Case Report

A case of Dengue Hemorrhagic Fever with myocarditis and complete heart block

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ABSTRACT

We report a case of serologically confirmed dengue hemorrhagic fever in a 20 year-old Vietnamese male, complicated by myocarditis and asymptomatic, complete AV block. (Rawal Med J 2014;39:104-106).

Keywords: Dengue hemorrhagic fever, atrioventricular block, complete AV block, myocarditis.

INTRODUCTION

Dengue virus (DENV) infection is a global health threat, caused by 1 of 4 single stranded RNA viruses in the Flaviviridae family and is transmitted by mosquito vectors, primarily, Aedes aegypti. All four dengue virus serotypes (DENV-1, DENV-2, DENV-3 and DENV-4) can cause dengue. The disease can present as a mild self-limiting illness, dengue fever (DF), or as a more severe forms of the disease, dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS).[1] Dengue fever and dengue hemorrhagic fever are important arthropod-borne viral diseases. It is estimated that around 50 million dengue infections occur every year and around 500,000 individuals are hospitalized with dengue hemorrhagic fever, mainly in Southeast Asia, the Pacific and the Americas.[2] Cardiac conduction defects have been associated with dengue fever or dengue hemorrhagic fever. However only a few case reports are available in the literatures.

CASE PRESENTATION

Our patient was a 20 year-old Vietnamese male with no known medical illness and no history or arrhythmia or cardiac disease. He had been residing in Malaysia for the past 10 months, working at a steel factory. He presented in July 2013 with fever, arthralgia, myalgia and poor oral intake. He denied any vomiting, diarrhoea, abdominal pain or bleeding tendency. He first presented to a general practitionerat day 6 of illness. A full blood count taken on the day revealed leucopenia (total white count 2,000/mm^3), thrombocytopenia (platelet count 79,000/mm^3) and hemoconcentration (hematocrit 51%).He was then referredfor hospital admission. Documented temperature at the general practice was 39.7°C, blood pressure was normal and heart rate was 90/min. At the district hospital, the patient was found to be bradycardic with a heart rate of 40/min. Electrocardiography showed a complete AV block. Blood pressure remained normal and he was asymptomatic. He was then referred to our cardiology department where he was admitted to the coronary care unit for close observation.

On examination, he was afebrile with a blood pressure of 100/60 and a heart rate ranging from 30 to 40 beats per min. Heart sounds were normal, apex beat was not displaced. Other systemic examinations did not reveal any abnormalities. Repeated electrocardiography showed persistent complete AV block. Other investigations revealed normal hemoglobin (16.8 g/dL) and white cell count (7,000/mm^3). Hematocrit was 48.6% and platelet count was low (90,000/mm^3). Transaminases and cardiac enzymes were raised. His electrolytes, renal and coagulation profiles were normal. Dengue IgM and IgG were reactive and leptospira serology was negative. Echocardiography revealed a structurally normal heart and chest radiography was normal.

The patient remained bradycardic with a heart rate ranging from 30 to 40 beats per min. His blood pressure, however, remained normal and he was afebrile throughout his hospital stay. As patient was asymptomatic and haemodynamically stable, he was not started on any inotropic support or

temporary pacemaker. He was managed supportively according to the World Health Organization (WHO) recommendations for management of dengue hemorrhagic fever.

He was discharged after 6 days of admission, with persistent complete AV block and normal blood pressure at the point of discharge. His full blood count, cardiac enzymes and liver function test were within normal range upon discharge. He will be seen in the cardiology clinic 4 months after discharge for a follow-up.

DISCUSSION

Cardiac complications associated with dengue hemorrhagic fever are uncommon. There have been few reported cases of denguehemorrhagic fever complicated by cardiac conduction abnormalities in pediatric patients such as complete AV block[3] and Mobitz type 1 second degree AV block,[4] sinus pause, first-degree AV block, atrial and ventricular ectopic beats.[5] In adults, atrial fibrillation[6] and Mobitz type 1 second degree AV block[7] during denguehemorrhagic fever has been reported. Cardiac manifestations in dengue are usually benign, transient and self-limiting.[3,5] Resolution may take up to 5 months as reported by Kaushik *et al*.[3] However, there has been a reported case of complete AV block in a patient with dengue that required a permanent pacemaker.[8]

The virus may invade the myocardium and directly damage the muscle fibres or give rise to a hypersensitivity or autoimmune reaction causing myocardial damage.[9] Salgado *et al*. reported direct viral infection of cardiomyocytes from an autopsy of a pediatric patient who succumbed to the disease.[10] Miranda *et al*. have also reported histopathological findings of clusters of virus particles inside cardiomyocytes, providing evidence of a possible direct action of dengue virus on myocardium.[11]

In our patient, dengue infection was confirmed serologically and we have excluded the possibility of a congenital cardiac conduction defect from the fact that his documented heart rate when he presented to the general practitioner was normal. We have also excluded structural cardiac defects from an echocardiogram. Myocarditis and hepatitis were suspected based on his raised creatinine kinase, lactate dehydrogenase and transaminases. Therefore, we suspect that the myocarditis could possibly be the cause of his compete AV block. Despite his cardiac conduction defect, he remained asymptomatic and was not subjected to temporary or permanent pacemaking. We have yet to see resolution of the conduction defect in our patient but we expect spontaneous resolution. Our patient has been advised that there is a possibility of the need for a permanent pacemaker. We will be following him up closely in our cardiology clinic to see if there is resolution of the complete AV block.

CONCLUSIONS

In conclusion, myocarditis and cardiac conduction defects can occur during dengue hemorrhagic fever. These conduction defects are usually benign and will usually resolve spontaneously.

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