Case Report

Vasculitic skin lesions in dengue fever - Case series

Menon Narayanankutty Sunilkumar*, Vadakut Krishnan Parvathy**

*Associate Professor, **Professor & HOD
Department of Pediatrics, Amala Institute of Medical Sciences, Amala Nagar, Thrissur-680 555, Kerala, India

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ABSTRACT

The number of cases of dengue fever (DF) has increased dramatically during the last decade and is emerging as a global health problem. The increased prevalence of DF has been noticed recently in Kerala. Eighty percent of people infected with dengue virus are asymptomatic. Typical and atypical presentations of DF have been mentioned in the medical literature. The usual presentation is with thrombocytopenia associated periorbital petechiae and purpura along with other symptoms like fever, skin rash, headache and myalgia. In this case study, we report two cases of DF with ecchymosis. The rare manifestation such as low grade intermittent fever and vasculitic skin lesions, even if normal platelets count and bleeding parameters, should not ignore the possible dengue viral infection.

Keywords: Ecchymosis, platelet count, dengue IgM, vasculitis

INTRODUCTION

Dengue fever (DF), also known as break bone fever, is a female mosquito *Aedes aegypti*-borne disease caused by the dengue virus mainly during the rainy season. Symptoms include fever, headache, muscle and joint pains, and a characteristic skin rash that is similar to measles. The number of cases of DF has increased dramatically during the last decade in Kerala. Infections are most commonly acquired in people living in the urban environment. The increased number of epidemics has been ascribed to the expansion of villages, and towns, poor vector control as well as the increased mobility of people. Eighty percent of people infected with dengue virus are asymptomatic or only have mild symptoms such as an uncomplicated low grade fever. Since, the infections are on the continuous rise, it remains important to be aware of the rare and atypical presentations. Children often experience symptoms similar to those of the common cold and gastroenteritis (vomiting and diarrhea) [1]. The diagnosis of dengue, especially in patients from endemic area, is typically made on the basis of reported symptoms like fever plus nausea and vomiting, rash, myalgia, low white blood cell count and thrombocytopenia and also by physical examination. Though substantial progress has been made in the diagnosis and management of the disease, atypical clinical manifestations remains a great challenge in the early medical intervention of the disease. Further, early disease can be difficult to differentiate from other viral infections [2]. Atypical manifestations of dengue include dengue encephalitis, dengue myocarditis, dengue hepatitis and dengue cholecystitis [3]. Neurological complications of dengue infection are also widespread. In this case study, we have observed rare manifestation of DF such as vasculitic skin lesions with normal platelet count and bleeding parameters.

CASE 1

A 5- year-old male child admitted in the Department of Pediatrics, Amala Institute of Medical Sciences, Thrissur, Kerala, India with history of low grade intermittent fever for preceding five days with malaise, headache and complaints suggestive of pharyngitis of four days duration. He has bluish discoloration over both lower limbs and abdomen, since two days. There was no fever, joint pains or other bleeds at the onset of admission or prior to the visit. On general physical examination, he was afebrile, did not have any pallor, lymphadenopathy, clubbing, and jaundice. The skin lesions were tender, nodular with ecchymotic skin over both lower limbs (fig 1) and abdomen. There was

no hepatosplenomegaly. Systemic examination was normal. Laboratory investigations such as hemogram revealed Hb (12 g/dl), PCV (33.7%), total count (9000/µl), neutrophils (47%), lymphocytes (48%), eosinophils (2.3%), monocytes (2.5%), basophils (0.2%), ESR (31mm/hr), and platelets count (210000/µl) were all found to be normal. Results of the urine routine analysis indicated albumin (nil), sugar (nil), pus cells (1-2/hpf), epithelial cells (+/hpf), bile salt (negative), bile pigment (negative). All the bleeding parameters such as BT, CT, PT and APTT were normal. Peripheral smear was normal, no thrombocytopenia or any atypical cells were seen. Blood and urine culture sensitivity were normal. Antinuclear antibody was negative. Diagnosis of DF was made based on the positive dengue specific IgM ELISA test. Skin biopsy has been done and revealed lymphocytic vasculitis changes (fig. 2). Patient was given only symptomatic treatment for his fever and pharyngitis. Periodic platelet count was monitored and showed values of 210000/µl (day 1): 220000 /µl (day 3); and 218000/µl (day 8). His skin lesions resolved in one week and the patient was discharged after full recovery.

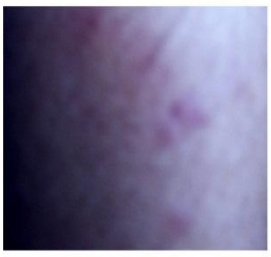

Fig. 1: Tender and ecchymotic skin lesion over the lower limb

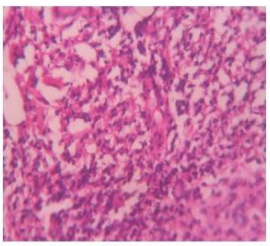

Fig. 2: Lymphocytic vasculitis changes in the biopsy of skin (H&E, X10)

CASE 2

A 3-year-old male child had history of bluish discoloration over abdomen two weeks back that persisted for one week with low grade fever for five days and disappeared. He has presented to the department with fever of four days. All bleeding parameters including platelet count were within normal limits with normal peripheral blood smear. Because of similarity in presentation with case 1, dengue specific IgM ELISA test was assayed and found positive. Patient was given only symptomatic treatment for his fever. Periodic monitoring of platelet count revealed 244000/µl (day 1); 250000/µl (day 3); and 253000/ µl (day 8) found within normal limits. Patient was discharged after full recovery.

DISCUSSION

DF is a widespread mosquito-borne illness in humans of the tropics and sub-tropics of the world. Mild dengue disease is characterized by biphasic fever, skin rashes, headache, vomiting, cough, photophobia, myalgia, arthralgia, leukopenia, thrombocytopenia and lymphadenopathy, while dengue hemorrhagic fever (DHF) is an often fatal disease characterized by haemorrhages and shock syndrome.It is thought that annually about 100 million cases of DF, 5,00,000 cases of DHF and 12000 mortality cases occur worldwide. *Aedes aegypti,* the mosquito vector of dengue virus is present in almost all tropics and sub-tropics of the world and it poses the greatest threat to one third of the world's population. The dengue (DEN) viruses are positive-strand RNA viruses in the genus *Flavivirus.* This most commonest arboviral disease is transmitted globally by four antigenically distinct dengue virus serotypes (DEN 1, DEN 2, DEN 3 and DEN 4) [4]. Usually, patients with DF are presented with thrombocytopenia, associated petechiae, purpura and other symptoms like fever, rash, headache and myalgia.

The hallmark of DF is vascular permeability and coagulation disorders. Petechial hemorrhages in conjunctiva being the commonest manifestation resulting from increased vascular permeability and decreased platelet count [5, 9]. The platelet count less than 50000/µl usually predisposes to ocular hemorrhages [6]. Maculopathy is another common manifestation. Bilateral periorbital ecchymosis in a case of DHF has been reported with no evidence of ecchymosis elsewhere in the body [7]. Neurological complications of DF are widespread and may involve almost all parts of the nervous system mediated through various pathogenetic mechanisms. Neurological complications can be categorized into dengue encephalopathy caused by hepatic failure or metabolic disorders, encephalitis due to direct virus invasion, neuromuscular complications such as Guillain-Barré syndrome or transient muscle dysfunctions, and also the neuro-ophthalmic involvement [8,9] .

In the presented case study, we are dealing with a rare manifestation of DF such as ecchymosis with normal platelet count and bleeding parameters. During this period, we had few cases of DF with thrombocytopenia without any complications. Since the patient in case report 1 presented as ecchymosis,

with normal platelet count and bleeding parameters, skin biopsy revealed lymphocytic vasculitic changes. The manifestation can be probably due to changes in the endothelium. It has been found that the endothelium is the target of the immunopathological mechanisms in DF and DHF. Unfortunately our cases do not exhibit any change in the platelet counts or bleeding parameters. Furthermore, no periorbital or conjuctival hemorrhages were evidenced. However, in the case report 2, the child had history of bluish discoloration over abdomen with intermittent fever prior to the admission in the department. The routine clinical investigations in this case were also found to be normal, whereas the clinical manifestations were similar to that of the case report 1. This directed us to take decision for dengue specific IgM antibody test. We could see high titre value for IgM antibody. Highest IgM titre is detected following a primary infection and also in re-infection. Since IgM persists for more than 60 days, the assay indicates that a DF has occurred in the past 2–3 months in dengue-endemic countries [10]. Patients in the case 1 had no previous history of infection in the past 3 months whereas; patient in case 2 had low grade fever for five days.

Dengue cases in different districts in Kerala showed a gradual progress in its prevalence. Tyagi et al., [11] reported the cases of dengue between 1997 and 2003 were 14 and 3546 respectively with a mortality of 68 in 2003, whereas the prevalence was reported as 959 in 2006 to 2597 in 2010 [12]. DEN-2 has also been reported from southern India - in Kerala along with DEN-3 [13]. There are no specific antiviral treatments required for dengue infection except for the fluid management which has to be given early [14]. This case study concludes that the rare manifestation such as low grade intermittent fever and vasculitic skin lesions even if normal platelets count and bleeding parameters should not ignore the possible dengue viral infection.

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Corresponding Author:

Dr. M N Sunil Kumar
Associate Professor,
Department of Pediatrics,
Amala Institute of Medical Sciences,
Amala Nagar, Thrissur-680 555, Kerala, India
E-mail: sunilsree99@gmail.com

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