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Expanded Dengue Syndrome with Status Epilepticus in a Nine Months Old Boy: A Case Report

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ABSTRACT

Dengue fever is a major global public health challenge in tropical and subtropical countries. The clinical spectrum of dengue infection ranges from mild illness to the life-threatening severe forms of the disease with plasma leakage, severe bleeding, or multi-organ failure, which may be fatal. The term expanded dengue syndrome is used for atypical manifestations of dengue fever. This study presented a case of expanded dengue syndrome with status epilepticus in a 9-month-old boy hospitalized with the chief complaint decreased of consciousness with fever and seizures. From the physical examination, there was a decrease in consciousness with GCS 9 accompanied by fever, ascites, and gastrointestinal bleeding. On laboratory examination, hyponatremia, increased transaminase enzymes, and hypoalbuminemia with positive dengue IgM were found. The patient had specific clinical features of expanded dengue syndrome with status epilepticus the appropriate anti-convulsion, vasopressor, and fluid management was given to the patient.

In cases of dengue virus infection, it is important to prevent other potential complications such as expanded dengue syndrome with status epilepticus. Early diagnosis of expanded dengue syndrome simultaneously with adequate treatment will prevent the complications of the disease.

Keywords: Dengue; status epilepticus; infant

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Introduction

Dengue is one of the mosquito-borne viral infections as a result of single-stranded RNA virus infection which can be transmitted with the aid of using the Aedes aegypti and Aedes albopictus mosquito species.[1] Dengue fever is a major global challenge in subtropical and tropical countries. The case has been increasing 30 times globally between 1960 and 2010 due to population growth, global warming, urbanization, inefficient mosquito control, and lack of health care facilities. More than two billion people live in dengue-endemic regions, and approximately four hundred million infections arise annually, with mortality rates exceeding 5-20% in several regions.[2] As a tropical country in South East, Indonesia is 2 predominant mosquito vector species DENV, Aedes aegypti, and Ae. albopictus is endemic to nearly all regions.[3]

The presentation of dengue has various manifestations starting from asymptomatic infection, to intense bleeding, hemodynamic instability or even death. While fever, headache, malaise, bleeding manifestations, shock and hemoconcentration are regarded as manifestations of the disease, a typical conditions have additionally been reported, which might be now called expanded dengue syndrome.[4] Expanded dengue syndrome is used to describe cases that are neither dengue shock syndrome nor dengue hemorrhagic fever. The atypical symptoms of expanded dengue syndrome are multi-organ and multi-faceted, involving organs such as the liver, brain, heart, kidneys, and CNS. Neurological symptoms, which affect both the central and peripheral nervous systems, are more frequently observed and reported. Patients are characterized by encephalitis, meningitis, stroke (both hemorrhagic and ischemic), hypopotassic palsy, encephalopathy, seizures, mononeuropathy, polyneuropathy, and Guillain-Barre syndrome or Miller-Fisher syndromes. Expanded dengue syndrome carries a high rate of mortality and morbidity.[5,6] This report is to highlight the importance of early diagnosis and prompt treatment of expanded dengue syndrome with status epilepticus to prevent either risk of complications.

Case

A 9-month-old boy was referred on April 15, 2021 to Dr Wahidin Sudirohusodo Hospital Makassar due to a decrease of consciousness 2 hours before admission. There is a history of seizure 1 time with a duration of more than 30 minutes, all of the body, and after a seizure, the patient is unconsciousness. There was a fever in the last 5 days. There is dyspnea 3 hours before admission. There is vomiting 8 times and not projectile. History hospitalized at P Hospital for 1 day and received paracetamol 75 mg/8 hour/intravenous, ceftriaxone 750 mg/24 hour/intravenous, diazepam 5 mg/rectal and Ringer Acetate Fluid infusion 3 ml/kgBW/hour = 22.5 ml/hour. The patient was then discharged and referred to the emergency department at RSUP Dr Wahidin with diagnosed respiratory failure and seizure. There was

dengue haemorrhagic fever in the environment where the patient lived.

The physical findings showed a severely ill, good nourished, and unconscious (GCS 9) with the fever of 38.5^{0}C, blood pressure 80/60mmHg, pulse 144/min, respiration 54/min, Sp02: 99%, capillary refill time > 3 secs and pain scale 0. There were signs and symptoms of bleeding manifestation (gastrointestinal bleeding from nasogastric tube). From the abdomen found ascites with shifting dullness examination and hepatomegaly. A further examination of the heart, lungs, and neurologic documented normal findings.

Laboratory examination showed Hb 6.4 g/dl, WBC 6.300/mm^3, platelet 20.000, blood glucose 150 mg/dl, urea 12 mg/dl, creatinine 0.28 mg/dl, albumin 2.9 gr/dl, sodium 116 mmol/l, potassium 4.4 mmol/l, chloride 94 mmol/l, SGOT 607 U/L, SGPT 160 U/L, dengue IgM positive and IgG negative.

The definitive diagnosis was expanded dengue syndrome, post status epilepticus, and anemia et caused by gastrointestinal bleeding. The patient was admitted with a working diagnosis of expanded dengue syndrome based on decreased of consciousness. The treatment for expanded dengue syndrome was fluid resuscitation, vasopressor and management of comorbidities. The patient had an imbalance electrolytes, thus he also received correction sodium fluid. Status epilepticus resulted from examination, therefore anti-convulsion was administered. The patient had also anemia caused by gastrointestinal bleeding, hence received a packed red cell transfusion.

On 4 days of hospitalization (fever days 8), the general condition was good and conscious with a vital sign within normal limits and ascites decreased. The prognosis: Quo ad vitam dubia, quo ad sanationam dubia and quo ad functionam bonam.

Discussion

Our case presented with 5 days of fever, status epilepticus, and anemia et caused by gastrointestinal bleeding. The classic symptoms of dengue have expanded by affecting different organ systems. Dengue must be considered as a probable diagnosis in patients who live in or recently traveled to a dengue-endemic area, presenting with fever and at least two of the following: nausea, vomiting, rash, aches and pains, positive tourniquet test, leukopaenia, or any of a set of defined warning signs (abdominal pain or tenderness, persistent vomiting, clinical fluid accumulation, mucosal bleeding, lethargy, restlessness, hepatomegaly, increase in hematocrit with rapid decrease in platelet count).[7]

In 2012, the World Health Organization (WHO) introduced a new term known as expanded dengue syndrome, with uncommon manifestations in different organs comparable to the cardiovascular system, the nervous system, the kidneys, the gut, and therefore the hematologic system. Recognizing the characteristics of expanded Dengue Syndrome (EDS) is critical in determining the appropriate treatment.[5,8] Atypical symptoms in patients with severe organ injuries such as liver, kidneys, brain, and

heart associated with dengue fever are increasingly reported in patients with dengue hemorrhagic fever (DHF) and dengue fever

with no evidence of plasma leakage. These atypical symptoms could be associated with co-infection, complications, or complications of prolonged shock, and can be summarized in expanded dengue syndrome.[9]

Patients with gastrointestinal and hepatic system involvement are characterized by asymptomatic elevation of liver enzymes, fulminant liver failure, acute pancreatitis, acalculous cholecystitis, peritonitis, sub-acute intestinal obstruction (SAIO), and spleen rupture. Neuropathology may be associated with direct viral entry into the CNS, autoimmune responses, and metabolic changes. In an animal experimental study, it has been found that infection with the dengue virus damages the blood-brain barrier (BBB), indicating virus invasion. Autoimmune responses and metabolic changes have been observed in most neurological complications of dengue fever.[10] Liver injury could be caused by dengue virus infection. Dengue virus is hepatotropic, inflicting liver cell damage and elevated aminotransferases. The higher level of Aspartate aminotransferase (AST) than alanine aminotransferase level is possible because of myositis, and the release of AST from injured muscle cells.[11]

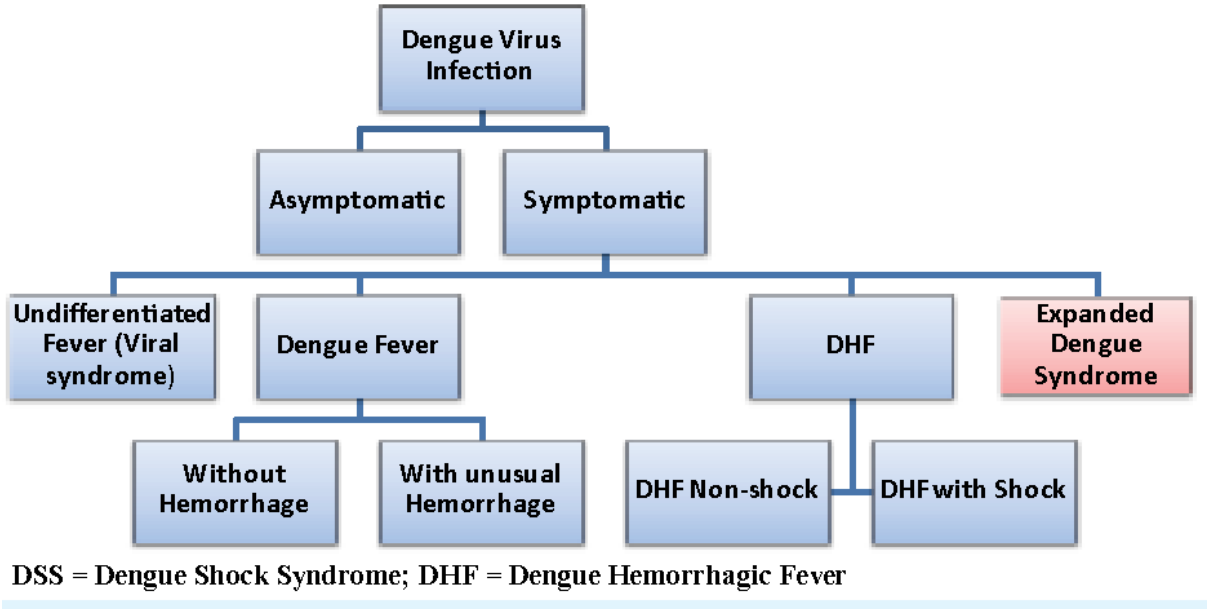

Fig. 1: Classification of dengue.[9]

Dengue fever is classified into undifferentiated fever, dengue fever (DF), and dengue hemorrhagic fever (DHF). If the fever is accompanied by at least two clinical findings, the diagnosis requires epidemiological or laboratory findings to prove the dengue virus infection. In the DHF definition, 4 criteria are required; fever, bleeding symptoms, thrombocytopenia (platelet count, ≤100,000 platelets / mm3), and evidence of plasma leakage. Supporting laboratory finding does not require to diagnose

DHF.[12] Expanded dengue syndrome includes severe organ injury such as the liver, kidneys, brain, and heart associated with dengue infection.[13]

Laboratory diagnostics for confirming dengue virus infection may include the detection of viruses, viral nucleic acids, antigens or antibodies, or a combination of these. The IgM antibody was the first immunoglobulin isotype to emerge. These antibodies are detectable in fifty percent of the patients by day 3-5 after onset, increasing to 80% by day 5, and 99% by day 10. The level of IgM peaked in 2 weeks after the onset of symptoms, and decreased to levels that are generally undetected for 2-3 months. Meanwhile, anti-dengue serum IgG is usually detectable in the low titer by the end of the first week of illness, which then slowly increase, and still detectable for months or even for a lifetime.[14]

There are still no definitive antiviral agents available for the treatment of dengue infections. The current treatments are general care with an emphasis on intensive hematological monitoring, fluid replacement, and blood transfusions as needed.[10] Hypovolemia shock due to dengue infection, characterized by increased systemic vascular resistance due to plasma leakage and manifested by a narrowed pulse pressure. When hypotension occurs, it should be suspected that other than plasma leakage, major bleeding or potential gastrointestinal bleeding could have occurred. DSS fluid resuscitation, unlike other types of shock such as septic shock, involves the transfusion of packed red blood cells in the case of massive bleeding.[15]

To the best of our knowledge, this case was the case of boy in the Wahidin Sudirohusodo Hospital Makassar who presented with expanded dengue syndrome with status epilepticus.

Conclusion

Early diagnosis and rapid treatment of expanded dengue syndrome is strongly important to prevent the potential severe complications such as status epilepticus, bleeding manifestation, hypovolemic shock and other organ damage. Early diagnosis of expanded dengue syndrome simultaneously with adequate treatment will prevent the complications of the disease. The physicians should be on focusing early recognition of scarlet fever and rapid treatment to prevent the potential severe complications.

Conflict of Interests

The authors declare that they have no competing interests.

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