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Case Report

ACUTE MYOCARDITIS SECONDARY TO DENGUE INFECTION IN A YOUNG FEMALE PATIENT: A CASE STUDY

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ABSTRACT

Dengue fever is a common mosquito-borne viral infection, especially in tropical regions where it is endemic. While most cases present with typical symptoms such as fever and musculoskeletal pain, severe dengue can lead to rare but serious complications, including myocarditis and cardiogenic shock. This case report describes a young female who developed dengue myocarditis with cardiogenic shock, reemphasizing the wide spectrum of complications in dengue. Through this case and a review of relevant literature, we discuss the clinical features, diagnostic approach, treatment, and prognosis for patients with dengue myocarditis.

Keywords: Dengue fever, Myocarditis, ST-segment elevations, Left ventricular dysfunction.

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INTRODUCTION

Dengue fever, caused by the *Flavivirus* genus, is one of the most prevalent mosquito-borne viral infections globally, with millions of cases reported annually, particularly in tropical and subtropical regions [1]. Transmitted by the *Aedes aegypti* mosquito, dengue is a significant public health issue due to its wide range of possible complications. While most infections are asymptomatic or mild, severe cases can lead to hemorrhagic fever and also shock, which are associated with plasma leakage, coagulopathy, and multi-organ involvement [2].

Cardiac involvement in dengue, though less common, is increasingly recognized as an important complication. Dengue myocarditis is one such manifestation where the viral infection leads to inflammation of the myocardium, potentially resulting in heart failure and cardiogenic shock [3]. The mechanism behind dengue myocarditis is not entirely understood but may involve both direct viral invasion and immune-mediated damage to cardiac tissues. Elevated pro-inflammatory cytokines and immune responses have been implicated in the pathogenesis of this complication [4].

Clinical presentation of dengue myocarditis can be variable, ranging from asymptomatic cardiac enzyme elevation to symptomatic heart failure. Early detection is challenging due to overlapping symptoms with other dengue manifestations, such as fever, fatigue, and shortness of breath, which can mask underlying cardiac issues. Diagnostic tools, including electrocardiography (ECG), echocardiography, and cardiac biomarkers (e.g., troponins), play a key role in identifying myocardial involvement in suspected cases [5].

In this report, we look at a case of dengue myocarditis presented as cardiogenic shock. This case underscores the need for awareness of cardiac complications in dengue and highlights the importance of timely intervention to prevent adverse outcomes.

CASE PRESENTATION

A 21-year-old female presented to the casualty with a 5-day history of high-grade fever and generalized myalgia. She subsequently developed a dry cough and progressive breathlessness over 3 days. Initial testing at a local clinic confirmed dengue fever through a positive dengue NS1 antigen serology. However, her clinical condition worsened with respiratory distress and hypotension, prompting her transfer to SRM Hospital.

Initial examination and emergency management

On arrival, the patient was tachypneic with a respiratory rate of 34 cycles/min, heart rate of 115 beats/min, and non-recordable blood pressure. Immediate inotropic support was initiated for hypotension, and she received high-flow oxygen through a non-rebreather mask. Physical examination revealed bilateral coarse crepitations in the lower lung fields, suggesting pulmonary edema.

Investigations

An ECG showed diffuse ST-segment elevations in multiple leads, indicating possible myocardial involvement (Fig. 1). Troponin I levels were elevated at 1.39 ng/dL, supporting myocardial injury.

A bedside echocardiogram showed global hypokinesia with a significantly reduced ejection fraction (EF) of 25% (Fig. 2). Lung ultrasound demonstrated B-lines, indicative of pulmonary congestion.

Additional laboratory tests showed thrombocytopenia with a platelet count of 80,000/μL and elevated NT-ProBNP levels at 3890 pg/mL, further supporting a diagnosis of cardiac involvement. Repeat dengue serology confirmed the presence of dengue immunoglobulin M antibodies, consistent with a recent infection.

Course of treatment

The diagnosis of dengue myocarditis was established based on clinical, laboratory, and imaging findings. The patient was started on dual inotropic therapy with noradrenaline and dobutamine, which was adjusted according to her hemodynamic status. Over the next 5 days, her condition gradually improved, allowing for the discontinuation of inotropic support. Her blood pressure stabilized at 110/70 mmHg, and blood cultures were negative, ruling out secondary bacterial myocarditis.

Progress and follow-up

The patient was advised to undergo a cardiac magnetic resonance imaging (MRI) to assess myocardial involvement in detail, but she

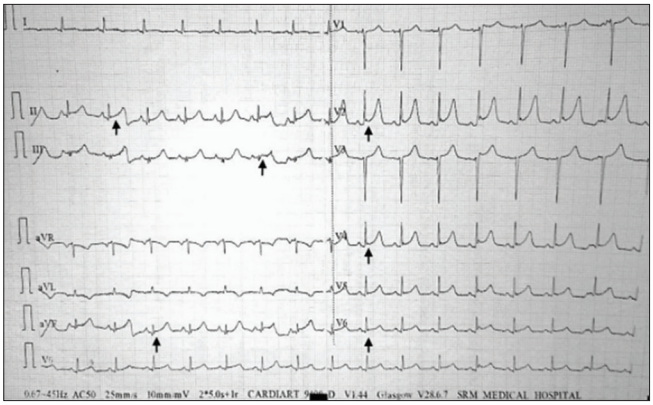

Fig. 1: Electrocardiography shows diffuse ST-segment elevations

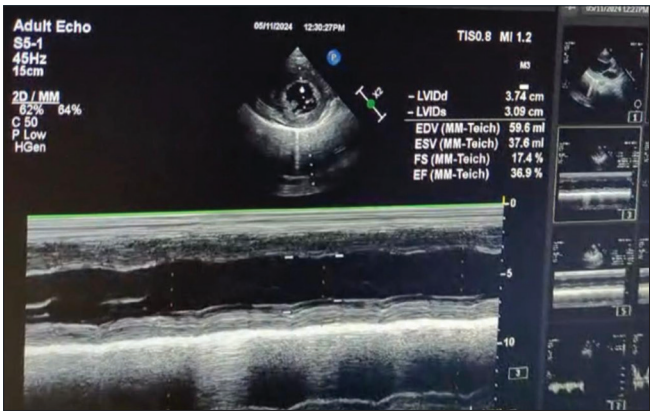

Fig. 2: Echocardiogram showing reduced ejection fraction of 25%

declined due to logistical constraints. Two days after stopping inotropic support, her clinical condition improved significantly. Repeat testing showed a rise in platelet count to 178,000/μL and a marked decrease in troponin I levels to 0.26 ng/dL, indicating myocardial recovery.

At discharge, the patient was stable with no residual symptoms. Follow-up evaluation with a cardiac MRI, which she completed later, showed mild global hypokinesia with preserved left ventricular function, indicating reversible myocardial injury without long-term damage.

DISCUSSION

Dengue myocarditis, though rare, is a serious and potentially life-threatening complication of dengue fever, especially in patients with severe disease [6]. The incidence of myocarditis in dengue is likely underreported, as cardiac involvement may be subclinical or masked by other dengue symptoms. Studies indicate that the inflammatory response triggered by dengue infection, including the release of pro-inflammatory cytokines, can contribute to myocardial damage, especially in severe cases [7].

In diagnosing dengue myocarditis, clinicians rely on clinical features, elevated cardiac biomarkers, ECG changes, and echocardiographic findings. Elevated troponin levels and diffuse ST-segment elevations, as seen in this case, are common indicators of myocardial injury in viral myocarditis. Echocardiography can reveal structural and functional cardiac abnormalities, such as reduced EF and global hypokinesia, which were observed in this patient [8]. Although cardiac MRI is considered the gold standard for myocarditis diagnosis, it is not always feasible due to cost and availability, particularly in resource-limited settings [9].

Management of dengue myocarditis primarily involves supportive care, including hemodynamic support with inotropes and management of heart failure symptoms. In this case, the timely initiation of inotropic support was crucial for stabilizing the patient's condition and preventing further deterioration. Prognosis generally depends on the severity of myocardial involvement and the timeliness of treatment. While some patients recover completely, others may suffer from long-term sequelae, including chronic heart failure or recurrent arrhythmias [10].

The outcomes in dengue myocarditis cases can vary significantly. Studies have shown that while many patients recover with appropriate supportive care, there is a subset of cases where cardiac involvement leads to significant morbidity or mortality. Long-term follow-up is advised for such patients to monitor for late-onset complications and ensure recovery of cardiac function [11].

Given the increasing recognition of cardiac complications in dengue fever, it seems necessary to establish guidelines for the management of dengue myocarditis. Prospective studies on the incidence and clinical outcomes of dengue myocarditis could inform strategies for early diagnosis and treatment, particularly in endemic regions where the burden of dengue is highest [12].

CONCLUSION

Dengue myocarditis is a rare but possible and serious complication of dengue infection, with the potential to cause significant morbidity and mortality if not identified early. This case highlights the importance of considering myocarditis in dengue patients with unexplained cardiovascular symptoms, especially in endemic regions. Early intervention with supportive therapy can improve outcomes, as seen in this patient, who recovered without long-term cardiac damage. Ongoing research is essential to guide clinical practices and improve outcomes for patients with dengue-related cardiac complications.

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Nil.

CONFLICT OF INTEREST

None to declare.

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