

## An unusual case of arrhythmia in a case of dengue hemorrhagic fever

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**Abstract:** We report a 9 year old girl suffering from dengue hemorrhagic fever developed bradycardia. Her electrocardiography during bradycardia suggested sinus node dysfunction with exaggerated sinus arrhythmia. This is probably the second case of sinus node dysfunction associated with dengue infection<sup>1</sup>. Furthermore, this sort of fluctuating heart rate between 50-70 beat/min with irregularly irregular heart rate was never reported before associated with dengue infection in pediatric population.

**Keywords:** Sinus node dysfunction, dengue hemorrhagic fever

### I. Introduction

Dengue is one of the most important mosquito-borne viral diseases in the world<sup>2</sup>. Clinically, a non-specific febrile illness, dengue hemorrhagic fever (DHF), and dengue shock syndrome (DSS) are commonly encountered in dengue epidemics. A variety of cardiac complications have been reported in dengue-affected patients<sup>3-8</sup>, which include cardiac rhythm disorders, such as atrioventricular block<sup>6</sup>, ventricular ectopics<sup>9</sup>, atrial fibrillation<sup>7</sup>, supraventricular arrhythmia<sup>7</sup> and myocarditis.<sup>1,8</sup> An uncommon case of DHF with bradycardia with some unique feature was treated in NRS medical college (Kolkata, India) being a tertiary care hospital catering to a large population where dengue is endemic. We report this case and discuss the implications of cardiac complications in dengue patients. The treatment of dengue illness will be potentially improved by a better understanding of cardiac complications by avoiding otherwise preventable morbidity and mortality in the affected patients.

### II. Case Report

A 9 year old girl with delayed developmental milestone presented with fever and bodyache for 7 days. From day 5 of illness patient developed gradual onset swelling of feet and abdominal pain. On examination, mild pallor, edema and ascites was present. Hemoglobin 11 gm%, WBC count 12,200/mm<sup>3</sup>, platelet count 60,000/mm<sup>3</sup>. Liver function test : bilirubin 1.3 mg/dl (conjugated 0.7 mg/dl), SGPT 54 U/L, SGOT 132 U/L. Serum sodium was 137 mmol/l, potassium 3.35 mmol/l, chloride 106 mmol/l, and bicarbonate 19.6 mmol/l. Her urinalysis result was normal. On day 8 of illness patient developed shock (systolic blood pressure was below 70 mm of Hg) and was shifted to pediatric intensive care unit. Initially patient was managed with fluid resuscitation according to standard guideline<sup>11</sup>. But interesting finding was that, shock was fluid resistant and patient developed sinus bradycardia with heart rate hovering between 50-60 beats/minute. So we added inotropes (dopamine, dobutamine and milrinone). Echocardiography revealed left atrium and left ventricle were mildly dilated. There was good left ventricular systolic function, mild pericardial effusion and left ventricular ejection fraction was 63%. Twelve lead electrocardiography (ECG) showed bradycardia sinus rhythm with exaggerated sinus arrhythmia, ST-T changes with T wave inversion in V1-V5 chest leads & aVL (Fig1). Heart rate varied from 50-70 beats/minute. With close monitoring patient recovered from shock. But arrhythmia persisted for few days more. Patient was discharged in a stable condition. ECG was normal on follow-up visit 2 weeks later (Fig-2).

### III. Discussion

The incidence of cardiac complications in patients with dengue illness varies greatly from one series to another<sup>7</sup>. Different types of cardiac involvement are reported. One end of the spectrum there is mild self-limiting cardiac complication. On the other end, there is cardiogenic shock. Different types of arrhythmias reported are relative bradycardia, transient atrioventricular block and or ventricular arrhythmia<sup>1</sup>. The pathogenic mechanism of cardiac dysfunction is not well established<sup>10</sup>. Though altered autonomic tone and prolonged hypotension may play a significant role. Post mortem autopsies conducted revealed distinct histological changes in the myocardium showing interstitial oedema with inflammatory cell infiltration and necrosis of myocardial fibres<sup>10</sup>. Our case was unique which showed bradycardia, sinus rhythm with exaggerated sinus arrhythmia,

ST-T changes with T inversion in V1-V5 & aVL (Fig1). Bradycardia was probably due to sinus node dysfunction and ST-T changes were due to pericarditis.

To conclude, pathogenic mechanism of cardiac dysfunction in dengue infection is not well understood. Day by day increasing number of cardiac complication are being recognized. Judicious treatment of this complex situation may increase the outcome. Mechanism of cardiac involvement is an area of research of course.

Our case is probably the second case of sinus node dysfunction associated with dengue fever reported so far.

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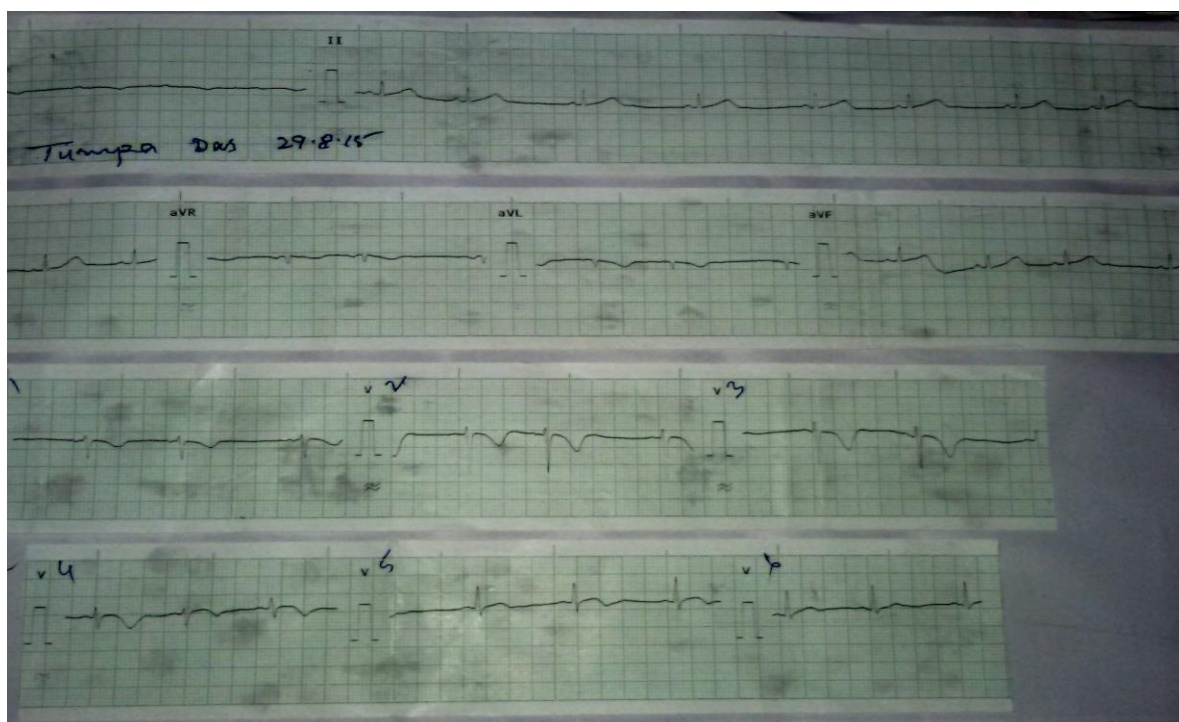


Figure 1: ECG on day 10 of illness



Fig 2 : ECG on 14 day after discharge