

Infective Endocarditis Due to *Achromobacter xylosoxidans* Associated with Spondylodiscitis : A Case Report

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Abstract

It is rare in patient with infective endocarditis associated with spondylodiscitis. Herein, we report a case of 35-year-old male with intravenous heroin addiction representing community-acquired *Achromobacter xylosoxidans* native tricuspid valve endocarditis with spondylodiscitis as his early presentation and treatment failure in medical therapy. Early recognition of the relationship between infective endocarditis and spondylodiscitis is a key to successful treatment. This case also reminds clinicians about the unusual presentation of infective endocarditis due to *Achromobacter xylosoxidans* (J Intern Med Taiwan 2007; 18: 212-216)

Key Words : Infective endocarditis; Spondylodiscitis; *Achromobacter xylosoxidans*

Introduction

Although infective endocarditis in association with spondylodiscitis is rarely observed, it does exist between them¹⁻³. Low back pain may be the only symptom preceding the clinical evidence of infective endocarditis¹⁻⁶. Early diagnostic intervention with echocardiography to the patients with spondylodiscitis accompanying with bacteremia will lead to successful treatment. *Achromobacter xylosoxidans* is

uncommonly recovered as a human pathogen, but it can cause various diseases in immunocompromised host⁷⁻¹⁰. To date, few cases of infective endocarditis caused by *Achromobacter xylosoxidans* have been reported on Medline search. Here, we document an unusual case of community-acquired native tricuspid valve infective endocarditis due to *Achromobacter xylosoxidans* in a 35-year-old male of parenteral drug abuser manifesting as spondylodiscitis.

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Case Report

A 35-year-old man presented with a 2-week history of low back pain with radiation to his right thigh. He had undergone a workup at outpatient department with the impression of herniation of intervertebral disc. Two years ago, he had received conservative therapy with appropriate antibiotic for spondylodiscitis at L5/S1 under the diagnosis by magnetic resonance imaging (MRI) and positive culture of *Enterobacter aerogenes* from computed tomography guided biopsy. The laboratory data disclosed negative blood cultures and normal hemogram at that time. Moderate to severe tricuspid regurgitation and mitral valve prolapse were identified by transthoracic echocardiography in a next hospitalization due to bacteremic (*Acinetobacter Iwoffii*) cellulitis over his left foot about one year ago. He had history of intravenous heroin addiction without interruption until this admission. He drank alcoholic beverages in moderate amount. During the present illness, he was afebrile. Limitation of movement on his back with difficult bending and turning around were complained. Remaining findings on the review of systems were unremarkable.

On admission, physical examination revealed anemic conjunctivae and tenderness to palpation over L4-S1. His body temperature was 36.2 °C. He appeared to be a well-nourished, middle-aged man who was alert and oriented. His lungs were clear to auscultation. Cardiovascular examination reveals a rapid heart rate of 124 times per minute and a grade III/VI systolic murmur with gallop rhythm in his left low sternal border. Positive Patrick test on right side presented, the remaining neurological examination was normal. There was no skin lesion including rash, petechiae or ecchymosis. The remainders of the examination were otherwise unremarkable. Laboratory findings showed an erythrocyte sedimentation of 119mm/1st hour, >140 mm/2nd hour, C reactive protein (CRP; nephelometry) 16.8 mg/dL, hemoglobin

7.7 mg/dL, hematocrit 24.0%, and a white blood cell count of $8.8 \times 10^9/L$ with 85.7% polymorphonucleocytes. The results of other routine laboratory investigations and a chest radiograph were normal. Serologic tests for HIV, syphilis and hepatitis B infection were negative, but positive test for hepatitis C infection. A roentgenographic study of the lumbar spine showed lumbar spondylosis with multiple spur formations and irregular contour at end plates of L5-S1. MRI of spine confirmed spondylodiscitis with typical finding (Figure1). He received intravenous cephalothin (1.0 gm 3 times daily) initially. On day 3, he began to develop increasing fever accompanying with worsening pain on his back. Empirical antimicrobial therapy with piperacillin/tazobactam (4.5 gm 4 times daily) plus amikacin (500 mg 2 times daily) were started. Two blood cultures were positive for *Achromobacter xylosoxidans* 2 days later. Susceptibility study showed that the strain was susceptible to ampicillin/sulbactam, ceftazidime, piperacillin/tazobactam, trimethoprim/sul-



Fig.1.Sagittal MRI demonstrating abnormal signal intensity in L4-5 endplate and intervertebral disc and an old insult of irregular destructive lesion in the L5-S1 endplate with mild fusion between L5 and S1 vertebra.

famethoxazole, flomoxef, levofloxacin, and was resistant to aminoglycosides. Antibiotic therapy with piperacillin/tazobactam (4.5 gm 4 times daily) in accordance with the antimicrobial susceptibility testing was continued. The fever declined gradually after treatment for 3 days. Although the appropriate intravenous antibiotics were prescribed to him for almost 2 weeks, repeated blood cultures yielded the same bacteria. Therefore, this patient underwent a transthoracic echocardiography examination and it proved the diagnosis of infective endocarditis with the finding of a vegetation about 1.5 to 1.1 cm in size attached to the tricuspid valve. Meanwhile, abnormal findings of left ventricle diastolic dysfunction (grade II), mild mitral valve prolapse, severe tricuspid valve regurgitation, and dilated right atrium and ventricle were identified on this examination. Subsequently, antibiotic was shifted to ceftazidime with a dose of 2.0 gm 3 times daily due to the limited response to piperacillin/tazobactam. The fever and the value of CRP declined steadily, accompanying with improvement of his daily activity and pain in the following hospitalization. Antibiotic therapy of ceftazidime was maintained for 4 weeks. The following blood cultures became sterile and the value of CRP and hemoglobin returned to normal in the following check-up. But the vegetation on tricuspid valve remained without decreasing size in the follow-up examination of transthoracic echocardiography. At that time, surgical intervention for infective endocarditis was considered by cardiovascular surgeon, but this patient refused. He was discharged with stable condition after a total of 49-day hospitalization including a 6-week course of appropriate intravenous antimicrobial therapy. After discharge, he never showed up until one month later when he visited at outpatient department with the complaints of recurrent fever and chest pain. Increasing size of the vegetation on his tricuspid valve was observed by a repeated transthoracic echocardiography. The CRP rose significantly with a value of 22 mg/dL. Blood cultures were posi-



Fig.2. Chest roentgenogram represents a patchy infiltration over right middle lung and cardiomegaly in his 2nd hospitalization.

tive again for *Achromobacter xylosoxidans* with the same antibiogram comparing with the previous cultures. Antimicrobial therapy was adjusted to imipenem (500 mg 4 times daily). At the same time, his chest roentgenogram represented a patchy infiltration over right middle lung that was considered to be either a pneumonic patchy or an embolic event (Figure 2). Thereafter, he was transferred to a medical center for surgical intervention.

Discussion

Although the musculoskeletal involvement on infective endocarditis had been addressed before, it is uncommon to find patients presenting with spondylodiscitis and infective endocarditis concomitantly¹⁻⁴. The reported prevalence rates were from 5 to 44%¹⁻⁶. But it could be under estimated according to the recent study¹. The musculoskeletal symptoms may exist for a long time before the diagnosis of spondylodiscitis and infective endocarditis^{4,5}. Gram positive cocci, especially the *Streptococcus* species are the most common causative agents in patients with this

combined infections¹⁻³. MRI remains the most sensitive image modality for diagnosing spondylodiscitis, even in the very early stage of disease^{1,12}. Disc culture is indicated if the patient with spondylodiscitis has negative blood culture because of the unpredictable pathogen. It is unclear about the precise mechanism of the pathogenesis and the relationship between them. Microemboli, immunologic-mediated complexes deposit or direct destruction by bacteria via bacteremia could be the possible cause²⁻⁴. In this regard, we do not know where the origin of infection is, either the bony lesion or the valvular lesion. Nevertheless, previous valvular disease is documented to be prone to infective endocarditis in patients with spondylodiscitis¹⁻³. In this patient, the problem of spondylodiscitis happened to him for twice. The causative agents were different. The contaminated mineral water used by heroin injection was considered to be the infectious source. It is likely that the previous abnormality in his tricuspid valve (regurgitation) that might be damaged by his repeated parenteral drug use predisposed him to get infective endocarditis. This patient had a picture of chronic anemia that did not present before. He might have the problem of infective endocarditis for quite some time, but he did not know it because of the insidious symptoms. Subsequently, seeding of the bacteria to spine induce bony pain to alert him. Thereby, it is noteworthy to emphasize that the bony symptoms might manifest as the early sign of the infective endocarditis and it is wise to check echocardiography while having positive blood culture in patients with spondylodiscitis, particularly those of having prior valvular diseases¹⁻⁶.

Achromobacter xylosoxidans is a gram-negative motile bacillus which is uncommonly isolated from clinical specimens, and usually it is considered to be an opportunistic pathogen⁷⁻¹⁰. Most of the patients with this bacterial infection are hospital-acquired and have underlying diseases, including diabetes mellitus, renal insufficiency, alcoholism, malignancy, tu-

berculosis, or endogenous immunosuppressant⁷⁻¹⁰. The most common clinical spectrum of *Achromobacter xylosoxidans* infection includes bacteremia, pneumonia, biliary tract infection, urinary tract infection, wound infection, and peritonitis⁷⁻⁹. With regard to these factors, this patient's evolution was unusual because of his immunocompetent status, the infection of community-acquired, and the uncommon causative agent. Medical therapy with appropriate antimicrobial for infective endocarditis was failed in this patient, although spondylodiscitis seemed to respond well to it. It suggests the need for adjunctive surgical therapy early if *Achromobacter xylosoxidans* infective endocarditis, even though involved in the right-sided native valve without embolic complication, is encountered in clinic.

It is hoped that more understanding the relationship between infective endocarditis and spondylodiscitis will lead to early diagnosis and successful treatment. Echocardiography should be performed as routine in such situation. In addition, to be aware of the potential role of *Achromobacter xylosoxidans* in causing infective endocarditis, especially in patients with intravenous drug addiction, is stressed.

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木糖氧化產鹼菌引發的心內膜炎以脊椎椎間盤炎 為臨床表徵

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摘 要

心內膜炎和脊椎椎間盤炎同時存在於一位病患身上，在臨床上並不多見。在此，我們報告一例 35 歲海洛英成癮的病患以背痛為表徵，之後證實為脊椎椎間盤炎；同時，還發現由木糖氧化產鹼菌所引發的三尖瓣心內膜炎。病患經由內科治療無效而後轉院。有關的文獻指出，心內膜炎和脊椎椎間盤炎之間確實有其相關性；臨床醫師若能對此有其認識，才能適時的給予病患必要的檢查而有助於治療的成功。除此之外，我們亦特別提出木糖氧化產鹼菌也可以是心內膜炎的致病菌。