Dengue Encephalitis with Concurrent Infections by Multiple Dengue Virus Serotypes

J.A.J.C. Jayarathne[1], W.A.T.A. Wijesinghe[2], S. Mendis[3], J. Waidyasekara[4], P.A.D.H.N. Gunathilaka[5], D. Gunasekara[6]

Dengue is a serious public health problem caused by an arbovirus. Abnormal-neurological presentations associated with dengue infection is rare. Herewith, we report a case of a patient with dengue encephalitis who was concurrently infected with multiple serotypes. A 36-year-old, male resident from Poogoda presented to North Colombo Teaching Hospital with a history of generalized tonic-clonic seizures (GTCS) and unconsciousness. On admission, he displayed only a persisting headache. He had no significant illnesses in the past. Detailed history revealed that he has had a fever and left the hospital against the medical advice on the same day. On clinical examination, he was afebrile and blood pressure was 110/80 mmHg. He was well oriented with a Glasgow Coma Scale (GCS) of 15/15 and there was no focal neurological deficit. The funduscopic examination was normal. His initial full blood count revealed a rise in white blood cells with a predominant elevation of neutrophils of 12.44 x 10^3/uL. His platelet count was reported to be 306 x10^3/uL and, he was treated for a bacterial infection. On the following day, the patient started developing a fever and GTCS. Aggressive behavior, confusion, and delirium were also demonstrated. Neck stiffness was not observed. Non-contrast computed tomography (NCCT) scan, contrast-enhanced computed tomography (CECT) scan, chest X-ray scan and magnetic resonance image (MRI) of the brain were normal. Electroencephalography (EEG) revealed encephalopathy with non-epileptic discharge. Lumbar puncture was performed on the third day of admission and analysis of cerebrospinal fluid (CSF) was unremarkable. IgM antibody for the dengue virus (DENV) was detected in CSF. All the other viral and parasitological studies were normal. The patient was treated with anti-epileptic, anti-psychotic, antibacterial and antiviral drugs. High fever spikes and seizures were continued. GCS started to deteriorate from 9/15 to 3/15. Urine out-put started to decline. Ultra-sound scanning revealed mild ascites. Blood picture analysis showed evidence of having a severe bacterial infection. On day 9, both CSF and serum specimens were referred to Molecular Diagnostic Laboratory, Faculty of Medicine, Ragama for dengue viral investigations. The presence of NS-1 antigen, IgM/IgG antibodies, and the occurrence of concurrent infections with serotype 2 and 3 in the serum sample confirmed that the patient was infected with DENV. The presence of IgM/IgG antibodies were observed in the CSF sample. On day 10, the patient was transferred to the medical intensive care unit and monitored thoroughly. As the condition was deteriorated, he was ventilated and incubated for 11 days in the intensive care unit. He started to recover gradually after the 31st day. On day 36, the patient was discharged without any residual neurological symptoms. The patient is currently being followed up at the neurological clinic. Dengue encephalitis is a rare and deleterious manifestation of dengue infection. It is believed that concurrent infections with multiple serotypes and serotype replacement may cause disease severity. Therefore, reporting uncommon cases will provide insights for the physicians in early diagnosis and effective management.

Keywords: Dengue Encephalitis, Dengue virus, Serotype, Concurrent infections, Neurological presentation

[1] Department of Biochemistry & Clinical Chemistry, Faculty of Medicine, University of Kelaniya, Ragama, Sri Lanka
[2] Colombo North Teaching Hospital, Ragama, Sri Lanka
[3] Colombo North Teaching Hospital, Ragama, Sri Lanka
[4] Colombo North Teaching Hospital, Ragama, Sri Lanka
[5] Department of Parasitology, Faculty of Medicine, University of Kelaniya, Ragama, Sri Lanka
[6] Department of Biochemistry & Clinical Chemistry, Faculty of Medicine, University of Kelaniya, Ragama, Sri Lanka, *dcgune@kln.ac.lk*