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A Case Report of Dengue Encephalitis: An Atypical Neurologic Manifestation of Dengue Fever in Adults

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ABSTRACT

Dengue fever is a febrile disease caused by infection from one of the four dengue virus serotypes (DENV1, DENV2, DENV3 and DENV4). The clinical manifestations of dengue fever are broad-spectrum, ranging from asymptomatic to life threatening, shock syndrome. Usually, the dengue virus doesn't cause neurologic manifestations, but recently this has been documented in some cases. We report a case of dengue encephalitis in a 42- year-old gentlemen from Bangladesh who was presented with a history of altered level of consciousness associated with headache, subjective fever, fatigue, nausea and vomiting. Blood test results of Dengue Immunoglobulin M (IgM) antibodies and polymerase chain reaction (PCR) were positive. In addition, other causes of encephalitis were ruled out by appropriate laboratory investigations. Dengue Encephalitis should be considered in the differential diagnosis of fever with altered level of consciousness, especially in areas where dengue fever is endemic.

Keywords: Dengue Encephalitis, Viral Encephalitis, Dengue Fever, Neurological manifestations.

INTRODUCTION

Dengue fever is a febrile disease caused by infection from one of the four dengue virus serotypes (DENV1, DENV2, DENV3 and DENV4). The dengue virus is a single-stranded RNA virus of the flaviviridae family, transmitted by (Aedes aegypti) or (Aedes albopictus) mosquitoes during the feeding on human blood. The incidence of dengue cases has increased dramatically in the last decades but, unfortunately, the actual numbers of cases are underreported or misclassified. One of the recent studies gave an estimate of 390 million dengue infections worldwide each year and over 2.5 billion persons at risk of infection [1,2]. The clinical manifestations of dengue fever are broad-spectrum, ranging from asymptomatic to life threatening shock syndrome. In 2009 the World Health Organization (WHO) classified dengue fever into three categories: (I) dengue without warning signs, which include the residence or travel to an endemic area plus fever plus two of the following (nausea/vomiting, rash, headache/eye pain/muscle ache/joint pain, leukopenia and positive tourniquet test); (II) dengue with warning signs includes the first category in addition to one of the following: abdominal pain or tenderness, persistent vomiting, clinical fluid accumulation (ascites or plural effusion), mucosal bleeding, lethargy or restlessness, hepatomegaly more than two cm, increase in hematocrit concurrent with rapid decrease in platelet count; (III) severe dengue includes the first category with at least one of the following: severe plasma leakage leading to shock or fluid accumulation with respiratory distress, severe bleeding, severe organ involvement (aspartate aminotransferase (AST) or alanine aminotransferase (ALT) ≥1000 units/L, impaired level of consciousness or organ failure) [3]. Usually, the dengue virus does not cause neurologic manifestations, but recently this has been documented in some cases. The neurologic manifestations can be classified into three categories: the first is related to the neurotropic effect of the virus like meningitis, encephalitis, myelitis or myositis; the second is related to the systemic complications of the virus like encephalopathy, stroke or hypokalemic paralysis; the third involves post-infectious complications like encephalomyelitis, optic neuritis or Guillain-Barre Syndrome [4]. The DENV2 and DENV3 serotypes of the dengue virus are more frequently implicated in causing neurologic manifestations [5]. We report a case of dengue encephalitis in a 42-year-old gentlemen from Bangladesh.

CASE REPORT

A 42-year-old gentlemen, medically free, presented with a history of altered level of consciousness for six days, associated with headache, subjective fever, fatigue, nausea and vomiting. Other systemic review was unremarkable. He discharged recently from another hospital against medical advice over financial issues. He is neither a smoker nor a drug abuser. He has no history of contact with a sick patient or recent travel. He also has no clear history of insect bite, but he lives in Ghulail district, which is one of the slums in the south of Jeddah city. Clinical examination on admission revealed pulse 55/min, blood pressure 155/87 mm hg, temperature 36.8°C, respiratory rate 15/min, oxygen saturation 82.5%. He

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looked confused with difficulty in responding to commands, dehydrated with macular rash on lower limbs and petechial rash all over the body. Respiratory examination revealed poor effort respiratory breathing sound. Neurologic examination revealed hyper-tonia and hyper-reflexia in both upper and lower limbs, with no neck stiffness. The rest of the systemic examination was within normal limits. Investigations revealed hemoglobin 15 g/dl, mean cell volume 78.6fL, mean cell hemoglobin 27.7pg, white blood cells 4.37k/uL with (neutrophils 63%, lymphocytes 26.5% and monocytes 9.6%), platelets 16ku/L, lactate dehydrogenase 675u/L and random blood sugar 26.8mmol/L. A liver function test showed aspartate amino transferase 111u/L, alanine amino transferase 57u/L, gamma glutamyl transferase 19u/L, total bilirubin 9umol/L, direct bilirubin 5umol/L and albumin 32g/L. A coagulation profile test showed prothrombin time 10.7seconds, activated partial thrombin time 31.4seconds and international normalized ratio 0.9.

Thyroid function test was normal. Urine function test and electrolytes showed urea 30.8mmol/L, creatinine 800umol/L, sodium 131mmol/L, potassium 4.8mmol/L, chloride 95mmol/L and phosphate 1.75mmol/L. Cerebrospinal fluid (CSF) analysis showed a white cell count of 1 cell/cubic mm with lymphocytes 78%. CSF proteins was 0.49mg/dl and CSF glucose was 7.1mg/dl. CSF, blood and urine cultures showed no growth of any organisms. Malaria test was negative. Herpes simplex virus 1 and 2, were not detected by blood polymerase chain reaction (PCR) test. The serology of Hepatitis B, C and human immunodeficiency (HIV) viruses were negative. Dengue virus was detected by blood PCR and serology tests. The Epstein-Barr virus IgG antibodies test was positive. There was evidence of non-anion gab metabolic acidosis in venous blood gas with pH 7.31, Pco2 30.8mmhg, bicarbonate 16.4mmol/L and lactic acid 1.6mmol/L. The brain computed tomography scan (CT scan) was normal.

The abdominal and pelvic CT scan showed retroperitoneal fat stranding. The electrocardiogram showed a sinus bradycardia. The brain magnetic resonance imaging (MRI) and electroencephalogram (EEG) were not done. During hospital course the patient had multiple spikes of fever. He also received intravenous fluid and four units of platelets. In addition, he received Ceftriaxone and Acyclovir empirically.

DISCUSSION

Dengue fever is classically known to be a non-neurotropic disease [6], but, recently, some cases of dengue encephalitis have been reported. Unexpectedly, the classical symptoms of dengue fever are reported in only 50 percent of dengue encephalitis cases [7]. The common symptoms of dengue encephalitis are headache, seizures, and altered level of consciousness [8]. The criteria of dengue encephalitis include: (I) the presence of fever, (II) acute signs of cerebral involvement like altered level of consciousness or personality and/or seizures and/or focal neurologic signs, (III) positive IGM dengue antibody or positive dengue PCR in serum and/or Cerebrospinal fluid, (IV) exclusion of other causes of viral encephalitis and encephalopathy [9].

Our patient had fever and altered level of consciousness and his laboratory investigations proved the presence of dengue virus and ruled out other causes of encephalitis. So, he satisfied the criteria for dengue encephalitis. In viral encephalitis MRI is superior to CT scan in demonstrating brain lesions. Cranial imaging in dengue encephalitis reveals various findings and non-specific changes [10]. The findings may be normal, but hemorrhages, cerebral edema and focal abnormalities can be found.

CONCLUSION

Dengue encephalitis should be considered in the differential diagnosis of fever with altered level of consciousness, especially in areas where dengue fever is endemic, regardless of the presence or absence of classical features.

REFERENCES

1. Bhatt S, Gething PW, Brady OJ, Messina JP, Farlow AW, Moyes CL, Drake JM *et al.* (2013): The global distribution and burden of dengue. Nature, 496(7446):504-7.

2. Brady OJ, Gething PW, Bhatt S, Messina JP, Brownstein JS, Hoen AG, Moyes CL *et al.* (2012): Refining the Global Spatial Limits of Dengue Virus Transmission by Evidence-Based Consensus. PLoS Negl Trop Dis., 6(8):e1760.

3. World Health Organization (2009): Dengue: guidelines for diagnosis, treatment, prevention and control. http://www.who.int/rpc/guidelines/9789241547871/en/

4. Murthy JM (2010): Neurological complications of dengue infection. Neurology India, 58(4):581-4.

5. Lum LC, Lam SK, Choy YS, George R and Harun F (1996): Dengue encephalitis: a true entity?. Am Trop Med Hyg., 54(3):256-9.

6. Arora SK, Aggarwal A and Mittal H (2012): Dengue encephalitis in children. J Neurosci Rural Pract., 3(2):228–229.

7. Solomon T, Dung NM, Vaughn DW, Kneen R, Thao LT, Raengsakulrach B, Loan HT *et al.* (2000): Neurological manifestations of dengue infection. The Lancet, 355(9209):1053-9.

8. Varathraj A (2010): Encephalitis in the clinical spectrum of dengue infection. Neurology India, 58(4):585-91.

9. Soares C and Puccioni-Sohler M (2011): Dengue encephalitis: suggestion for case definition. J Neurol Sci., 306(1-2):165.

10. Bhoi SK, Naik S, Kumar S, Phadke RV, Kalita J and Misra UK (2014): Cranial imaging findings in dengue virus infection. J Neurol Sci., 342(1-2):36-4