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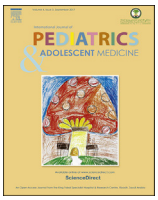

Case report

Dengue meningoencephalitis in a child presenting with focal seizures

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ABSTRACT

We report a 9-year-old female child who presented with fever and focal seizures. The Cerebrospinal Fluid (CSF) analysis was compatible with viral meningoencephalitis and Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) on same sample was positive for dengue virus RNA, serotype 2. The dengue IgM in blood sample was positive on the 8th day of the illness. This case demonstrates the emerging neurological manifestations of dengue infection and the first confirmed pediatric meningoencephalitis reported from Saudi Arabia. In areas where it does exist, dengue should be included in the differential diagnosis of cases of viral meningitis or meningoencephalitis.

1. Case report

A 9-year-old, Saudi female child was apparently well until three days prior to admission when she presented with persistent frontal headache and fever, followed on the second day by tonic focal seizure of the left upper limb for about 20 minutes. The seizure stopped spontaneously on arrival to the Emergency Department (ED). The seizure was not associated with postictal sleep. Six hours after admission to hospital, she developed a second short, less than 5 min, seizure like the first one with depressed sensorium. On the second day of admission, she developed diffuse abdominal pain and repeated episodes of vomiting. There was no history of skin rash or bleeding tendency. The child was fully immunized as per Saudi schedule. Family history was unremarkable. The child has three siblings with no history of epilepsy in family members.

Physical examination on admission to ED revealed a drowsy child. Vital signs were temperature 36.8 Ċ, BP 104/70 mmHg, HR 110/min and respiratory rate 20/minute. The body weight was 48.5kg, above 95th centile. Neck stiffness, positive kerning's sign and photophobia were noted on admission. Upon arrival to the pediatric ward, the patient was fully conscious, oriented to place, person and time.

There was no skin rash or lymph node enlargement. Liver and spleen were not palpable. She was in pain because of both headache and abdominal pain, the abdomen was diffusely tender with no rebound tenderness. Bowel sounds were normal. No abnormality of cranial nerves, the power, deep tendon reflexes and sensation were within normal limits both on upper and lower limbs.

Laboratory investigations revealed CBC; WBC 13.85 $\times$ 10^9/L (polys77.7, lymphocytes14.5, monocytes 6.6 and eosinophils 0.8%), Hb 119 g/L and platelets 407 $\times$ 10^9/L. The WBC and platelet counts on 3rd, 5th, 7th and on discharge did not show leukopenia or thrombocytopenia. The leukocyte and platelets counts were between 5.54 and 15 $\times$ ^{9} and 241–350 $\times$ 10^9/L respectively. Liver panel; serum bilirubin 6 μmol/L, Albumin 38 g/L, alkaline phosphatase 256 U/L, ALT 25 U/L, AST 19.2 U/L. Serum sodium 140 mmol/L, potassium 3.14 mmol/L, BUN 2, creatinine 47 μmol/L. CSF analysis; WBC 60 cell/mm3 (30% neutrophils, mononuclear 70%), glucose 3.5 mmol/L and protein 0.21 g/L.

Blood and CSF samples were sent to a recognized laboratory for viral hemohrragic fevers in Saudi Arabia which revealed positive RT-PCR for degue serotype 2 from both CSF and blood and negative result for other viruses (HSV1, Enteroviruses, Reft Valley virus,

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West Nile, Alkhumra and Chikungunya). Serology for Dengue IgM was positive on the 8th day of the disease. The patient was started empirically on vancomycin, ceftriaxone and acyclovir. Based on CSF analysis, negative culture and negative PCR for herpes simplex viruses and normal MRI study, both antibiotics and acyclovir were discontinued on fourth day of admission. During hospital stay, the patient did not develop symptoms or signs of respiratory distress, clinical ascites or mucocutaneous bleeding. The abdominal pain improved gradually, however mild, intermittent headache was evident on discharge of the patient, which responded to paracetamol as needed. Two weeks after discharge, the child was well and had no neurological deficits.

2. Discussion

Dengue virus (DENV) infection is one of the arboviruses transmitted by the mosquito *Aedes Aegypti* and to a lesser extent by *A. albopictus*. Dengue is RNA virus belongs to the *Flaviviridae* family. It has four serotypes DENV1, DENV2, DENV3 and DENV4. The spectrum of clinical disease ranges from asymptomatic infection in majority of cases to severe Dengue in forms of Dengue Hemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS). The clinical manifestations of dengue have expanded beyond classic dengue fever to affect other organs including Central Nervous System (CNS) [1,2].

The neurological manifestations of dengue infection are uncommon. The reported CNS involvement has included so far, febrile seizures, encephalopathy, encephalitis, meningitis, Guillain barre' syndrome, transverse myelitis, acute Disseminated Encephalomyelitis (ADEM) and retinochoroiditis [3–6]. In most reported patients, the diagnosis of CNS involvement was based on clinical symptoms and signs and detecting specific antibodies in blood samples. However, limited number of dengue cases were confirmed by CSF dengue IgM and or positive PCR [3,7,8]. The prominent neurologic manifestation in our case was focal seizures. In addition, leukopenia and thrombocytopenia which are common findings in dengue were not observed in this patient. In a recent study on 102 patient with dengue, leukopenia and thrombocytopenia were seen in 26.5 and 59.8% of the patients respectively [9]. In addition to fever and severe headache which are most common symptoms in dengue fever, the differential diagnosis in our area which is endemic for dengue includes, bacterial meningitis, herpes encephalitis, cerebral malaria and dengue infection.

Dengue serotype 2 was identified in the CSF of our patient. DENV 2 serotype was identified in 83.9% of the cases studied in Jazan area [10]. The reported neurological manifestations of dengue infection from Saudi Arabia had included three cases of meningitis, meningoencephalitis and intracranial hemorrhage [11–13]. In one of these cases, Dengue IgM was detected in CSF and the in the other two cases the infection was confirmed by serology and PCR on blood samples. Dengue infection should be included in the possibilities of acute CNS disease in children from or those have travel history to endemic areas of saudi Arabia.

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