An extremely rare complication associated with primary varicella zoster virus infection: Cardiac tamponade

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Introduction

Varicella zoster virus (VZV) causes chickenpox in childhood and herpes zoster, associated with painful vesiculous skin lesions in adults (1-3). Varicella zoster virus pneumonia is uncommon among healthy children, and it is generally observed in immunosuppressed patients (1). Cardiac tamponade is a pediatric emergency characterized by accumulation of an excessive amount of fluid in the pericardial cavity and scarcely accompanies VZV infection. Here, a previously healthy girl who had pericardial tamponade following VZV pneumonia is presented.

Case Report

A 5-year-old girl was referred to our clinic because of cardiac tamponade following evaluation of fever and respiratory distress in another hospital. Crusting and hyperpigmented skin lesions over the scalp and trunk were observed on physical examination. She had tachycardia (140 beats per minute), narrow pulse pressure (blood pressure: 90/70 mm Hg), tachypnea (40 breaths per minute), and intercostal and subcostal retractions. Upon learning the skin lesions to be initially papulovesicular, we thought that she might have VZV infection. Echocardiography revealed normal left ventricular systolic function (fractional shortening: 34%) and an excessive amount of fluid in the pericardial cavity surrounding the heart completely. The right atrium was being collapsed in diastole (Fig. 1). Her troponin I level was normal (0.02 ng/mL). Following ultrasonographic detection of the accompanying pleural effusion, she underwent surgical drainage of both cavities and was started on acyclovir (30 mg/kg/day), ceftriaxone (100 mg/kg/day), and vancomycin (40 mg/kg/day) therapy.

The pericardial fluid had a hemorrhagic appearance and the characteristics of exudate (fluid lactate dehydrogenase/serum lactate dehydrogenase ratio >0.6, 619/508 IU/L; fluid total protein/serum total protein ratio >0.6, 4.2/5.2 gr/dL; fluid glucose/serum glucose ratio <0.6, 32/97 mg/dL). Her erythrocyte sedimentation rate and C-reactive protein level were 26 mm/h and 5.3 mg/dL, respectively. She had no leukocytosis. Serum anti-VZV immunoglobulin M was found to be positive. Her clinical condition improved quickly after drainage. When pericardial and pleural fluid cultures were determined to be negative for bacteria, fungi, and mycobacteria 1 week later, ceftriaxone and vancomycin were stopped. Fluid cytology did not reveal any abnormality, including malignity and tuberculosis. Serologic tests for other causative viruses and rheumatologic screening were negative. The pleural and pericardial tubes were withdrawn at the end of first week of admission. The effusions did not recur. Acyclovir treatment was ceased at the end of 2 weeks, and she was discharged from the hospital. She has been followed up without any health problems for 9 months.

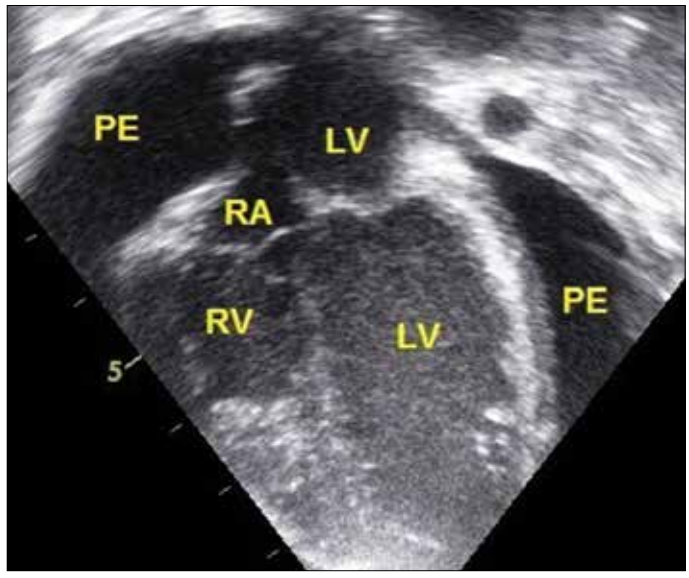

Figure 1. Excessive amount of fluid in the pericardial cavity surrounding the heart completely
PE - pericardial effusion; RA - rihgt atrium; RV - right ventricle; LA - left atrium; LV - left ventricle

Discussion

Varicella zoster virus is one of the most frequent infectious agents and is spread through droplet infection. It causes a self-limiting eruptive disease in children. It may occasionally result in more serious clinical conditions, such as myocarditis, pneumonia, and meningoencephalitis (1, 3). The diagnosis of VZV infection is established following detection of anti-VZV immunoglobulin M in cases with consistent clinical findings.

Pericarditis, myocarditis, endocarditis, or arrhythmia can be observed in the course of cardiac involvement in VZV infection (3, 4). However, the myocardium is the most commonly affected tissue. Fever, myalgia, chest pain, palpitation, and tachypnea are the major clinical findings in those cases (4). Although vesicular eruptions generally become evident before cardiac involvement, the opposite is also possible (3). Myocardial biopsy may also help in the diagnosis of cases with cardiac involvement. The pericardial fluid may have the characteristics of either exudate or transudate, and pericarditis is reported to be able to cause constrictive pericarditis within a few weeks (3, 5, 6). We did not determine any cause other than VZV in our patient, and she had no constrictive pericarditis in the course of the disease.

Electrocardiogram and monitorization are useful for the detection and follow-up of any arrhythmia (4). We determined no rhythm disturbance in our case. The echocardiography is a noninvasive and frequently used modality for both the diagnosis and follow-up of pericardial effusion. Readily available echocardiography in a former rural hospital led to the timely diagnosis and management of cardiac tamponade in the patient.

Conclusion

Despite its relatively mild clinical course, VZV infection may occasionally cause life-threatening conditions, including cardiac tampon-

ade. It should be kept in mind that any hemodynamic instability in a case with known VZV infection might have resulted from cardiac tamponade. Besides having an extremely rare complication of VZV infection, another unique feature of our patient was the observation of VZV pneumonia in an immunocompetent girl.

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