

# Expanded Dengue Syndrome : Myocarditis or ST Elevation Myocardial Infarction : a Case Report



**Egi Herliansah**

Hermina Grand Wisata Hospital

Email: Egiherliansah@gmail.com

## KEY WORDS

Dengue Fever,  
Myocardial  
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## ABSTRACT

Dengue fever is an endemic disease in tropical countries, Indonesia is a tropical country with a high number of dengue infections, dengue fever is an arboviral infection with clinical symptoms of fever to multisystemic complications, the condition is called dengue expansion syndrome, is a clinical manipulation of dengue virus infection involving organs such as the lungs, liver, brain, and heart, has a high mortality rate with systemic complications, especially when it hits the heart. In this case, a 45-year-old female patient with complaints of fever, weakness, nausea and vomiting, during the treatment of the patient complaining of chest pain, an electrocardiography examination was carried out and an elevation ST segment was found, expanded dengue syndrome with cardiac complications can cause heart failure, hypotension, arrhythmias, myocarditis, cardiomyopathy and even myocardial infarction, in this case describes the complications that occur in expended dengue syndrome in the form of ST elevation that occurs during the examination ECG on the patient. In this case, it is difficult to distinguish the complications that occur as myocarditis or ST elevation myocardial infarction.

## 1. INTRODUCTION

Dengue fever is an endemic disease in tropical countries, Indonesia is a tropical country with a high number of dengue infections, the prevalence increases in the rainy season where the spread of *Aedes aegypti* increases which is a vector of the dengue virus, dengue fever is an arboviral infection with clinical symptoms of fever to multisystemic complications, the condition is called expanded dengue syndrome, is a clinical manipulation of dengue virus infection which involving organs such as the lungs, liver, brain, and heart. Having a high mortality rate with systemic complications, especially regarding the heart, expended dengue syndrome with cardiac complications can cause heart failure, arrhythmias, myocarditis,

cardiomyopathy and even myocardial infarction. In this case report, we present a case of a 45-year-old female patient with dengue dilation syndrome complications ST myocardial elevation infarction with a differential diagnosis of myocarditis at Hermina Grand Wisatas Hospital.

## 2. METHOD

This study employs a case study design to explore cardiovascular complications associated with expanded dengue syndrome, particularly involving myocarditis or myocardial infarction with ST elevation.

### Location and Subjects of Research

The research was conducted at Hermina Grand



Wisata Hospital. The subject of the study is a 45-year-old woman diagnosed with expanded dengue syndrome and experiencing cardiovascular complications.

### 3. RESULT AND DISCUSSION

A 45-year-old woman came with a complaint of fever since 5 days ago, fever was felt up and down accompanied by weakness, headache, nausea and vomiting, heartburn, spontaneous bleeding denied, on physical examination, compos mentis blood pressure 130/80 mmHg heart rate 102x/min temperature 37.8 respiratory rate 20x/min SpO<sub>2</sub> 98% room air, laboratory test result Hemoglobin 13.0 g/dL Hematocrit 40.1% Leukocytes 1.66 10<sup>3</sup>/uL Platelets 87,000/uL diff count Basophil 0.6 Eosinophil 0.0 Neutrophil 48.2 Lymphocytes 31.9 Monocytes 19.3 ECG examination at the time of emergency room: sinus rhythm. With this, the patient is diagnosed with dengue hemorrhagic fever.



Figure 1.

The patient was given Ringer lactate 2000cc/24 hours, omeprazole 2x40mg IV, paracetamol 3x1 gram IV, during the treatment the patient experienced chest pain felt continuously such as pressing extended to the left chest, radiating to the left hand and back, ECG :



Figure 2.

elevation was found on leads I, AvL, V<sub>3</sub>-V<sub>6</sub>, laboratory test results Hemoglobin 13.5 g/dL Hematocrit 46.2% Leukocytes 8.05 10<sup>3</sup>/uL Platelets 12,000/uL troponin T 346, LDL 27mg/dL, Triglycerides 347 mg/dL, Blood sugar at 102 mg/dL, urea 33 mg/dL creatinine 0.73 mg/dL, HbA<sub>1C</sub> 6.1, SGOT 226 U/L SGPT 294 U/L, The patient was given aspirin 160mg, clopidogrel 300 mg, etoricoxib 2x90mg, and SNMC 1x2 vial, clinical chest pain persistently the patient was transferred to HCU, echocardiographic examination was carried out with the following results:

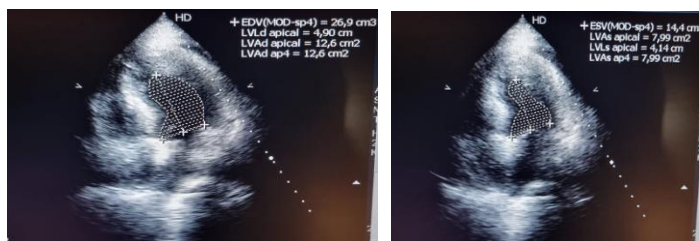


Figure 3.

Decreased systolic function of LV, LVEF 47%-50%, Hypokinetic anteroseptal, diastolic dysfunction grade I. Patients are planned to be referred to hospitals with coronary angiography facilities, while waiting for referrals the patient complains of chest pain is felt to be getting worse, restless, and hypotension, ECG:

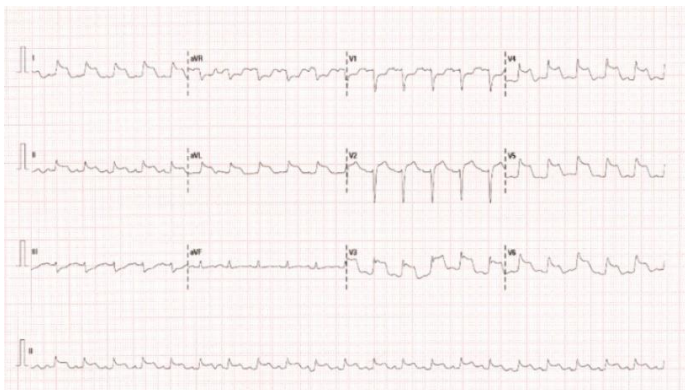


Figure 4.

ST elevation in I, II, AvL, V3-V6, the patient complained of worsening chest pain, diaphoresis, shortness of breath, and hypotension, the patient experienced cardiogenic shock, tightness worsened accompanied by desaturation, intubation was carried out immediately, and mechanical ventilator support was given, the condition worsened, the patient experienced bradycardia, cardiopulmonary resuscitation was carried out without success.

#### 4. DISCUSSION

Dengue fever has a systemic complication called expanded dengue syndrome, a condition of systemic infection expansion that causes heart involvement, this results in heart disorders such as heart failure, hypotension, arrhythmias, myocarditis, cardiomyopathy. However, conditions that cause the occurrence of myocardial elevation ST infarction are rare. There is not much literature that shows that expanded dengue syndrome results in ST elevation myocardial infarction. Kashyap et al. presented a case report of dengue fever with complications of ST elevation myocardial infarction, report PCI was carried out 80-90% stenosis accompanied by a clot in the proximal left anterior descending artery.<sup>1</sup> Wijayabandara et al, reported two cases of dengue with complications ST elevation myocardial

infarction, both cases were treated conservatively, but in this study both patients had risk factors type 2 diabetes mellitus and hypertension.<sup>2</sup> Mechanisms that Rupture of preexisting unstable plaques in the background of widespread inflammation in severe dengue, which favors a procoagulant environment, is likely to increase the risk of thrombotic complications such as myocardial infarction.<sup>1</sup>

Various literatures explain that a common complication due to expanded dengue syndrome is myocarditis. Singh et al. presented a case of dengue myocarditis masquerading as ST elevation myocardial infarction, describing dengue patients with ST elevation ECG and increased cardiac enzymes, but coronary angiography examination did not find stenosis.<sup>4</sup> Sud et al. presented 3 cases of dengue fever with dengue myocarditis, diagnosis of myocarditis established on a clinical base, thorax x-ray examination with a picture of pulmonary edema and increase cardiac biomarkers.<sup>6</sup> A study of 1,782 patients diagnosed with dengue hemorrhagic fever in China found that 201 of the patients had myocarditis.<sup>5</sup> In dengue myocarditis, the inflammatory process can affect myocytes, vascular structures, conduction systems, autonomic nerves, interstitium, and even pericardium. Myocardial damage is likely to be a combined effect of direct and immune-mediated viral infections.<sup>5</sup> Both viral genetic material and viral proteins can directly promote myocyte apoptosis, while immunological damage is caused by leukocyte responses and cytokine inflammatory cascades. In addition, vascular endothelial injuries caused by viruses or additional immune reactions also indirectly contribute to myocardial injury.

In this case, dengue fever with expanded dengue syndrome were found typical clinical symptoms of ST elevation myocardial infarction, namely

typical chest pain with ECG found ST elevation, increase troponin T, echocardiography obtained decreased LV function. Kashyap et al explained further examinations to get a diagnosis with coronary angiography and MRI.<sup>1</sup> In this condition, it will be difficult to perform a coronary angiography with severe thrombocytopenia. To support the definitive diagnosis between ST elevation myocardial infarction and myocarditis by performing an endocardial biopsy, it is the gold standard for diagnosis of acute myocarditis

## 5. CONCLUSION

Dengue expansion syndrome has a high risk of mortality with cardiac complications, the condition worsens when falling in cardiogenic shock, further examination is needed to diagnose and compare the diagnosis between STEMI and myocarditis so that management can be carried out appropriately and quickly.

## 6. REFERENCES

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