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Mononeuritis Multiplex: A Rare Complication of Dengue Fever

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ABSTRACT

Mononeuritis Multiplex is a rare autoimmune peripheral neuropathy that occurs in association with infection, vasculitis, diabetes or a paraneoplastic syndrome. Here we report a case of left-sided weakness secondary to dengue fever. Neurological complications of dengue fever are increasingly reported. These complications are self-limiting and do not require any treatment. Early clinical suspicion helps to find the diagnosis

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INTRODUCTION

Dengue fever is one of the most common viral diseases transmitted by mosquitoes that impact humans, every year.[1] One of the four unique serotypes (DENV 1-4) of the single-stranded RNA Flavivirus genus is responsible for dengue disease.[2] A sudden onset of a high fever marks the start of classical DF after an incubation period of 3–15 days (often 5–8). Dehydration can result in neurological issues including febrile seizures during the febrile phase. Three to five days following the onset of a fever, a macular-papular recovery rash occurs, and it typically begins on the trunk before spreading to the extremities.[3] The most common symptoms of dengue include fever, headache, rash, myalgia and arthralgia.[2] Dengue fever can develop with neurological symptoms, despite the fact that it often presents with a feverish illness.[4]

CASE REPORT

A 62-year-old male patient was apparently normal until 2 days back of his admission when he developed a fever with chills (recorded temp-100F). He also had a headache which had persisted for the past 2 days. He had 5-6 episodes of vomiting, vomitus contained food particles and was non-bilious & non blood stained; 5-6 episodes of loose stools, semi-solid, yellow stools. His initial routine blood investigations showed decreased total counts(3600), reduced platelet count(89000), and normal levels of Hb (13.4), RBC and PCV. His RFT and URE were within normal ranges. He had hyponatremia (Na-128) and was started on a 6gm Salt diet after which his sodium level was corrected. His LFT was mildly deranged (SGOT/PT-128/134). He tested Dengue NS1 antigen and was found to be positive.

CT and MRI brain were taken in view of left-sided weakness and showed no acute infarction or bleed, Age-related atrophy, Fazekas grade I leukoaraiosis. Neurology consultation was sought in view of left distal weakness. His vitals and platelet levels were serially monitored. Nerve conduction study (Radial nerve & Common peroneal nerve) was done i/v/o Wrist drop and Foot drop and showed evidence of the possibility of mononeuritis multiplex involving left radial, peroneal and tibial nerves(?autoimmune mediated). In addition there is a mild degree of bilateral entrapment of median nerves at wrist-Carpal tunnel syndrome. He developed burning micturition and pain while urinating and URE & Urine C&S were sent. Urine C&S showed growth of mixed organisms (>3) and hence repeat culture was send. Neurology and PMR consultations were sought and their advises followed. In view of

persistent wrist drop/foot drop, rheumatology workup, serum ACE levels, Hep B, C tests were done and all were inconclusive. Also Anti Ganglioside Antibodies profile (IgG and IgM in serum-GM1,GD1b,GQ1b) and Neurofascin Quantification in serum-155,140,186 were sent. During his course of hospital stay, he was treated with IV Fluids, anti-pyretics, gastroprotectives, vitamin supplements, anti-spasmodic, urinary alkalising agent and other supportive measures. His platelet levels showed decreasing trends initially from 89000 to 60000 but improved subsequently to 0.98 on the day of discharge.

DISCUSSION

This case highlights a rare neurological complication of dengue fever, mononeuritis multiplex. There has been increasing evidence of dengue neurotropism and accordingly the neurological manifestations of dengue fever can be categorised as dengue encephalopathy, encephalitis, neuromuscular complication and neuro-ophthalmic involvement. It is important that we identify these uncommon neurological presentations and also understand their underlying mechanisms.

Several pathogenic mechanisms have been hypothesized to contribute to the neurological manifestations of the disease. Three pathogenic pathways for the neurological consequences of dengue infection were described up till 2012. 1) Viral direct CNS invasion that results in neurotropic conditions like meningitis, encephalitis, and myositis. 2) metabolic abnormalities that cause CNS complications like encephalopathy, stroke, and hypokalemic paralysis; 3) autoimmune complications such encephalomyelitis, Guillain-Barré syndrome (GBS), cranial nerve palsy, and optic neuritis. According to studies, when the dengue virus infects a person, the blood-brain barrier is disrupted, signaling a viral invasion. The presence of viral RNA in the CSF and cerebral tissues of the patients also suggests that the cause of dengue encephalitis is the direct invasion of the CNS by the virus rather than a passive crossing of the virus into the CNS secondary to a vascular leak or rupture of the blood brain barrier.[4]

The immune-mediated mechanism is one of the causes of mononeuropathies. Another process involves a hematoma that forms because of the low platelet count compressing the nerve trunk.

Dengue-associated mononeuropathies are self-limiting and do not require any specific treatment.

Our patient developed left-sided distal weakness during his hospital stay for which a CT and MRI were taken following which a NCS study was performed as the patient developed wrist and foot drop. The NCS study revealed the possibility of mononeuritis multiplex involving left radial, peroneal and tibial nerves.

The patient developed the symptoms in the early stage of his illness and the fact that he developed full recovery without the use of any immune modulators suggests that the likely pathological mechanism underlying his presentation would have been the direct invasion of the peripheral nerves rather than an immune mediated mechanism. This is similar to the case presented by Jun Yang Ho et al.[4]

CONCLUSION

Dengue remains the world's most common mosquito-borne viral disease to date. About half of the world's population is now at risk of dengue with an estimated 100- 400 million infections occurring each year. Even though neurological manifestations are rare, they should always be taken into account as a potential sign of DENV infection in patients who appear with fever and acute neurological abnormalities in dengue-endemic areas of the world. There is a wide range of potential neurological symptoms, and in endemic locations, early clinical suspicion is still essential for making the correct diagnosis.[4]

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