International Journal of Research in Medical Sciences
Salini NR et al. Int J Res Med Sci. 2025 Jan;13(1):441-444
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20244153

Case Report

Ventricular bigemini in a patient with serologically positive dengue hemorrhagic fever

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Received: 03 November 2024
Revised: 09 December 2024
Accepted: 13 December 2024

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ABSTRACT

Dengue epidemic is a major health problem in India. In expanded dengue syndrome major organs involvement and atypical manifestations have been increasingly reported. Cardiac involvement in dengue ranges from benign arrhythmias to fatal fulminant myocarditis. ECG changes usually secondary to myocarditis. Most common ECG abnormality Is bradycardia. Other ECG findings are ST segment depressions and elevation T wave abnormalities, sinus pauses ventricular ectopics, ventricular trigeminy, atrial fibrillation, heart blocks such as first-degree block and Mobitz type I second-degree AV block and bundle branch blocks. Most of the cardiac abnormalities are transient, but sometimes it can aggravate pre-existing conditions and even be fatal. So, assessing cardiac involvement in dengue patients is important for appropriate management. We are reporting a 55-year-old patient with dengue haemorrhagic fever presenting with ventricular bigeminy symptoms and markers indicative of cardiac compromise which improved after 1 week.

Keywords: Arrhythmias, Dengue infection, Ventricular bigeminy

INTRODUCTION

Dengue, the most common arthropod- borne disease is transmitted by mosquitos of the Aedes family. Cardiac involvement in dengue is not uncommon, can range from asymptomatic sinus bradycardia to severe myocarditis.[1] Major clinical manifestations of dengue myocarditis are left ventricular dysfunction and arrhythmias.[2]Different cardiac rhythm disorders, like ventricular ectopics, atrial fibrillation atrioventricular blocks reported in dengue fever.[1] Most of them are asymptomatic and have been self-limiting without requiring any intervention. In dengue high level viremia and overactivity of immune system leading to myocardial dysfunction.[3]

CASE REPORT

Previously healthy 55-year-old man was admitted with fever, giddiness, backache for 5 days. The symptoms started gradually and were more on standing, with no associated syncope, palpitations. He was addiction free and never suffered from chronic illness The patient had a temperature of 39°C. His blood pressure was 100/60 mmHg and pulse was 46 per minute. He had no other significant findings on examination.

A 12-lead electrocardiogram showed ventricular bigeminy with bradycardia (Figure 1 and 2) there were no st –t changes., but Troponin T was found to be positive. His ECG had same findings for following 2 days (Figure 3).

His chest X-ray had no abnormality. His lab values shown in Table 1. The echo done showed a hypokinetic apex with ejection fraction 52% and evidence of dengue myocarditis. On the fifth day patient pulse became regular with 60/rate, BP 120/80 mmHg and ECG showed sinus brady cardia. Repeat echo done on the 9th day was normal. Patient was treated with iv fluids, platelet transfusion.

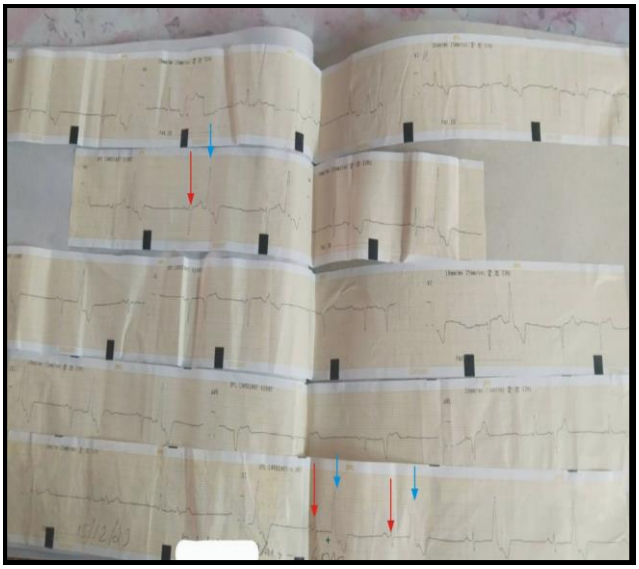

Figure 1: Electrocardiogram showing ventricular premature complexes (blue arrows) with normal sinus beats (red arrows) in between forming alternative ventricular bigeminy (green star marked complexes).

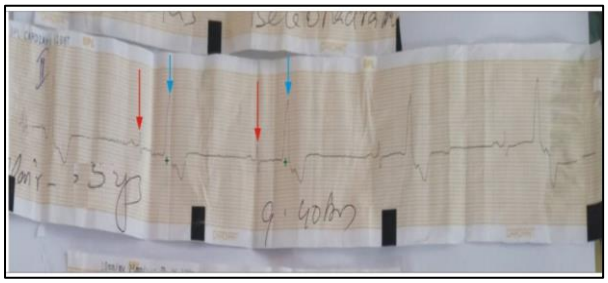

Figure 2: Ventricular bigeminy showing ventricular premature complexes (blue arrows) with normal sinus beats (red arrows) in between forming alternative ventricular bigeminy (green star marked complexes).

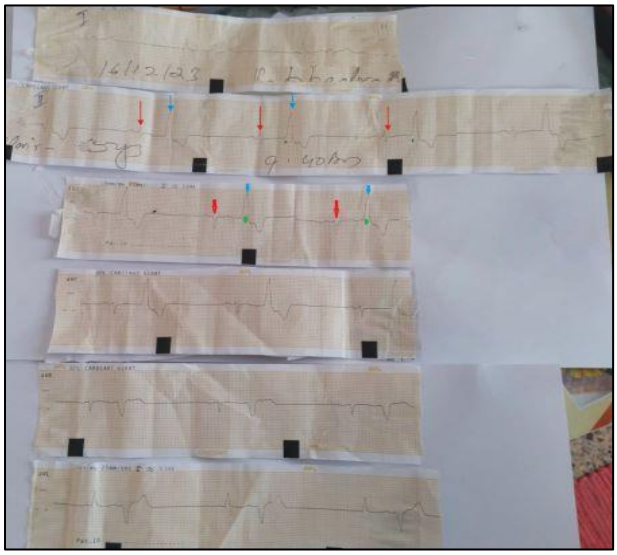

Figure 3: ECG 2nd day shown same findings.

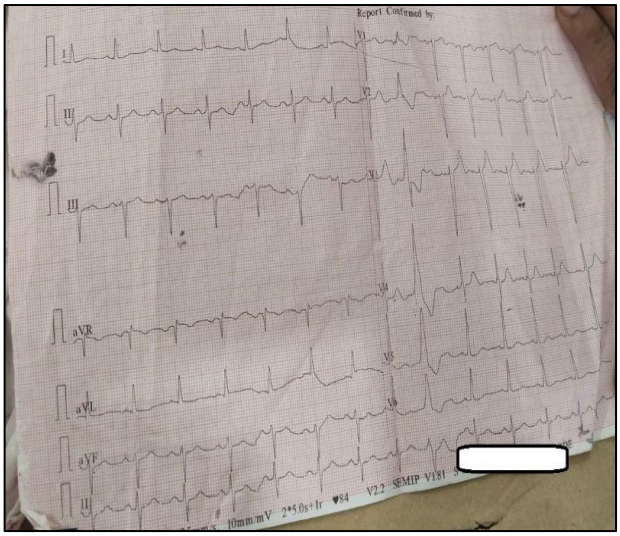

Figure 4: ECG taken after 1 month.

The ongoing conservative management was continued till discharge, following which the patient became completely asymptomatic and was discharged.

The platelet count became normal and ECG was normal at discharge on day 9. One month later patient underwent a repeat ECG (Figure 4) and ECHO, both were normal. The ECHO showed no hypokinetic segments with EF>60%.

Table 1: Lab values of the patient.

	On admission	Day of discharge
Hb	12.4	12.6
Platelet count	9000	1.3 lakh
Total count	3200	4600
PCV	48	28
ESR/CRP	64/8	18
RBS	123	112
Total bilirubin/direct bilirubin	2/0.8	1.8/1
SGOT/SGPT	142/98	43/38
B UREA/S Creatinine	28/0.8	26/0.7
Na/k	136/3.9	134/3.9
IgM dengue	Positive	
Fever profile **IGM lepto** **IGM scrub** **peripheral smear malarial parasite** **widal tests**	Negative	
TSH	2.64	
S calcium	9.3	9.2
S magnesium	1.88	1.98
TROPT	Positive	
CK MB	20	
S phosphorous	3.8	

Hb-hemoglobin,TC-total count.ESR-erythrocyte sedimenation rate SGOT: Serum glutamic oxaloacetic transaminase, SGPT: Serum glutamic pyruvic transaminase.CK MB-creatine kinase-Myoglobin binding.TSH-thyroid stimulating hormone.

Normal laboratory values: Hb 13-17 g/dl, TC: 4000-10,000 cells/mm3, Platelets: 1.5-4.0 l cells/mm^3, ESR-20 mm/hr, CRP-0.3-1mg/l, RBS-<140 mg/dl TB: 0.1-1.2 mg/dl, SGOT: 5-40 U/l, SGPT: 5-40 U/l, Serum creatinine: 0.8-1.3 mg/dl, Blood urea: 5-20 mg/dl. Total protein-6-8.3 gm/dl. Albumin-3.5-5.5 gm/dl.s calcium-8.5 -10.5 mg/dl.s phosphorus-3.4-4.5 mg/dl.INR-0.8-1.1 , TSH-0.4-4mIU/l, CKMB-0-24IU/l.

Table 2: Recent studies dengue cardiac manifestations with ventricularectopics (prevalence).

Authors	Total number of patients with dengue	Ventricular ectopics (%)
Sheetal et al[5]	100	1
Poornima et al[9]	341	1.75
Caberera-Rego et al[10]	427	4
Rajapakshe et al[11]		1
Yadav, et al[12]	100	15

DISCUSSION

The diagnosis of dengue fever is usually done by presence of fever, thrombocytopenia, bleeding manifestations. In the presence of chest pain, palpitations, pulse abnormalities, ECG changes we should suspect cardiac involvement. Ventricular premature contractions occur when heart beat initiated by the purkinje fibres.[4] In ventricular bigeminy a ventricular premature beat alternates with a single sinus beat. Common etiologies of ventricular ectopics includes stimulant drugs, ischemic heart disease, hyperthyroidism, hypokalemia and hypomagnesiemia.[4] This patient had no identifiable causes like that may leading to cause bigeminy. He was not on any medication that precipitate ventricular bigeminy. Patient had no addictions.

Other infective etiology like malaria, scrub, leptospirosis, enteric fever was also ruled out by appropriate tests. Patient had history of fever, thrombocytopenia, haemoconcentration and positive dengue serology these are in favor of dengue myocarditis. Our patient had ventricular bigemini recovered after 1 week shows that dengue can causes reversible rhythm abnormalities. Dengue infection affects cardiac conduction system leading to abnormal ECG changes.[5]

More number of cardiac manifestations are reported in dengue hemorrhagic feverand dengue shock syndrome. Arrythmias caused by cytokine stroms in dengue infection which affecting myocytes and interstitum.[6] In a study by Sheetal et al, common ECG abnormality sinus brady cardia (32%) followed by 3% unexplained tachycardia,1% ventricular bigeminy, trigeminy.[5]

In literature a few cases were reported about ventricular bigeminy in dengue. First case about transient ventricular arrhythmias in dengue reported by Chuah in 1987.[7] Gupta SJ et al, Esrani et al, reported a case of alternative pattern dengue ventricular bigeminy and trigemini.[2] Cases of severe dengue if not treated can cause high mortality.[8] So adequate intra vascular volume status should be maintained through administration of intravenous fluids. If the patient not responding to intra venous fluid administration, we should aware of cardiac dysfunction.

CONCLUSION

Cardiac involvement in dengue is not uncommon. Ventricular bigeminy is a possibility among many other known cardiac arrhythmias in dengue. Physicians should be aware of various cardiac manifestations in dengue. Conduction abnormalities caused by dengue are transient and self-limited. Early recognition of cardiac dysfunction, proper treatment to maintain hemodynamic stability and avoid circulatory overload are important to prevent mortality.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Salini NR, Srikantan S. Ventricular bigemini in a patient with serologically positive dengue hemorrhagic fever. Int J Res Med Sci 2025;13:441-4.