Contents lists available at ScienceDirect

Asian Pacific Journal of Tropical Medicine

journal homepage:www.elsevier.com/locate/apjtm

Document heading doi:

Isolated Bell's palsy – An unusual presentation of dengue infection

Peter S[1*], Malhotra N[2], Peter P[3], Sood R[4]

[1]*Department of Medicine, Christian Medical College & Hospital, Ludhiana, Punjab, India*
[2]*Department of Medicine, Christian Medical College & Hospital, Ludhiana, Punjab, India*
[3]*Department of Radiodiagnosis, Christian Medical College & Hospital, Ludhiana, Punjab, India*
[4]*Department of Medicine, Christian Medical College & Hospital, Ludhiana, Punjab, India*

ARTICLE INFO

Article history:
Received 10 January 2012
Received in revised form 15 March 2012
Accepted 15 May 2012
Available online 20 January 2013

Keywords:
Dengue infection
Bell's palsy

ABSTRACT

Dengue fever is a very common arthropod – borne infection in tropical countries. Neurological complications in dengue fever are relatively uncommon and among these, isolated cranial neuropathies have been reported only very rarely. We present an unusual neurological complication of Bell's palsy (lower motor neuron 7 th nerve palsy) associated with dengue infection. To the best of our knowledge, there have been very few documented cases of *Flavivirus* causing isolated Bell's palsy.

1. Introduction

Dengue infection is caused by Flavivirus and is an important arthropod – borne infection in the tropics. Nervous system involvement is seen with serotypes 2 and 3[1]. Dengue infections are usually asymptomatic, but can present with classic dengue fever, dengue haemorrhagic fever or dengue shock syndrome. Some unusual manifestations of dengue infection that have been reported previously include liver failure[2], encephalopathy[3], acute disseminated encephalomyelitis[1] and Guillian Barre Syndrome[4]. There are reports about dengue infected patients with lower cranial nerve involvement, causing bulbar weakness[5]. Very few cases of isolated Bell's palsy occurring with dengue infection have been documented[6].

2. Case report

A 35 year old male from Punjab (north India), was admitted with history of fever and bodyache for four days. He had also noticed left sided facial weakness with drooping of the mouth, drooling of saliva, inability to close the left eyelid along with excessive lacrymation for three days prior to presentation. He had no history of any chronic diseases in the past, prior hospitalisation or any head and neck surgeries. There was no associated ear ache, ear discharge, parotid enlargement, trauma or weakness in any other part of the body. On examination, he was febrile, had generalised blanching, and left side lower motor neuron (LMN) facial nerve palsy (Figures 1 & 2). There was no evidence of any bleeding from any site, encephalitis, sensory motor deficits or any other cranial neuropathy. The rest of the systemic examination was normal.

His full blood count showed total white blood cell count of 5 500/mm^3, normal differential counts with evidence of haemoconcentration (hematocrit 54) and marked thrombocytopenia with platelet count of 1 lakh/mm^3. He had elevated Aspartate transaminase and Alanine transaminase levels (120 and 180 respectively). There was no history of alcohol intake in the past and he was not exposed to any hepatotoxic drugs. Chest roentgenogram and Electrocardiogram were normal. Ultrasonography of abdomen revealed reactionary cholecystitis and mild ascites. His viral markers, renal function tests, electrolytes and fasting blood sugar level were normal. He was

*Corresponding author: Dr. Soumia Peter, Assistant Professor, Department of Medicine, Christian Medical College & Hospital, Ludhiana, Punjab, India.
Tel: 08054900362
E-mail: soumiaanna@rediffmail.com

diagnosed with dengue infection as evident by positive immunoglobulin M serology and positive NS1 antigen testing. NS1 antigen assay is done for rapid diagnosis of the dengue infection, in which the method of detection is through Polymerase chain reaction (PCR)[7]. The platelet count progressively reduced over the next 5 d, reaching a minimum of 25 000/mm^3.

Figure 1. Left sided Bell's palsy with drooping of mouth.

Figure 2. Left sided Bell's palsy with loss of wrinkling on left side.

Magnetic Resonance Imaging (MRI) brain including Fast imaging employing steady state acquisition (FIESTA) sequences showed no evidence of any altered signal intensity within the brain parenchyma or in the visualised portions of the left facial nerve (Figure 3). No evidence of restricted diffusion (suggestive of infarct) or haemorrhage or any space occupying lesion was noted in the MRI. Contrast study showed no abnormal parenchymal or leptomeningeal enhancement.

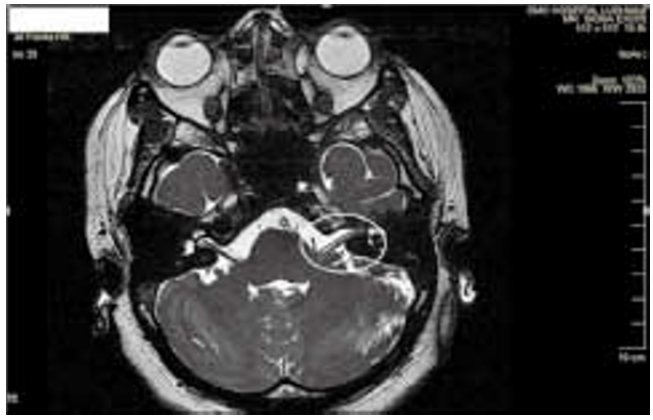

Figure 3. MRI FIESTA Images show normal signal intensity within the VIIth and VIIIth nerves on the left side (circle).

He was treated symptomatically for his dengue fever and was also started on oral prednisolone in view of his facial nerve palsy, at a dose of 1 mg/kg that was tapered off over the subsequent weeks. His platelets gradually improved over the period of hospitalisation and he was discharged in a stable condition after two weeks. Four weeks later, he was followed up and his facial nerve palsy showed improvement. The liver enzymes, platelet count and hematocrit also returned to normal.

3. Discussion

Classic dengue infection is characterised by symptoms of fever, headache, myalgia, retro-orbital pain, blanching, rash and petechiae. It can lead to complications of dengue haemorrhagic fever, and dengue shock syndrome. In recent years, an increasing number of dengue fever with uncommon manifestations has been reported. Though dengue had been regarded as a non-neurotropic virus, there are recent reports on neurotropism or neuroinvasion of the dengue virus, causing various Central Nervous System (CNS) manifestations[3,8]. They include encephalopathy, encephalitis, Guillain-Barre syndrome (GBS), transverse myelitis, meningitis, acute disseminated encephalomyelitis (ADEM), polyradiculitis[9] and stroke, both ischemic and hemorrhagic[1,8,10]. The neurological spectrum of dengue patients has been limited because of small number of case reports, paucity of imaging and neurophysiological studies in developing countries. Seizures and pyramidal tract signs have also been reported in association with this infection[11,12]. Recently, a case of dengue infection with bilateral thalamic involvement had been reported[13]. To our knowledge, only thirteen cases of nerve palsies have been documented which included Bell's palsy, long thoracic

nerve palsy and neuronal nerve palsy. All the cases followed a classical dengue illness of 1 to 3 weeks duration[6].

Our patient had a rare neurological complication of isolated left sided Bell's palsy with dengue infection. Bell's palsy is a peripheral facial nerve palsy involving the lower motor neuron, causing weakness of all muscles of facial expression. The diagnosis of bell's palsy in our case report was suggested by the patients history and clinical examination. MRI brain did not suggest any evidence of ADEM, encephalitis or any other possible pathologies that could result in 7th nerve paralysis. Bell's palsy occurring with viral infections have been previously reported in association with Herpes simplex virus, Herpes zoster, Lyme disease, Syphilis, Epstein-Barr viral infection, Cytomegalovirus, Human Immunodeficiency Virus and Mycoplasma[14]. There is paucity of literature on *Flavivirus* as a cause of seventh nerve palsy. Recent observations indicate that the clinical profile of dengue is changing, and that neurological manifestations are being reported more frequently. The pathogenesis of neurological manifestations are multiple and include both neurotropic effects of the dengue virus, related to the systemic effects of dengue infection, and immune mediated[10,15,16]. They can also be attributed to plasma leakage into serous spaces, haemorrhage, coagulopathy, release of toxic substances or shock and metabolic disturbances in severe dengue infections. Neurotropic potential of dengue virus leading to encephalitis has been suggested[17,18]. Although these pathological mechanisms cannot explain all of the neurological disorders reported, it certainly might be responsible for some. In our case, the patient had an unusual presentation of isolated unilateral LMN facial nerve palsy along with dengue fever. The pathologic mechanisms causing the above remains undefined in the current literature due to a paucity of reports and the possibility of direct neuronal injury due to dengue virus may be considered.

To the best of our knowledge, this is one of the few reported isolated case of Bell's palsy in a patient with dengue infection. In a tropical country with endemic dengue infection, dengue fever may be considered among the causes of Bell's palsy.

Conflict of interest statement

The authors declare that there are no conflicts of interest.

References

[1] Chowdhury RN, Siddiqui MR, Mahbub MS, Hasan OSI, Talukder A, Nabi S, et al . Dengue fever as a cause of acute disseminated encephalomyelitis (ADEM). *J Medicine* 2011; **12**: 185-187.

[2] Subramanian V, Shenoy S, Joseph AJ. Dengue haemorrhagic fever and fulminant hepatic failure. *Dig Dis Sci* 2005; **50**: 1146-1147.

[3] Varatharaj A. Encephalitis in the clinical spectrum of dengue infection. *Neurol India* 2010; **58**: 585-591.

[4] Imai T, Matsumoto H. Insidious phrenic nerve involvement in postpolio syndrome. *Intern Med* 2006; **45**: 563-564.

[5] Gupta P, Jain V, Chatterjee S, Agarwal AK. Acute inflammatory motor axonopathy associated with dengue fever. *JIACM* 2009; **10**(1&2): 58-59.

[6] Lam SK. Dengue infections with central nervous system manifestations. *Neurol J Southeast Asia* 1996; **1**: 3-6.

[7] Shu PY, Yang CF, Kao JF, Su CL, Chang SF, Lin CC. Application of the dengue virus NS1 antigen rapid test for on-site detection of imported dengue cases at airports. *Clin Vaccine Immunol* 2009; **16**(4): 589-591.

[8] Solomon T, Dung NM, Vaughn DW, Kneen R, Thao LT, Raengsakulrach B, et al. Neurological manifestations of dengue infection. *Lancet* 2000; **355**: 1053-1059.

[9] Sainte-Foie S, Niel L, Moreau JP, Ast-Ravallec, Chippaux A. A case of polyradiculoneuritis associated with dengue in a patient native to French Guiana. *Bull Soc Pathol Exot* 1993; **86**: 117-118.

[10] Misra UK, Kalita J, Syam UK, Dhole TN. Neurological manifestations of dengue virus infection. *J Neurol Sci* 2006; **244**: 117-122.

[11] Thisyakorn U, Thisyakorn C, Limpitikul W, Nisalak A. Dengue infection with central nervous system manifestations. *Southeast Asian J Trop Med Public Health* 1999; **30**: 504-506.

[12] Pancharoen C, Thisyakorn U. Neurological manifestations in dengue patients. *Southeast Asian J Trop Med Public Health* 2001; **32**: 341-345.

[13] Kamble R, Peruvamba JN, Kovoor J, Ravishankar S, Kolar BS. Bilateral thalamic involvement in dengue infection. *Neurol India* 2007; **55**(4): 418-419.

[14] Peitersen E. Bell's palsy: the spontaneous course of 2,500 peripheral facial nerve palsies of different etiologies. *Acta Otolaryngol Suppl* 2002; **549**: 4-30.

[15] Yamamoto Y, Takasaki T, Yamada K, Kimura M, Washizaki K, Yoshikawa K, et al. Acute disseminated encephalomyelitis following dengue fever. *J Infect Chemother* 2002; **8**: 175-177.

[16] Gera C, George U. Acute disseminating encephalomyelitis with haemorrhage following dengue. *Neurol India* 2010; **58**: 595-596.

[17] Cam BV, Fonsmark L, Hue NB, Phuong NT, Poulsen A, Heegaard ED. Prospective case control study of encephalopathy in children with dengue hemorrhagic fever. *Am J Trop Med Hyg* 2001; **65**: 848-851.

[18] Kabra SK, Verma IC, Arora NK, Jain Y, Kalra V. Dengue haemorrhagic fever in children in Delhi. *Bull World Health Organ* 1992; **70**: 105-108.