Review artical

Surgical aspects of Dengue Fever: A Review article

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Abstract

The incidence of dengue has grown dramatically around the world in recent decades. The disease is now endemic in more than 100 countries. But whenever there is large dengue outbreak in any region around the world, many of these cases are misdiagnosed as other febrile illness and many a times it has mislead the surgeons of some acute or other surgical conditions. Thus it is of utmost importance for a medical professional to consider and exclude dengue fever as one of the differential diagnosis for a patient in an endemic zone or in an area with an epidemic outbreak of dengue fever and direct himself towards getting the right diagnosis and providing pompt treatment which is the key for the patient.

Keywords: uterine myomas, progestin, gonadotropin-releasing hormone receptor blockers, selective progesterone receptor modulators, antiestrogens.

Introduction

Dengue is a viral disease of tropical regions. The causative agent is one of serotypes of a single stranded RNA virus called DENV 1, 2, 3, and 4.[1] Dengue illness can present with many unusual manifestations.[2,3] It is a tropical disease, which is transmitted by the *Aedes aegypti* mosquito. Incubation period is 4 to 7 days (range 3–14 days)**.** It is the commonest and most important arthropod borne viral infection in man. It is usually seen during the hot season when mosquitoes are numerous especially found in the tropics and subtropics areas of the world (south East Asia, India, Pakistan, Sri Lanka, Africa and the Americas. This viral infection has a wide clinical spectrum ranging from asymptomatic disease to undifferentiated fever (or viral syndromes), classical dengue fever (DF), dengue hemorrhagic fever (DHF), or dengue shock syndrome (DSS) and expanded dengue syndrome (EDS) The severe form of Dengue been dengue shock syndrome is the most dreaded complication of dengue. During the course of dengue fever all organs in the body can be affected resulting in numerous complications and this is termed Expanded Dengue Syndrome (EDS). The atypical or unusual manifestations of dengue grouped under expanded dengue syndrome (EDS) with neurological, hepatic, renal, and other isolated organ involvement, have increased for the last decade.[4] These manifestations are usually associated with coinfections, comorbidities, or complications of prolonged shock. The pathogenesis is multifactorial attributed to the complex interplay of vasculopathy, coagulopathy, platelet dysfunction, and thrombocytopenia.Plasma leakage syndrome is life threatening in DHF which can present as ascitis, pleural effusion, and hypoproteinemia.. Factors such as older patients, high baseline hematocrit levels, low platelet levels, prolonged APTT, female gender, vomiting, high absolute lymphocyte count, duration of shock, and high aspartate aminotransferase level are associated with severe bleeding in dengue patients.[5,6]

Respiratory involvement in dengue patient: the respiratory manifestations such as pneumonitis, acute respiratory distress syndrome and pulmonary hemorrhage are rare. The pathogenesis of lung involvement by dengue is incompletely understood**.**A study at Manipal in Karnataka,India highlighted a case of massive right sided hemothorax as a presenting feature of dengue.[7] Pleural effusion is the most frequent cause of dyspnea in patients with dengue, usually seen in the context of plasma leakage syndrome.[8] This effusion may be bloody, and a case of massive unilateral (right-sided) hemothorax has even been reported recently.[9] Awareness regarding DHF as a cause of non traumatic hemothorax especially in an endemic area should always be kept in mind. Prompt diagnosis and aggressive supportive therapy with blood and platelet transfusions are imperative to maintain hemodynamic stability and prevent motality**.**

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Liver involvement : Dengue fever is well known to involve the liver,especially in dengue hemorrhagic fever.The hepatic involvement is usually that of a mild hepatitis with transaminase derangement without jaundice. But in DSS, a severe hepatitis with gross derangements of transaminase and bilirubin may occur. The literature mentioned describes the patients with dengue hemorrhagic fever presenting with a cholestatic jaundice.[10] This literature highlights the importance of considering dengue fever as a differential diagnosis even in the presence of cholestatic jaundice,especially in countries where dengue fever is endemic. Patients with clinical picture and biochemical analysis revealing cholestatic jaundice but blood picture with dropping platelets demands for serological investigation in the form of dengue non structural protein 1 antigen and dengue immunoglobulin M, specially in areas where dengue fever is endemic.

Dengue fever with abdominal symptoms: The spectrum of acute surgical emergencies which raise suspicion of acute catastrophe in patients presenting with dengue fever include,acute pancreatitis,acute acalculous cholecystitis, non specific peritonitis and acute appendicitis. The unusual presentation of dengue fever mimicking acute appendicitis should be suspected during viral outbreaks and in patients with atypical symptoms and cytopenias on blood evaluation in order to prevent unnecessary surgery.[11, 12] An another literature here mentions a case of Acute Acalculous Cholecystitis(AAC) secondary to dengue fever.[13] In dengue fever,the main pathophysiological changes in AAC could be due to increased vascular permeability, causing plasma leakage and serous effusion with high protein content,which then causes thickening of the gallbladder wall, a thickened gall bladder leads to motility problemAAC in dengue fever is usually self limiting and the thickenend gallbladder wall usually returns to the normal thus the management is conservative with antibiotics. Cholecystectomy is usually not indicated in dengue patient unless complicated with gangrene and perforation.[14]

Splenic rupture in dengue fever[15] Spontaneous splenic rupture is rare, but a life threatening complication of infectious disease. The diagnosis of spontaneous splenic rupture should be entertained in young patients with acute atraumatic abdominal pain and hemoperitoneum with a history suggestive of recent infection. Splenic rupture is secondary to abdominal trauma or due to non-traumatic causes. Non traumatic splenic rupture is of two types –pathologic and spontaneous. Spontaneous splenic rupture is caused by lymphoproliferative diseases, connective tissue disorders,solid neoplasm,aneurysm,pancreatitis,and various infective disorder.[16] The spleen is frequently congested in cases of DHF and sub-capsular hematomas are found in 15% of necropsies cases. Only anecdotal case reports have been documented to have splenic rupture in DF.[17,18] Splenectomy is the treatment of choice for the spontaneous splenic rupture with hemoperitoneum but several reports also have shown favourable results with conservative treatment.[19, 20, 21] The most accepted hypothesis suggests that the mechanism is subcapsular hemorrhage due to a combination of vascular abnormalities, decreased coagulation factors and severe thrombocytopenia. In the vast majority of cases, splenic rupture occurs in the viremic phase of dengue, that is, before the development of antibodies and in the presence of antigen. However, there is a report in the literature of splenic rupture due to dengue during the recovery phase of the disease, around the eighth day.

Hypotension, tachycardia and oliguria are clinical signs common in severe dengue, which happen due to the extravasations, but can also be indicative of bleeding from a possible splenic rupture in these patients.[19, 22] Splenic rupture associated shock can be easily misdiagnosed and should be distinguished from classic dengue shock syndrome. Both shocks develop hypotension and tachycardia. Splenic rupture shock, a hemorrhagic shock, presents hematocrit value decreases, while dengue shock syndrome, an extravasations shock, presents as increases in the hematocrits values.[20]

Intracranial haemorrhage in dengue patient

Intracranial hemorrhage (ICH) is one of the rare manifestations of the central nervous system (CNS) involvement by dengue as a part of Expanded dengue syndrome. There is a scarcity of data regarding the incidence, pathogenesis, and treatment modalities available to prevent and treat patients of dengue with ICH. In a study by Cam *et al*., of the 5400 patients with DF, only one had ICH.[24] There is a scarcity of knowledge on prevention and management of ICH secondary to DF. The role of prophylactic platelet transfusion and the need for elaborate assessment of hemostasis parameters remains uncertain. The case here is of a previously healthy 65-year-old female who developed ICH as a part of EDS.[25]

Detection of dengue IgM, IgG, and NS1 Ag in cerebrospinal fluid (CSF) of patients with dengue suggests breach of blood–brain barrier and blood–CSF barrier and vasculopathy secondary to immunopathological-related mechanisms.[26] The lack of treatment guidelines for prevention and early recognition of ICH contributes to significant morbidity and mortality. High-risk population for EDS includes infants and the elderly, obesity, pregnant women, peptic ulcer disease, women who have menstruation or abnormal vaginal bleeding, hemolytic diseases such as glucose-6-phosphatase dehydrogenase deficiency, thalassemia and other hemoglobinopathies, congenital heart disease, chronic diseases such as diabetes mellitus, hypertension, asthma, ischemic heart disease, chronic renal failure, liver cirrhosis, and patients on steroid or nonsteroidal anti-inflammatory drug treatment.[27] However, the role of prophylactic transfusion

of platelets in the prevention of ICH remains contentious and debatable taking into consideration the significant morbidity and mortality associated with this rare event. In the case mentioned,[25] the patient was transfused 6 units of platelets. Despite that patient's intracranial bleed progressed and the patient succumbed to death. The role of other blood products such as fresh-frozen plasma, cryoprecipitate, and factor VIIa in prevention and treatment of ICH remain equally contentious and are generally administered by discretion of the physician taking into consideration the clinical condition of the patient.[28] Neurosurgical procedures can be undertaken if platelets are above 100×10^9/L and international normalized ratio is maintained from 1.5 to 1.7.[29,30,31] Timely surgical intervention if performed within 8 h of hemorrhage was associated with improved outcome.[32,33] These recommendations need to be validated for ICH associated with dengue infection.In an another literature mentioned patient met with an low velocity car accident in which he happens to sustain extra dural and sub dural haematoma according to the CT.[34] Thus a patient with dengue fever may develop intracranial bleed even after sustaining mild head injury.His final diagnosis was intracranial haemorrhage secondary to mild trauma in a patient with probabale dengue fever.

Conclusion

Dengue fever though a febrile viral illness, rarely presents as an acute abdominal emergencies this can be confusing and can lead to unnecessary surgical interventions especially in dengue endemic regions, so in areas where there is viral outbreak of dengue fever early use of serological assays should be considered to avoid non therapeutic operation. and this awareness should be heightened in tropical and endemic geographical regions.

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