Isolated Tricuspid Valve Endocarditis Due to Candida Parapsilosis Associated with Long-term Central Venous Catheter Implantation

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Abstract

A 72-year-old man was treated for fungal tricuspid valve endocarditis (TVE) with significant tricuspid valvular regurgitation and severe congestive heart failure caused by Candida parapsilosis. The patient had received hyperalimentation and antibiotic therapy for three months through a central venous catheter after the surgical treatment of ileus. The patient was treated medically with amphotericin B and fluconazole because of high surgical risk due to severe pulmonary emphysema, and he responded well. Although TVE caused by C. parapsilosis is rare, we should consider this possibility in patients receiving long-term hyperalimentation and antibiotic therapy using a central venous catheter.

Case Report

A 72-year-old man was referred to our hospital with precordial murmur, dyspnea, low grade fever and progressive edema of the lower extremities. He had no history of cardiac diseases or drug abuse. He had received post-operative hyperalimentation and antibiotic therapy via a central venous catheter for three months following the surgical treatment of ileus. On admission, chest X-ray showed cardiomegaly and severe congestion, indicating the presence of severe congestive heart failure. Electrocardiography showed right ventricle hypertrophy. Transthoracic echocardiography (TTE) revealed vegetation of the tricuspid valve with severe valvular regurgitation and moderate pulmonary hypertension (Fig. 1). Laboratory analysis showed a white blood cell count of 3,300/µl, C-reactive protein (CRP) of 2.5 mg/ml, platelet count of 39,000/µl and fibrin degraded protein level of 7.5 µg/ml, indicating the presence of inflammation and disseminated intravascular coagulation. A series of blood cultures revealed positivity for Candida parapsilosis.

The patient received a total dosage of 3,022 mg of amphotericin B because of high surgical risk due to severe pulmonary emphysema, and responded well to this treatment. Four weeks after the treatment, results of blood culture studies became negative. TTE and transesophageal echocardiography (TEE) showed diminution of the vegetation and decreased tricuspid regurgitation. After 16 weeks, the treatment was switched from intravenous amphotericin B to oral fluconazole. After the fluconazole treatment, TTE and TEE confirmed the absence of vegetation on the tricuspid valve. Inflammatory signs of laboratory data and blood culture studies also remained negative. The patient was discharged in good condition.

Discussion

Overall involvement of the tricuspid valve occurs in only 5% to 10% of patients with infective endocarditis (1). The reason for the low frequency of right-sided endocarditis compared with that of the left side is due to: (a) lower incidence of congenital and rheumatic heart disease in right side valves; (b) lower right-heart pressures resulting in decreased stress to the right side valves; (c) reduced right-heart blood oxygen content (2). Tricuspid valve endocarditis (TVE), however, has recently become more common with increased numbers of intravenous drug abusers in Western countries. The majority of TVE cases generally occur with a virulent organism, such as Staphylococcus aureus (50–80%), Psuedomonas aeruginosa (10–40%), Alpha streptococcus (10–20%) (1). Although Candida species are reported to account for only about 3% of TVE cases (1), recent clinical evidence indicates that the prolonged use of antibiotics in patients with implanted central venous catheters is an important predisposing factor of TVE.

The frequency of fungal endocarditis had been reported as 1.4% among all types of infectious endocarditis (3). Of these,
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Figure 1. Transthoracic echocardiography (TTE) on admission revealed a vegetation on the tricuspid valve (VEGE). RA: right atrium, RV: right ventricle.

two-thirds were caused by Candida species (3). Although C. parapsilosis exists as part of the normal flora in healthy humans, TVE caused by C. parapsilosis as reported here is very rare. Interestingly, several reports have described that parenteral hyperalimentation was recognized as a risk factor of candidemia, and it was subsequently associated more specifically with C. parapsilosis infection (4). More recently, Levins et al (5) reported that the fungemia caused by C. parapsilosis is associated with long-term central venous catheters. Therefore, the infection in the patient described here was obviously mediated by the long-term central venous catheter implanta-
tion used for hyperalimentation and the antibiotic treatment following the surgical treatment of ileus.

The treatment of fungal TVE is controversial, although the general management of TVE is appropriate antibiotic therapy. It is reported that the survival rate of C. parapsilosis endocarditis with surgical treatment is about 35%, but that among patients treated medically is only 22% (4). Surgical treatments combined with medication resulted in an increase in the survival rate to between 50% and 64% (4). The present patient had congestive heart failure, and surgical treatment was recommended. However, we decided to treat this patient medically because of high surgical risk and good response to amphotericin B and fluconazole.

We reported isolated TVE due to Candida parapsilosis associated with long-term central venous catheter implantation. Although TVE caused by C. parapsilosis is rare, we should consider this possibility in patients receiving long-term hyperalimentation and antibiotic therapy using a central venous catheter.

References