prosthetic aortic valve was performed 36 hours after his admission, revealing a destroyed valve and a septal perforated abscess with interatrial communication. Blood, vegetation, bronchoalveolar, and CSF cultures were positive for S pneumoniae. Cefotaxime and vancomycin were withdrawn when the amoxicillin minimum inhibitory concentration (MIC) was known (< 0.5 µg/ml). Amoxicillin was given for the next four weeks, in combination with aminoglycosides for 15 days. The patient was discharged from the ICU a few weeks later, with moderate altered mental status.

CASE REPORT 2
A 70 year old woman without underlying disease, who only presented a grade III atrioventricular (AV) block of 10 minutes duration with transient hypotension, and a major aortic murmur was detected. Transoesophageal echocardiography was performed, and showed a large sigmoid vegetation with massive aortic insufficiency; no perivalvular abscess was seen. Within eight hours of the grade III AV block, his haemodynamic status dramatically deteriorated, and he developed multiple organ failure syndrome, despite the use of vasopressors, associated with low doses of hydrocortisone and fludrocortisone. No otitis media, sinusitis, or embolic complication was disclosed with injected computed tomography (CT). A further episode of grade III AV block required rapid valve replacement. Valve substitution by prosthetic aortic valve was performed 36 hours after his admission, revealing a destroyed valve and a septal perforated abscess with interatrial communication. Blood, vegetation, bronchoalveolar, and CSF cultures were positive for S pneumoniae. Cefotaxime and vancomycin were withdrawn when the amoxicillin minimum inhibitory concentration (MIC) was known (< 0.5 µg/ml). Amoxicillin was given for the next four weeks, in combination with aminoglycosides for 15 days. The patient was discharged from the ICU a few weeks later, with moderate altered mental status.
treated successfully for six weeks with vancomycin and rifampicin.

**DISCUSSION**

Most invasive pneumococcal infections occur in debilitated middle aged men with predisposing factors, such as chronic alcoholism, altered immune state, dural fistula, and ear or sinus infection. *Streptococcus pneumoniae* remains the most frequent microbial agent of community acquired bacterial meningitis in adults, with high mortality (25%) and morbidity rates despite adequate antibiotics, combined or not with corticosteroids. 5, 6

*Staphylococcus aureus* is the most prevalent pathogen responsible for native or prosthetic valve endocarditis in patients admitted to the ICU, and prognosis is poor. 7, 8 Only a small proportion of cases of community acquired endocarditis are caused by *S pneumoniae*, with the same predisposing factors as meningitis. 4 In pneumococcal endocarditis, the native aortic valve is the most frequent localisation of the vegetation. 1, 4 Despite adequate antibiotics, the evolution is usually acute and very aggressive, with a high rate of local (perforated perivalvular abscesses) and systemic complications, requiring surgical treatment in most cases. 4 A subacute evolution is less frequent and often involves mitral endocarditis. 9

The usual portal of entry for Osler’s triad is the lung, followed by cardiac valve 10 or meningeal 11 localisations; the third site of the triad usually appears when high doses of appropriate antibiotics are delivered. In a recent retrospective study concerning 80 cases of pneumococcal meningitis in the ICU, only six patients developed endocarditis, which caused cardiogenic shock, then death in two patients. 3 Similarly, in the largest described cohort of pneumococcal endocarditis (325 patients), only three patients presented with the triad. 3 However, Aronin et al reported a 42% prevalence of Osler’s triad in a review of pneumococcal endocarditis in the penicillin era, with a mortality rate greater than 50%. 7

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Patient 1</th>
<th>Patient 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>51 years</td>
<td>70 years</td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Underlying disease</td>
<td>Hypertension, peripheral arteriopathy</td>
<td>–</td>
</tr>
<tr>
<td>Primary localisation</td>
<td>Pneumonia and meningitis</td>
<td>Pneumonia and meningitis</td>
</tr>
<tr>
<td>Empirical intravenous antimicrobial chemotherapy</td>
<td>Amoxicillin (2 g/4 h), cefotaxime (2 g/4 h), vancomycin (2 g/day)</td>
<td>Cefotaxime (2 g/4 h), vancomycin (2 g/day)</td>
</tr>
<tr>
<td>Combined treatment</td>
<td>–</td>
<td>Dexamethasone (10 mg/6 h)</td>
</tr>
<tr>
<td>Isolation of <em>Streptococcus pneumoniae</em></td>
<td>Blood, vegetation, CSF (culture), bronchoalveolar fluid, sputum culture, bronchoalveolar fluid</td>
<td>Blood, vegetation, CSF (Gram stain cultures), bronchoalveolar fluid</td>
</tr>
<tr>
<td>S pneumoniae MIC</td>
<td>&lt;0.5 µg/ml</td>
<td>5 µg/ml; cefotaxime: 4 µg/ml</td>
</tr>
<tr>
<td>Adapted antimicrobial treatment</td>
<td>Aminocillin, gentamicin</td>
<td>Rifampicin, vancomycin</td>
</tr>
<tr>
<td>Evolution</td>
<td>Septic and cardiogenic shocks and III AV block, acute</td>
<td>Septic shock, subacute</td>
</tr>
<tr>
<td>Vasopressor support (µg/kg/min)</td>
<td>Dobutamine (15), noradrenaline (1.2), isoprenaline (10 µg/min)</td>
<td>Dobutamine (5), noradrenaline (0.5)</td>
</tr>
<tr>
<td>Corticosteroids, 7 days</td>
<td>Hydrocortisone (200 mg/day), fludrocortisone (50 µg/day)</td>
<td>Hydrocortisone (200 mg/day), fludrocortisone (50 µg/day)</td>
</tr>
<tr>
<td>Surgical treatment</td>
<td>Aortic valve substitution</td>
<td>–</td>
</tr>
<tr>
<td>ICU length before discharge</td>
<td>5 weeks</td>
<td>3 weeks</td>
</tr>
<tr>
<td>Mental status at ICU discharge</td>
<td>Moderate disability</td>
<td>Normal</td>
</tr>
</tbody>
</table>

AV, atrioventricular; CSF, cerebrospinal fluid; ICU, intensive care unit; MIC, minimum inhibitory concentration.
Could reduce morbidity and mortality rates in invasive pneumococcal infections.

In summary, pneumococcal Osler’s triad is seen not infrequently in the ICU, and is still associated with a poor outcome. The appropriate medical or combined medical–surgical treatment needs to be discussed promptly. Moreover, because dexamethasone has been used successfully to treat meningitis and low doses of hydrocortisone and fludrocortisone to treat septic shock, the addition of corticosteroids may decrease the mortality and morbidity rates in this severe disease.

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**REFERENCES**


**CD, AK, and uSpA share serum reactivity to yeast**

An immunological study has provided more evidence that vertebral disease and coeliac disease (CD) are related. For the first time patients with ankylosing spondylitis (AS) and undifferentiated spondyloarthropathy (uSpA) have been shown to share a serum marker for CD.

The study compared serum IgA and IgG antibodies to *Saccharomyces cerevisiae* in patients with joint diseases and in patients with CD, with rheumatoid arthritis (RA) patients acting as controls for general inflammation, and with healthy controls. Serum IgA antibody was significantly raised in patients with AK and uSpA versus both controls, but not as high as in CD. These high antibody titres persisted over 12 weeks in a subgroup of 19 patients tested. Both IgG and IgA antibodies were significantly higher in CD than normal or RA controls. IgA antibody and bowel inflammation or intestinal lymphoid follicles were not related in AS or uSpA, but large prospective studies should tell whether high IgA leads eventually to CD, say the authors.

The study looked at 108 patients with joint disease: 43 with AS, 20 uSpA, and 45 PsA; 26 patients with CD; 56 patients with RA; and 45 healthy controls.

Evidence of a link between vertebral disease and CD has been mounting. Over two thirds of patients with joint disease have subclinical bowel inflammation and some develop CD. Their gut lining has more lymphoid follicles, regardless of its inflammatory state. Conversely, over a third of patients with CD has joint disease and meets criteria for SpA. So a common serum marker seemed likely.

CD, AK, and uSpA share serum reactivity to yeast

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