Chest Pain in a Patient with Dengue Fever Resembling Acute Myocardial Infarction: A Case Report

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Abstract

Dengue is an arthropod-borne viral disease. Dengue fever may present with dengue hemorrhagic fever/dengue shock syndrome. Now a days some atypical and rare manifestations are noticed involving liver, central nervous system and heart. Here we reported a case of dengue fever in 25 years young man having high level of cardiac biomarkers and ECG changes mimicking myocardial infarction initially but later on further evaluation of the case confirmed as acute myocarditis due to dengue fever.

Key-words: Acute myocarditis, acute myocardial infarction, dengue fever.

Introduction

Dengue fever is a mosquito borne viral disease transmitted by *Aedes* mosquito particularly *Aedes aegypti*[1]. There are 4 distinct serotypes (DEN1, DEN2, DEN3, and DEN4)[2] causing dengue fever. The clinical manifestations of dengue fever are- fever, headache, bodyache, retro-orbital pain, rash, joint pain. A more severe clinical form of dengue fever is known as dengue hemorrhagic fever or dengue shock syndrome (DHF/DSS) which is characterized by increased vascular permeability, thrombocytopenia (platelets <100,000), bleeding tendency, and sometimes circulatory shock[2–5]. Some cardiac manifestations in dengue hemorrhagic fever such as atrioventricular blocks, sinus node dysfunction, and ectopic ventricular beats are noticed[6]. But myocarditis is a rare complication and it rarely mimics acute myocardial infarction (MI). Here we are discussing a patient with severe chest pain with ECG changes mimicking acute myocardial infarction with dengue fever which is finally confirmed as a case of acute dengue myocarditis.

Case presentation

A 25 year-young man, Mr. Mosarrof was admitted in the Kurmitola General Hospital at male medicine ward on 20/10/2019 with the complaints of fever for 3 days associated with headache, malaise, joint pain, vomiting and loose motion. On admission day, his temperature was 102ºF, pulse-86/min, Blood Pressure-100/60mmHg, respiratory rate-24/min, SPO_2 97% at room temperature and ECG showed no change (Figure-1). Other systemic examinations revealed normal. Due to history of fever, we sent blood for dengue NS1 antigen and complete blood count (CBC). Dengue NS1 Antigen was +ve and platelet count was 137×10^9/L. On 2nd day patient went to circulatory shock with pulse-102/min and BP-80/60mmHg, dopamine infusion was started along with other supportive treatment. On 3rdday patient developed sudden severe chest pain with shortness of breath, SPO_2 fell to 86%, so he was shifted to ICU. In ICU, ECG showed ST elevation with tall T from V1 to V6, (Figure-2) serum Troponin-I was raised to 94ng/ml, clinically bilateral basal crepitations and 3rd heart sound was present. Chest X-ray showed cardiomegaly and congestion (Figure-3), Echocardiography showed LV septal and apical wall hypokinesia with ejection fraction 46%. Assessing all these clinical and lab parameters, we suspected the case as acute Myocardial infarction with dengue fever but as platelet count fell to 14×109 /L, so no fibrinolysis was done and loading dose of antiplatelet drugs or anticoagulant was not given. We just observed the patient with dopamine infusion, antipyretics, fresh blood transfusion, antibiotics as WBC count raised (15-24×109/L) along with ventilatory support. Gradually his hepatic and renal function impaired, but there were no features of mucocutaneous bleeding. As serum albumin reduced to 1.9g/dL, infusion of 20% human albumin was given, ECG changed to ST depression and S. Troponin- I further raised to 180ng/ml(Table-I). From day 5th, his ECG improving-ST retuned to base line. Serum Troponin-I gradually reduced up to 0.86ng/ml on 9th day, platelet count raised to 127×109 /L. Clinically patient improving. On day 12th - his pulse-76/min, BP-110/70mmHg, Respiratory rate-16/min with SPO_2-92% at room temperature (Table-II), so he was shifted to ward. ECG was done showing no abnormalities, Echocardiography showed no regional wall motion abnormalities with EF-64%, but chest X ray still showed a small amount of pleural effusion bilaterally. Finally, we diagnosed the case as dengue fever with acute myocarditis with features of heart failure. Patient was discharged after clinical improvement of lung congestion for heart failure.

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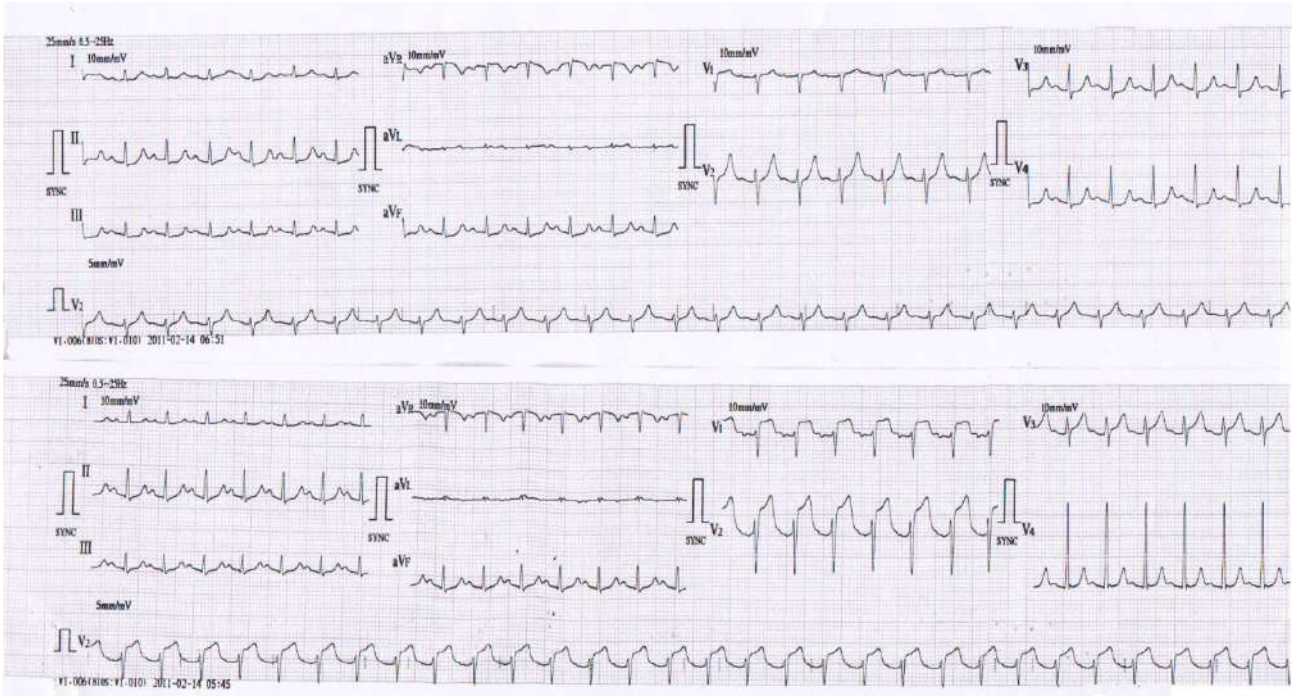

Figure-1: ECG showing no changes on day of admission (above).

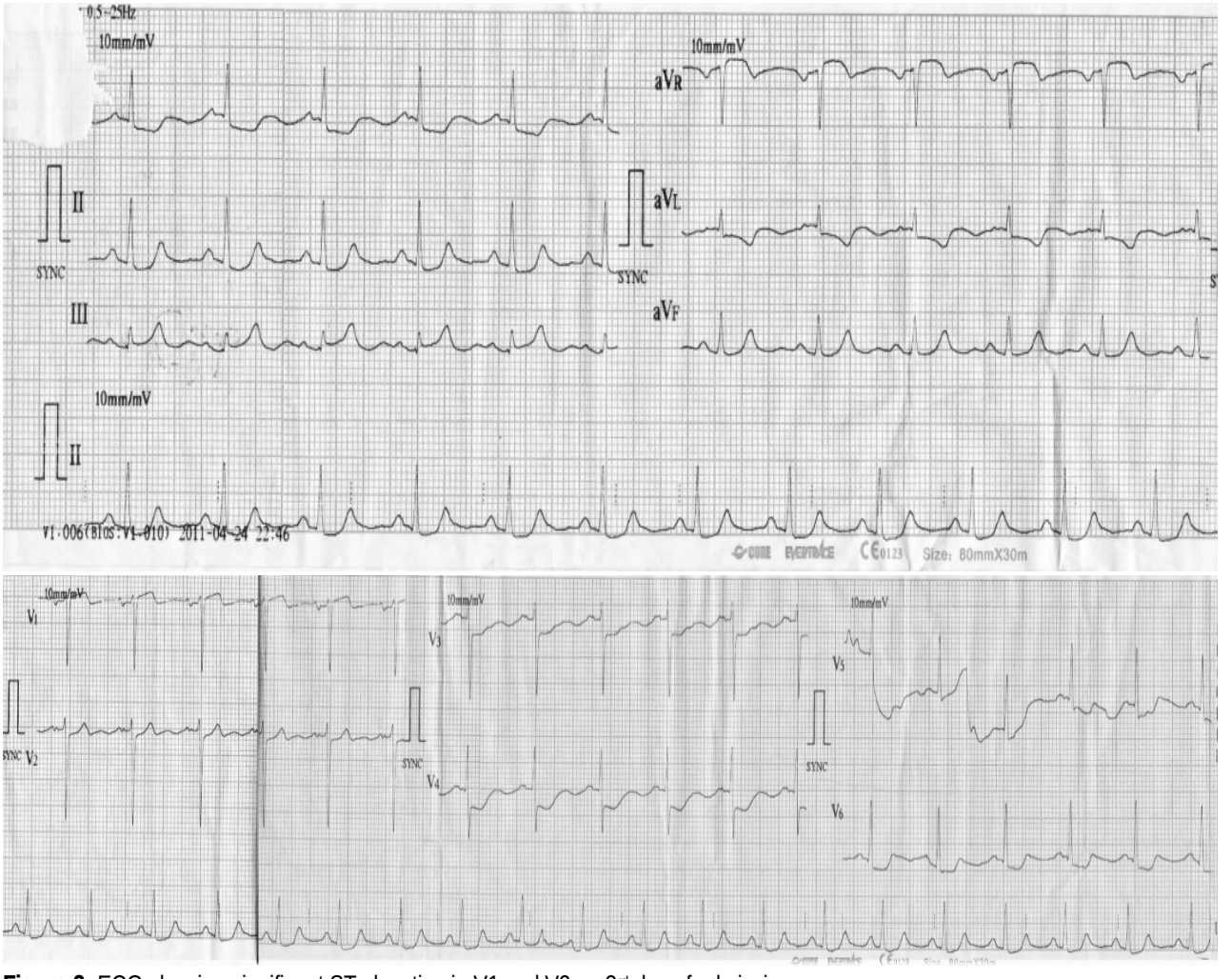

Figure-2: ECG showing significant ST elevation in V1 and V2 on 3rd day of admission.

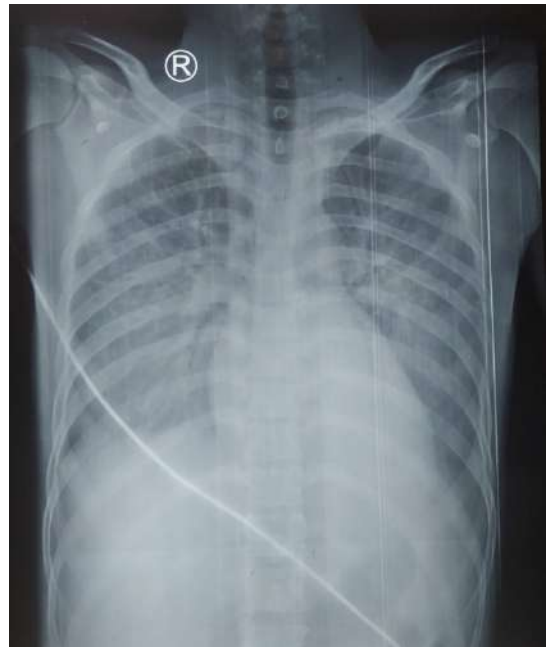

Figure-3: Cardiomegaly with Bilateral plural effusion

Table-I: Biochemical parameters

Test	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12
NS1 Antigen	+ve											
HGB (g/dL)		11.6	13.0		11.8	11.6	11.0	10.8	10.7	10.5		
HCT		37 %	38 %		33 %	46%	31 %	31 %	32 %	30 %		
WBC (x10^9/L)		3	15		24	18	16	16.3	18.0	15		
PLT (x10^9/L)	137	96	14		18	26	58	76	103	127		
Troponin I ng/ml			90.4	>180	65.9				0.86			
ALT (IU/L)		-	-	1070	890	667	461		361			
AST (IU/L)		-	-	2147	-	-	461		256			
S. Bilirubin (mg/dL)				2.7			1.2					
S. Albumin (g/dL)	-	-	-	-	1.9	2.0	2.2	2.6		2.8		
Creatinine (g/dL)				2.1	1.4	1.2	1.0		0.9			
RBS (mmol/L)			6.3	6.7	6.4							
Sodium (mmol/L)				142	147	140	145	142	141			
Potassium (mmol/L)				4.1	4.3	4.9	4.4	4.6	4.2			
Chloride(mmol/L)				98	101	96	99	100	95			

Table-II: Clinical and Biochemical parameters on 12th day

Patient condition:	**Conscious, oriented. No chest pain or dyspnoea. Appetite is normal.**
Pulse	76 bpm
Temperature	98.5° F
BP	110/70 mmHg
Respiratory Rate	16 /min
SpO2	92% on Room Air
CXR P/A view	Bilateral pleural effusion
S. Troponin-I	0.03ng/ml

Discussion

Although cardiac manifestations in dengue fever are very rare but nowadays many cases are reported worldwide. Different criteria have been used for diagnosis of cardiac involvement with dengue infection i.e. ECG abnormalities, echocardiographic abnormalities, and biomarker elevation[7]. A very rare complication of dengue fever is acute myocarditis[8]. By echocardiography, although global LV hypokinesia is usually seen in dengue myocarditis but ST-elevation and tall T-wave changes in the electrocardiogram (ECG) along with regional wall motion abnormality, mimicking acute MI is rare[9,10]. Here, in this case with dengue fever we found ECG changes (ST segment elevation, tall T wave in V1 to V4), markedly elevated biomarker (S. Troponin-I) and echocardiographic changes resembling acute myocardial infarction. Throughout the world, very few such cases are found[9,10]. The first one was reported by Lee et al[9], a 25-year-old male, who presented with acute pulmonary edema and cardiogenic shock having ECG changes suggestive of anterior wall MI, and died, receiving initial fibrinolysis therapy. But in this case, we avoided aggressive treatment of acute myocardial infarction considering risk versus benefit for this young man of 25 years. A Sri Lankan study found that in 25% cases of dengue fever at least one of the cardiac biomarkers was raised (N-terminal pro-brain natriuretic peptide, myoglobin, troponin-T)[11]. In this case, serum Troponin-I raised markedly up to 180ng/ml making us puzzled whether this is acute MI or not. Ultimately this case diagnosed as acute myocarditis as ECG, Echocardiography and serum Troponin-I returned to near normal within weeks. Although acute myocarditis need other modalities to confirm like MRI or cardiac biopsy but due to unavailability in this center we could not do these. We also found in this case that by judicial use of fluid, inotropes and avoiding aggressive thrombolytic/ fibrinolytic treatment foreseeing initial ECG and biomarker changes, adengue infectionwith acute myocarditis resembling acute myocardial infarction can help patient to survive.

Conclusion

In summary it can be said that a dengue infection with acute myocarditis may present with ECG changes and high serum Troponin-I level resembling acute myocardial infarction. Judicial management of dengue infection should be followed. Aggressive management of acute myocardial infarction may lead to lose of life.

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