

An Unusual Case Of Tricuspid Valve Endocarditis Caused By Coagulase Negative Staphylococcus

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Citation

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Abstract

We report a case of a 41-year-old man who developed tricuspid valve endocarditis caused by coagulase-negative Staphylococcus with a large vegetation and bilateral pulmonary infiltrates. There were no predisposing conditions or an underlying cardiac disease that could have resulted in the native valve infection. After treatment with intravenous antibiotics and cardiac surgery the patient had a good recovery.

INTRODUCTION

Tricuspid valve endocarditis is an uncommon disease in non-intravenous drug abusers [1]. An increase in the incidence of infective endocarditis of the tricuspid valve in patients without an underlying heart disease has occurred, but it is still very rare in the absence of other predisposing conditions [2].

CASE REPORT

We describe a case of a 41-year-old man who developed coagulase-negative Staphylococcal endocarditis of the tricuspid valve. Prior to the infection he was healthy and had no risk factors for native valve endocarditis: he denied any symptoms referable to the oral cavity, gastrointestinal, or urogenital tract, recent dental or abdominal surgery, skin lesions, or intravenous drug abuse. Symptoms developed abruptly with a fever of 40°C, chills and fatigue. The patient was admitted in a local hospital with a septic fever and signs of bilateral pneumonia and treated with various intravenous antibiotics for 2 weeks, but remained febrile with intermittent chills. A new cardiac murmur raised a suspicion of endocarditis, and the patient was transferred to our institution for further diagnosis and treatment.

On admission he was febrile and pale, with stable blood pressure of 115/70 mmHg and no signs of heart failure or respiratory distress. Auscultation revealed inspiratory rales in the right lower lung field and a pan-systolic heart murmur at the lower left sternal border. Other findings on physical examination were unremarkable. Blood analyses showed leukocytosis of $13.5 \times 10^9/L$, hemoglobin of 75 g/L and

erythrocyte sedimentation rate of 110 mm/h. Routine biochemical analyses demonstrated normal metabolic profile, renal and hepatic function. Urinalysis was negative. Chest radiograph revealed bilateral lower lobe infiltrates and electrocardiogram recorded sinus tachycardia of 110 bpm.

Transthoracic echocardiography showed a large vegetation (28x14 mm) on the septal tricuspid leaflet with a moderate regurgitation and systolic right ventricular pressure of 45 mmHg. All cavity dimensions were normal. A diagnosis of right-sided endocarditis with an unknown portal of entry was made and several blood cultures were obtained. Antibiotic treatment with intravenous cefepime and teicoplanin was started and continued for 6 days but there were no signs of improvement and the patient remained febrile. Meanwhile, blood cultures remained negative and the previous antibiotic therapy was substituted for intravenous vancomycin, gentamicin, ceftazidime and oral fluconazole, according to the European Society of Cardiology (ESC) Guidelines for the treatment of culture negative endocarditis [3].

After 3 days the fever subsided and there was a noticeable improvement in the chest auscultatory and radiographic findings. For the next 7 days the patient remained afebrile with further radiographic improvement, but control echocardiographic examination was unchanged. Cardiac surgery and valve replacement were indicated but we did not consider the situation critical for the urgent surgery. However, 3 days later the patient complained of pleuritic chest pain and later the same day became febrile again (37.7°C), but without chills or dyspnea. On chest radiograph new bilateral lower lobe infiltrates without signs of cavity

formation were present. A dilemma emerged: was the deterioration of the clinical and radiographic findings a result of pneumonic exacerbation, or was it a consequence of a new septic shedding from the vegetation? We considered the situation as a manifestation of a new septic dissemination and decided to proceed with the cardiac surgery. The valve was excised and replaced with a bioprosthesis (figure 1). Under sterile conditions a specimen was obtained for the microbiology and the excised valve was sent to the histopathologic examination. There were no complications during the surgery.

Postoperative course was uneventful and the patient remained afebrile. Control chest radiographs after the surgery revealed successive resolution of pneumonia. Postoperative echocardiographic finding showed normal function of the prosthetic valve. Culture of the valve vegetation revealed coagulase-negative Staphylococcus that happened to be sensitive to the antibiotics chosen for the treatment. Unfortunately, further identification of the species was not performed. Histopathology of the tricuspid valve with the vegetation demonstrated fibrinoid necrosis with a significant valve destruction and Gram staining revealed a multitude of bacteria with granulocyte infiltration. Sputum culture taken after the surgery revealed Streptococcus pneumoniae, recognized to be the culprit organism of pneumonic exacerbation preoperatively considered the result of the dissemination from the vegetation. The patient completed the full course of antibiotic treatment. During the follow-up period of 3 months he was doing well.

Figure 1

Figure 1: Excised septal tricuspid leaflet with a vegetation.



DISCUSSION

Coagulase-negative Staphylococci are invariable

constituents of the normal skin flora and they have a great propensity to colonize foreign materials in the human body. These microorganisms are a major cause of prosthetic valve endocarditis and only 3 to 8% of native valve infections are due to these pathogens, but usually in the setting of a prior valve abnormality [1]. In the recent years significant increase in the incidence of native valve endocarditis caused by coagulase-negative Staphylococci has been reported [4]. However, it is quite unusual for this pathogen to cause endocarditis in a young, otherwise healthy person who was not an intravenous drug abuser and who had no other risk factors predisposing to infective endocarditis. Further, we did not discover the portal of entry of the microorganism.

Right-sided endocarditis is generally considered to have a better prognosis than left-sided infection and the initial approach to the treatment should be conservative in the majority of patients. Indication for the surgery should be based on a correct, careful clinical evaluation, microbiological test results, and the information provided by repeated echocardiographic examinations [3]. Our initial decision was to treat the patient with antibiotics according to the ESC Guidelines, since surgical therapy for right-sided endocarditis is considered only if the fever persists for more than 3 weeks of the adequate antibiotic treatment, and pulmonary infiltrates per se are not an indication for the surgery [5]. Nevertheless, a hypermobile vegetation larger than 10 mm is a relative indication for the surgical treatment [1] because echocardiographically documented vegetations of 10 mm or greater are associated with a significantly lower response to the appropriate medical therapy [6]. Decision for the surgical treatment in our case was made when the control echocardiographic examination revealed that there was no change in the size of the vegetation despite obvious clinical improvement, and it was reinforced by subsequent relapse of the fever. Right timing of the cardiac surgery is crucial for the successful outcome, but it is difficult to predict when the right moment has come, especially when the initial clinical response to the conservative treatment is favorable.

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