

**A CASE OF SECOND DEGREE MOBITZ TYPE 1 HEART BLOCK IN A CASE OF DENGUE FEVER IN A KNOWN PATIENT OF PAROXYSMAL NOCTURNAL HEMOGLOBINURIA: A RARE ASSOCIATION**Chatterjee R.<sup>1</sup>, Dr. Sarkar K.<sup>\*2</sup>, Modak D. C.<sup>3</sup> and Guha S. K.<sup>4</sup><sup>1</sup>Rupak Chatterjee, M.B.B.S, Post Graduate Trainee, MD Tropical Medicine, School of Tropical Medicine, Kolkata<sup>2</sup>Kumkum Sarkar, M. B. B. S., MD, Assistant Professor, Dept. of Tropical Medicine, School of Tropical Medicine, Kolkata.<sup>3</sup>Dr. D C Modak, M. B. B. S., MD, Assistant Professor, Dept. of Tropical Medicine, School of Tropical Medicine, Kolkata.<sup>4</sup>Prof. S. K. Guha, M. B. B. S., MD, Professor, Dept. of Tropical Medicine, School of Tropical Medicine, Kolkata.**\*Corresponding Author: Dr. Sarkar K.**

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**ABSTRACT**

Dengue virus infection affects the heart structurally as well as functionally. Clinical manifestations of cardiac complications are various. Myocarditis is the most common cardiac complication reported. Here we report a case of dengue myocarditis related Mobitz Type 1 Atrio-Ventricular (AV) block in a 24 years old male who was a known case of Paroxysmal Nocturnal Hemoglobinuria but without any history of structural or functional heart diseases.

**KEYWORDS:** Dengue, Mobitz type 1 AV block, myocarditis.**INTRODUCTION**

Dengue virus is an arbovirus and an important cause of morbidity and mortality in tropical countries. Dengue is a febrile illness transmitted by Aedes mosquito. There are five antigenically distinct dengue virus serotypes (DENV1-5). Most of the dengue virus infections are symptomatic and can present with a wide range of clinical manifestations, from mild febrile illness to life threatening dengue shock syndrome.<sup>[1]</sup> Variable cardiac complications reported include myocarditis, arrhythmias, conduction disorders and also cardiogenic shock. The commonest cardiac manifestation of dengue is myocarditis. It is more prevalent in serotype 3.<sup>[2]</sup> Abnormalities of cardiac rhythm are the manifestation of myocarditis and have been reported in association with dengue cardiac involvement.<sup>[3]</sup> Paroxysmal Nocturnal Hemoglobinuria (PNH) is an acquired, life threatening hematopoietic stem cell disorder characterised by haemolytic anemia, thrombosis and impaired bone marrow function. Complicated dengue fever- dengue Hemorrhagic fever itself is also a cause of bone marrow suppression and hemolysis. So, a case of transient heart block in a known case of PNH complicated by dengue fever deserves mention.

**CASE**

A 24 years male was admitted with high grade, intermittent fever for 5 days along with severe

generalised bodyache, joint pain, retro-orbital pain, nausea and mild pain abdomen. He had no history of cough, chest pain, diarrhoea, burning sensation during micturition. He gave history of red coloured urine 4 days back. He was a known case of PNH (paroxysmal nocturnal hemoglobinuria). He didnot have any history of cardiac disorder and no cardiovascular disease in his family. He had past history of blood transfusions owing to his anemia due to PNH. His higher function and general examination were normal except pallor. On admission his pulse was 80/min, regular with slight low volume. His systemic examination was also normal.

Since admission, patient was deteriorating clinically. His complete blood count showed Hemoglobin 7.8g%; total RBC- 2.68 million/mm<sup>3</sup>; total WBC-1,100/mm<sup>3</sup>; Hematocrit- 23.2 %; MCV- 86.6fL; MCH- 29.1 pg; MCHC- 33.6 g/dl; and platelet 10,000/mm<sup>3</sup>. Liver function test revealed raised transaminases (SGOT-239 and SGPT- 92u/l) and kidney function test were normal. Serum LDH was 4397 U/L; CRP- 7.1 mg/dl. Serum electrolytes were normal. ECG was done and it was otherwise normal. Urine report showed plenty RBCs, and 2to3 pus cells per high power field. His other viral serology markers were nonreactive but Dengue IgM was reactive. His USG whole abdomen showed evidence of mild right sided pleural effusion and mild ascites.

Combining his clinical and investigations, he was diagnosed as a case of Dengue Hemorrhagic Fever. He was being managed conservatively throughout his course with adequate intravenous fluids as per guidelines and he also had to be transfused packed RBC and platelets. With conservative management, medications and he was improving.

On the 8<sup>th</sup> day after the illness, his pulse became irregular without any symptoms or hemodynamic instability but rest cardiovascular examination was normal. A 12 lead ECG was done which revealed Mobitz Type 1 second

degree atrio-ventricular (AV) block and echocardiography was normal. His repeat CBC showed Hemoglobin-10g%; WBC – 4,400/mm<sup>3</sup>; platelet-80,000/mm<sup>3</sup>. The patient was asymptomatic with stable vital signs; so he was only monitored without any additional intervention for the heart block. The abnormal cardiac rhythm persisted until 12<sup>th</sup> day of illness. Then patient was discharged under hemodynamically stable condition. His follow up ECG was normal after 2 weeks and he had no cardiovascular abnormality detected on physical examination.

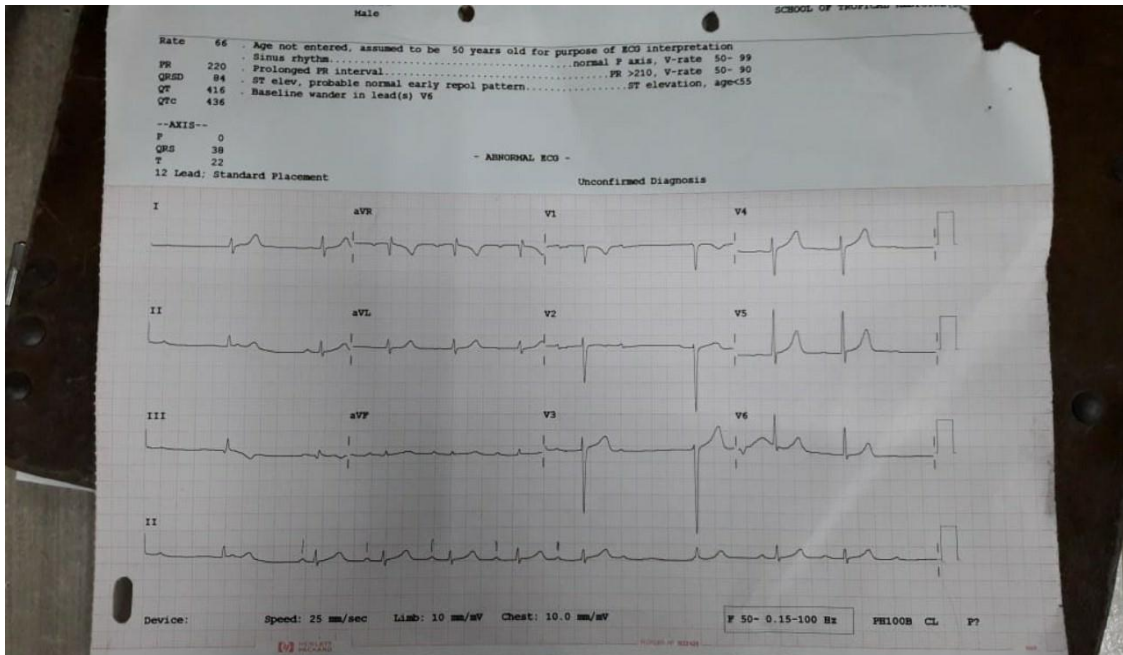


Figure 1: ECG following development of irregular pulse showing second degree Mobitz Type 1 heart block.

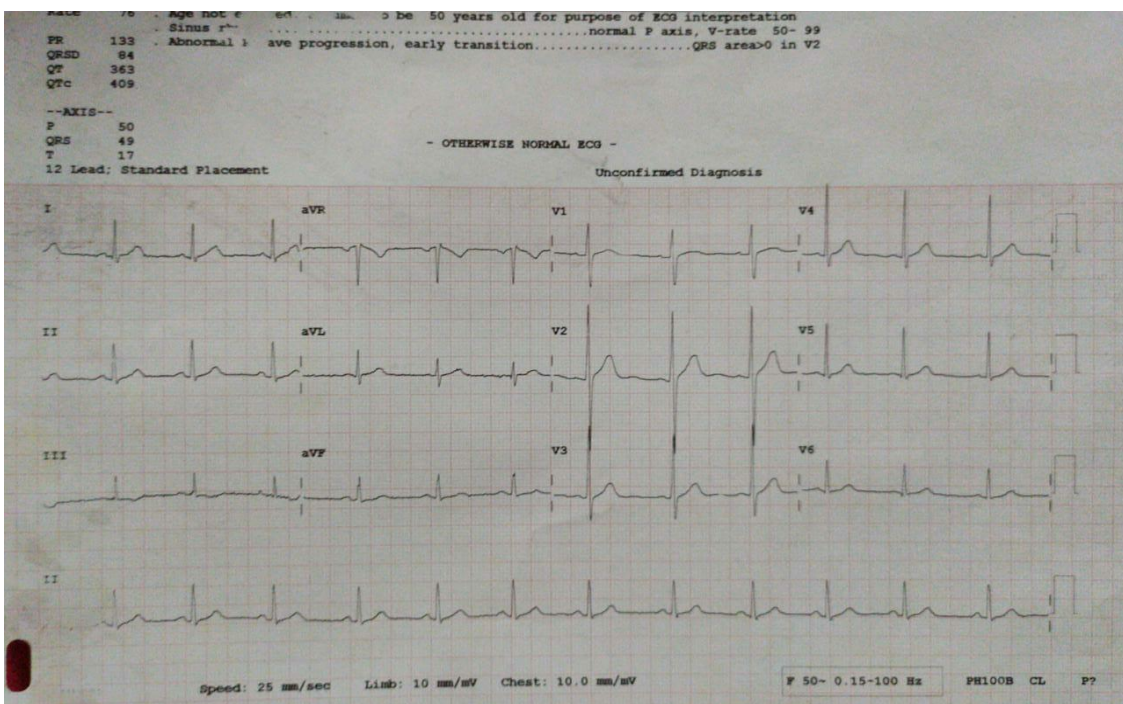


Figure 2: ECG at discharge.

## DISCUSSION

The commonest cardiac manifestation of dengue fever is myocarditis. Various mechanisms are involved predisposing to arrhythmias. Firstly, inflammation of myocardium can lead to membrane potential alterations. Second one is that alterations of ventricular dynamics including increased myocardial oxygen demand, and lastly, fibrosis and atrophy of myocytes can favour ectopics.<sup>[4]</sup> The cardiovascular symptoms can occur in the febrile phase of the disease or during the resolution phase.<sup>[5]</sup> Our patient's on admission ECG was normal. However, he subsequently developed 2<sup>nd</sup> degree type 1 Mobitz heart block during his dengue fever but without any clinical symptoms. He was managed conservatively with continuous clinical monitoring and then discharged. His follow up ECG showed no abnormality. Mobitz Type 1 second degree AV block during recovery from dengue hemorrhagic fever may be a transient functional impairment of the AV node. So, physicians should have high index of suspicion for dengue viral infection as a cause of rhythm abnormality. As dengue fever is very much common in tropical countries like India, all physicians should be aware of cardiovascular complications of dengue fever including arrhythmias because unless promptly diagnosed and treated, some of these can be potentially life-threatening, even fatal. Complicated dengue fever itself can lead to bone marrow suppression: aplastic anemia and hemolysis.<sup>[6]</sup> So, a case of transient heart block in a known case of PNH complicated by dengue fever deserves mention.

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