



Transient Atrioventricular Block as a Complication of Influenza A Virus: A Case Report

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Influenza is one of the most common respiratory viral infections, causing annual epidemics of respiratory illnesses characterized by sudden onset of fever, malaise, myalgias, cough, and other respiratory complaints. A spectrum of cardiovascular complications has also been reported in association with influenza infection. Cardiovascular involvement can occur through the direct effects of the virus on the myocardium or through the exacerbation of the existing cardiovascular disease. We report the case of an 86-year-old woman without a history of cardiac disease before admission who developed a transient complete atrioventricular block without myocarditis after acute infection with the influenza A virus.

Key words: *atrioventricular block, influenza A virus, cardiovascular complications*

Introduction

Influenza is an infectious respiratory disease that, in humans, is caused by influenza A and influenza B viruses. The World Health Organization estimates that annual epidemics of influenza result in approximately 1 billion infections, 3–5 million cases of severe illness, and 300,000–500,000 deaths.¹ Although influenza infections predominantly have respiratory manifestations, other organ involvement is not uncommon. Cardiovascular involvement in acute influenza infection can occur through the direct effects of the virus on the myocardium or through the exacerbation of the existing cardiovascular disease.² According to earlier studies, seasonal influenza infections may contribute to increased cardiovascular disease mortality in the winter.³ We report the case of transient complete atrioventricular (AV) block after infection with the influenza A virus in a patient without underlying cardiac disease.

Case Report

An 86-year-old woman with no relevant history of heart disease presented to the emergency department (ED) complaining of fever and weakness for a day. She also experienced cough and itching in the throat for 1 week. Two days before admission, she had been in contact with her grandson who was diagnosed as having an influenza A infection. A physical examination revealed clear breathing sounds without a heart murmur. A biochemistry examination revealed leukocytosis (white cell count: 11,490 mg/dL) and an increased C-reactive protein level (5.690 mg/dL). An influenza screening test was positive for the type A virus. A chest X-ray revealed an enlarged heart shadow without pneumonia patches. Electrocardiography revealed a complete AV block (heart rate: 59 beats per minute) (Fig. 1). She was prescribed oseltamivir and admitted to the intensive care unit. Five days later, an electrocardiography test revealed a sinus rhythm with a heart rate of 70 beats per minute (Fig. 2). After

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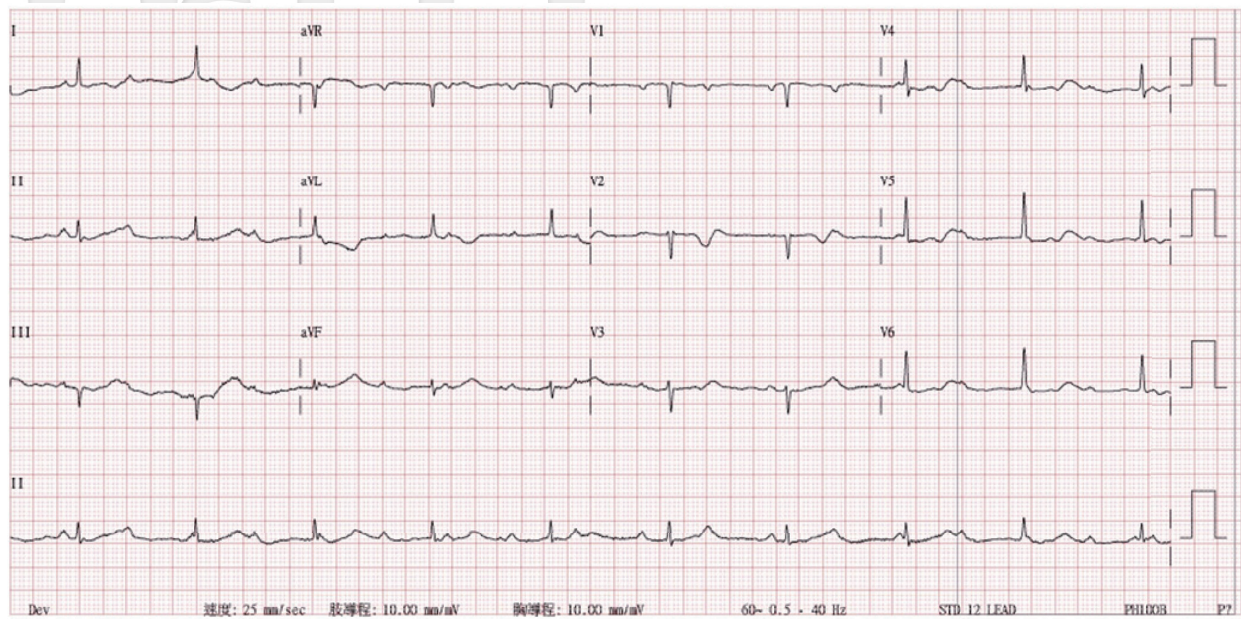


Fig. 1. Initial electrocardiogram when the patient presented to the emergency department.

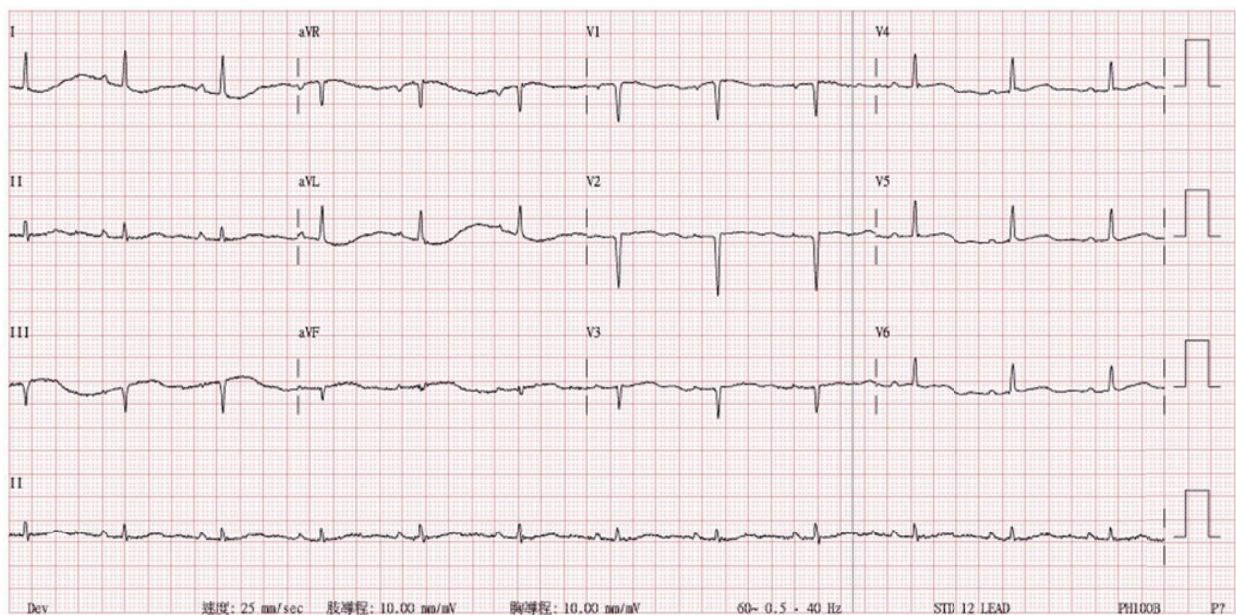


Fig. 2. Electrocardiogram taken after 5 days of antiviral medications.

a discussion between her family and the cardiologist, a permanent pacemaker was inserted a week after admission in the dual chamber mode. She exhibited excellent tolerance and was discharged with a good general health status. One month later, follow-up cardiac echocardiography demonstrated adequate left ventricular systolic function (54%).

Discussion

Influenza is a segmented RNA virus of the *Orthomyxoviridae* family. Both influenza A and B viruses cause disease in people. Influenza accounts for 2–20% of cardiopulmonary hospitalizations every year.^{4–8} In older adults especially, the virus can cause significant morbidity and mortality. Classic presen-

tations of influenza infection comprise fever, cough, and general ache. The frequency of myocardial involvement in influenza infections is up to 10% as per the literature.⁹

According to a systemic review, the most frequent cardiovascular manifestations associated with influenza infection include acute myocardial infarction, myocarditis, pericarditis, and myocardiopericarditis.² In fulminant myocarditis, myocarditis can also cause cardiac dysfunction, which may be related to sudden cardiac death. To the best of our knowledge, publications on AV conduction block in the context of influenza infections are sparse.² Moreover, in these reported cases, they are mostly secondary to underlying fulminant myocarditis. In our case, the patient presented to the ED with a complete AV block without any evidence of myocarditis. She did not display any unstable hemodynamic signs such as low blood pressure or disturbed consciousness. After the use of antiviral medications, subsequent electrocardiography demonstrated a quick return to a normal sinus rhythm.

Cardiovascular involvement in acute influenza infections can occur through the direct effects of the virus on the myocardium or through the exacerbation of existing cardiovascular disease.⁹ Clinical presentations may vary from asymptomatic to cardiac shock and death. In older adults, the presentation is neither classic nor simple. Fever may not manifest in such people. Therefore, during the influenza season, clinicians should pay attention to cardiovascular manifestations related to influenza infections, even in cases of simple AV conduction block. Cardiac involvement should also be considered early in those patients with influenza infections whose condition deteriorates or hemodynamic compromised. Antiviral medications should be started as soon as possible. Conversely, influenza vaccination is valuable to reduce cardiovascular mortality, especially for those with cardiovascular disease.

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