

Chronic Dengue Syndrome: A Narrative Review

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ABSTRACT

Dengue fever (DF) is a dynamic disease. As the disease progresses, the course of treatment changes. Symptoms range from mild (e.g., fever, headache, retroorbital pain, nausea, vomiting, rash, myalgia, arthralgia) to severe body pain (e.g., rash fever), severe (e.g., dengue hemorrhagic fever) (DHF) and dengue shock syndrome. It changes. (DSS). DHF and DSS are associated with poor outcomes. Although there is a classification of dengue into DF, DHF, and DSS, overlap has been observed between the different presentations. In dengue, end organ damage such as liver, kidney, heart, brain, and bone marrow involvements are often reported along with blood plasma or hemorrhage. Order support system. The World Health Organization recognized these unusual symptoms and coined the term "Extended Dengue Syndrome" (EDS) to encompass atypical manifestations of neurological, renal, hepatic or other isolated diseases that occur with or simultaneously with serious diseases. Co-infections or other diseases in the host. EDS is now recognized worldwide as a common cause of dengue fever, and information continues to appear in medical journals. This review discusses this aspect of dengue fever, which covers the spectrum of symptoms in the body. This review article will help increase clinicians' knowledge about EDS and facilitate early detection and intervention.

Key Words: Extended Dengue Syndrome (EDS), Dengue Fever (DF), Dengue Hemorrhagic Fever (DHF), Dengue Shock Syndrome (DSS).

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Introduction

Although we have been experiencing dengue fever for many years, doctors continue to observe the changes and complex patterns of the dengue virus, and many adverse and unusual consequences are observed. This variable presentation and increased global burden may result in delayed and underreporting of diagnoses. Syndrome. Extended dengue syndrome (EDS) was established by the World Health Organization in 2012 to describe conditions other than dengue shock syndrome (DSS) or dengue hemorrhagic fever (DHF).¹ EDS

includes many cases where dengue fever was not previously classified as a behavioral disease. The atypical symptoms recorded in the spread of dengue fever are numerous and have been found to be located throughout the body, such as the liver, brain, heart, kidney, and central nervous system.² physical dysfunctions.

EDS will be needed. Providing management support from various disciplines to be efficient and effective. Knowing the characteristics of EDS is important in developing a treatment plan. Patients with these atypical presentations often consult their family physicians, so it is important

for them to keep a high level of suspicion in order to recognize and treat the necessary condition early.

Clinical Spectrum of EDS

EDS should be considered when clinical abnormalities occur in patients diagnosed with DF or undiagnosed during dengue infection. Atypical symptoms can be numerous, and there are unusual features in the medical field that affect many organs and should prompt doctors to investigate dengue fever. Knowing about dengue fever, especially when there is an ongoing epidemic, can help detect dengue fever early and prevent further investigation.

Gastrointestinal and Hepatic Symptoms

Analysis of the analysis showed that stomach and liver diseases are frequently affected, followed by involvement of the central nervous system. In the published literature, 92% of EDS cases presented with different gastropathy symptoms. Neurological symptoms occur in approximately 5.5% of patients. Acute kidney injury occurs in 3% of patients and requires renal replacement therapy such as hemodialysis.³ Asymptomatic liver enzyme elevations, fulminant liver failure, acute pancreatitis, acalculous cholecystitis, peritonitis, subacute intestinal obstruction (SAIO) and splenic rupture may develop in patients with stomach and liver diseases. Lee et al. Transaminitis has been observed in 30% of cases.⁴ Although dengue fever usually affects the liver, liver damage is usually mild to moderate. However, cases of liver failure complicated by hepatic encephalopathy, hepatorenal syndrome, severe bleeding, and metabolic acidosis have also been reported. Liver failure without plasma leakage has also been reported in dengue patients⁵. The pathogenesis of dengue liver disease is unclear, but many factors are hypothesized to cause liver dysfunction. These include direct infection of hepatocytes and Kupffer cells, and immune mechanisms are also believed to play a role⁶. Many reports have

documented acalculous cholecystitis. Bhatti et al. Acalculous cholecystitis was reported in 27.5% of patients.⁷ In another, 21.3% of patients had cholecystitis. Some studies have also shown cholecystitis in EDS to be as high as 38%.⁸ These patients have high alkaline phosphatase levels, thickening of the gallbladder wall, and fluid accumulation around the gallbladder. The pathogenesis of acute acalculous cholecystitis is unclear. Cholestasis, increased bile viscosity and direct infection are possible. However, the main reason for the thickening of the gallbladder wall is increased vascular permeability, which causes plasma leakage and serous exudation containing a lot of protein content, especially albumin. However, in all published studies, patients with acalculous cholecystitis recovered completely with medical care and did not require surgery. Pancreatitis is a rare and uncommon presentation Jain V et al published a case study of 67 cases of dengue fever presenting with features of pancreatitis, elevated serum amylase and lipase, and hyper Sonogram results were evident.⁹ The exact pathogenesis of pancreatic involvement in dengue fever is unknown. However, it may also be due to the direct effects of the disease, which causes inflammation and destruction of pancreatic acinar cells and an autoimmune response to islet cells, causing edema in the ampulla of Fatt and affecting the outflow of pancreatic juice. Dengue fever accompanied by pancreatitis and hemorrhagic symptoms has also been reported.

Cardiac manifestations

Many cardiac symptoms of dengue fever have been reported. A variety of heart conditions have been described, ranging from arrhythmias to myocardial depression, pericarditis, myocarditis, and acute myocardial infarction. Many different rhythms have been reported in DF, and although sinus bradycardia is the most common, conditions ranging from sinus tachycardia, second heart, third heart, atrial fibrillation to paroxysmal

supraventricular heart block have also been reported. Bradycardia followed by cardiac arrest has also been documented.¹¹ The incidence of myocarditis in DF varies between 9% and 15%. The incidence of dengue myocarditis has not been reported because it is asymptomatic and easily overlooked. Almost all cases of dengue myocarditis are self-limiting, and severe myocarditis leading to cardiomyopathy is extremely rare.¹² The pathophysiology of the heart associated with dengue fever is different. The popular theory is that the virus causes inflammation, causing a cytokine storm that causes loss of structure and function. Local injury due to minor bleeding involving the SA node, AV node or its surroundings may also cause disruption of the conduction system.

Neurological findings

Neurological findings are more common in DF and are reported to be related to the central and peripheral nervous system.¹³ Various neurological complications have been reported in DF, including encephalopathy, encephalitis, meningitis, dengue fever-related stroke (hemorrhagic and ischemic), epilepsy, acute encephalomyelitis (ADEM), neurospinal hypokalemia (NMO) due to neuropathy, optic neuritis, mononeuropathy, polyneuropathy, Guillain-Barré syndrome (GBS) or Miller Fisher syndrome, transverse myelitis caused by dengue virus paralysis. Encephalitis and encephalopathy are the most common neurological manifestations of dengue fever. Studies have shown that neurological symptoms of DF, especially encephalitis, have a high mortality rate.¹⁴ In the results of neurological symptoms of DF published by Puccioni-Sohler M et al., cerebral infarction was detected in 1 patient, meningitis in 5 patients, and encephalitis in 15 patients. In these patients, cerebrospinal fluid is pleocytotic and dengue enzyme-linked immunosorbent assay (ELISA) is positive.¹⁵ In addition, EDS occurs in the form of intracranial hemorrhage and stroke, which is one of the rare

and life-threatening complications of dengue fever that affects the central nervous system.¹⁶ Only a few cases of myelitis have been reported to date. Documented cases of dengue transverse myelitis in dengue patients treated with steroids and immunoglobulins^{17,18} Acute hypokalemic quadriplegia is a rare symptom of dengue fever that does not reflect the general presentation. Only a few cases have been reported by various international organizations. The process of hypokalemia may be due to changes in potassium distribution in the body or tubular abnormalities that cause increased urine output. Reported cases of hypokalemic quadriplegia with DF improved after potassium supplementation. The exact pathogenesis of the neurological manifestations of dengue fever is unknown. But there are many opinions. These may be due to direct effects of dengue virus, autoimmune responses, and metabolic changes on the central nervous system. The most important of these is the neurotrophic effects of the disease or the immune system against damage, or both. When neurological symptoms occur during infection, they are attributed to the nerve being directly affected by the disease. It is generally thought that the delay of neurological disease after infection depends on the immune system in the nervous system.

Renal manifestations

Dengue fever is associated with various kidney diseases. The incidence of kidney symptoms varies between 17% and 62%. These include electrolyte imbalance, acute kidney injury (AKI), proteinuria, glomerulonephritis, alanine aminotransferase (IgA) nephropathy, hemolytic uremic syndrome, and acute tubular necrosis.¹⁹ Acute kidney injury (AKI) is a significant disease and is potentially fatal. Although the actual impact is unknown, many studies have reported that AKI in dengue cases continues to be associated with higher mortality and longer hospital stay, sometimes requiring initiation of kidney transplantation treatment.²⁰ In our published case

of AKI, two patients recovered and received supportive treatment, and one patient required renal replacement therapy.²¹ Hyponatremia is the most common electrolyte abnormality in DF. Various strategies have been proposed to reduce blood sodium levels, including inappropriate replacement of anti-inflammatory medications and dysfunction of the sodium-potassium pump.²² The mechanism of AKI is multifactorial. The main mechanism is renal invasion by dengue virus, which involves direct infection of renal tissue or the immune system, hypoperfusion, and rhabdomyolysis secondary to shock. Rhabdomyolysis has been reported as a cause of AKI in DF. It is associated with increased serum creatine kinase and increased urinary myosin excretion.^{23,24,25}

Respiratory manifestations

Multiple organ involvement EDS, infections seen in the lungs are rare. Complications include pleural hydrops, pneumonia, noncardiogenic pulmonary edema, acute respiratory distress syndrome (ARDS), and pulmonary hemorrhage.²⁶ Radiological findings include ground glass abnormalities, various types of consolidation, interlobular septal thickening, and pulmonary hemorrhage. Such complications occur simultaneously with capillary leak syndrome and thrombocytopenia. Shortness of breath is a common symptom of pneumonia and can be caused by pleural effusion (usually), ARDS, pulmonary hemorrhage, pneumonia, or shock.^{27,28} Generally speaking, the above dengue virus does not cause pneumonia unless complicated by EDS. However, in cases of dengue fever, pneumonia can and often means co-infection. *Staphylococcus pneumoniae* is a common and important complication in dengue patients.²⁹ The combination of dengue fever and influenza can lead to more severe pneumonia.³⁰ If there is no relationship, severe influenza can also lead to pneumonia. and pneumonia can be fatal for dengue patients.³¹

Conclusion

Dengue fever can present as asymptomatic DF, DHF, and DSS. The World Health Organization has introduced the term "extended dengue syndrome" to describe patients other than dengue shock syndrome or dengue hemorrhagic fever. Extended dengue syndrome may go unrecognized and unreported. There are atypical situations in medical practice, and especially in the case of an epidemic disease, symptoms of fever need to be investigated by a doctor or family physician. The most common are abdominal, cardiac and neurological findings. A high level of suspicion is the key to early diagnosis and early treatment. EDS increased. Adequate knowledge of EDS helps diagnose dengue fever with unusual symptoms and leads to appropriate treatment. Doctors should be aware of these unusual features to suspect the presence of dengue fever as early as possible, especially in the case of an ongoing epidemic. Information is now needed everywhere in society to combat this disease, which leads to many treatments.

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