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CASE REPORT

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An unusual case of transverse myelitis in dengue fever: A case report from Nepal

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Key Clinical Message

Dengue fever can also have various neurological complications but involvement of the spinal cord is often unusual. This is a case where the patient had transverse myelitis as a complication of dengue fever.

Abstract

Dengue fever can have various neurological complications but involvement of the spinal cord is often unusual. We report a case of a 49-year-old female, a known case of dengue fever, who presented with urine retention, inability to stand and walk with tingling sensation of bilateral lower limbs. Her vibration and joint position sensation was reduced below T2 level along with altered reflexes but MRI could not explain the examination findings. She was diagnosed clinically as transverse myelitis (TM) in the background of dengue fever. She showed drastic improvement with treatment of steroids. As TM as a complication in a patient with dengue fever is rare, and due to the paucity of similar case reports in Nepal, this case report is of value for the scientific community.

KEYWORDS

dengue fever, flavivirus, methyl prednisolone, transverse myelitis

1 | INTRODUCTION

Dengue is a febrile illness caused by flavivirus transmitted via Aedes aegypti or Aedes albopictus mosquitoes. With rampant increase in population rate and unmanaged urbanization, dengue cases are rapidly increasing in tropical and sub-tropical countries like ours as these vector breeds in standing water like in containers and air coolers.[1–3] Though, four serotypes of the dengue virus (Dengue 1–4) exist in Nepal, 1 and 2 contributes maximum number of cases. Infection may be asymptomatic or present with a broad range of clinical manifestations including a mild febrile illness to a life-threatening shock syndrome.[4]

Multiple studies have shown the central and peripheral nervous systems involvement of Dengue but spinal cord involvement is unusual and can manifests as post infectious myelopathy, acute disseminated encephalomyelitis, or transverse myelitis (TM).[5]

Here we present a case of TM that developed 5 days following dengue infection.

2 | CASE REPORT

A 49-year-old female with no known comorbidities presented with history of fever, generalized body weakness and loss of appetite and who had been diagnosed with dengue fever after positive results of NS1 antigen and was under oral Paracetamol 500 mg per oral (as per required) presented to emergency room with retention of urine after 5 days of her initial symptoms. She was discharged with Foley's catheter in situ. Two days following this, she presented to ER again with inability to stand and walk which was associated with weakness and tingling sensation of bilateral lower limbs. She also complained of burning sensation over dorsal aspect of right foot for 3 years but had no history of any known comorbidities like diabetes, hypertension, or thyroid disorders.

Her vitals were stable and central nervous system examination showed intact higher mental functions. There were no signs of meningeal irritation. Muscle power was normal in the upper limb whereas it was decreased bilaterally in the lower limb. Her sensory examination revealed intact fine and crude touch but vibration and joint position sensation were reduced on bilateral lower limbs, abdomen and chest below T2 level. Superficial abdominal reflex was abolished and knee and ankle reflex were absent bilaterally with plantar reflexes bilaterally upgoing. Neurological examination of upper limbs, the cranial nerves and cerebellar examination were normal. Ophthalmological examination were also within normal limits.

Laboratory investigations showed normal complete blood counts and no growth on blood culture. Her HIV serology was nonreactive and blood sugar, electrolytes, kidney function tests, vitamins level were within normal limits. CSF analysis and auto immune panel also did not point us toward any pathological condition. Patient clinical profile did not guide us to perform serological evidence of anti-aquaporin 4 (NMO-IgG) to rule out neuromyelitis optica spectrum disorder (NMOSD). As shown in Figure 1, MRI Brain did not reveal any significant finding. However, MRI dorsal spine (Figure 2) showed mild disc bulge at the L4/5 and L5/S1 levels, mild bilateral neural foraminal stenosis without major neural impairment, and lumbar spondylosis-like characteristics.

Provisional diagnosis of TM was made based on patient's symptoms and correlating with the examination and investigations. MRI report of mild disc bulge at L4/L5 could not explain the examination findings of reduced vibration and joint position sensation in chest, abdomen and bilateral lower limbs below T2 level.

She was admitted and managed with analgesics and IV methylprednisolone 1 g intravenously once a day for 5 days and then changed to oral prednisolone 60 mg per oral once a day. Bladder catheterization was removed after 5 days. Physiotherapy was also started in hospital. Her symptoms of weakness improved dramatically with starting of steroids and she could walk with assistance. She was discharged after 8 days of hospital stay and advised to follow-up in OPD (outpatient department). As per advice, on neurophysician consultation, her steroids were tapered gradually over 30 days but for her burning sensation, she was started and advised to continue capsule gabapentin 100 mg, three times a day. In the follow-up after 2 weeks, the patient had no difficulty walking in level ground and her condition drastically improved. She is under regular follow up in our OPD.

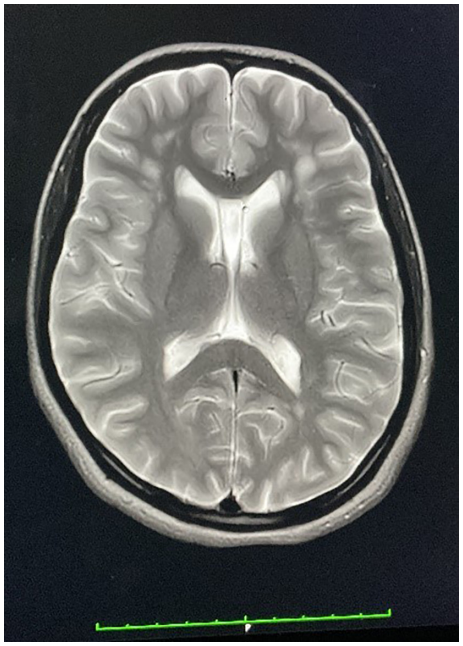

FIGURE 1 MRI brain axial view showing no gross pathology.

3 | DISCUSSION

Dengue fever can have neurological features with 95% of those comprising to be central nervous system complications. The most common of them are encephalopathy and encephalitis. There can be a wide range of neurological complications ranging from mild non-specific symptoms of headache, dizziness, altered sensorium to seizures, meningismus, myelitis, encephalitis, or encephalopathy.[5]

Badat et al. showed that overall 2.3% of patients with dengue fever showed TM with children (<18 years old) constituting 13% of them as reported by six studies. Transverse myelitis is a neurological disorder of the spinal cord which is caused by inflammation. Its symptoms develop over hours or days and worsens over a matter of days to weeks. Symptoms include, but are not limited to, sensory alteration, weakness, and autonomic dysfunction

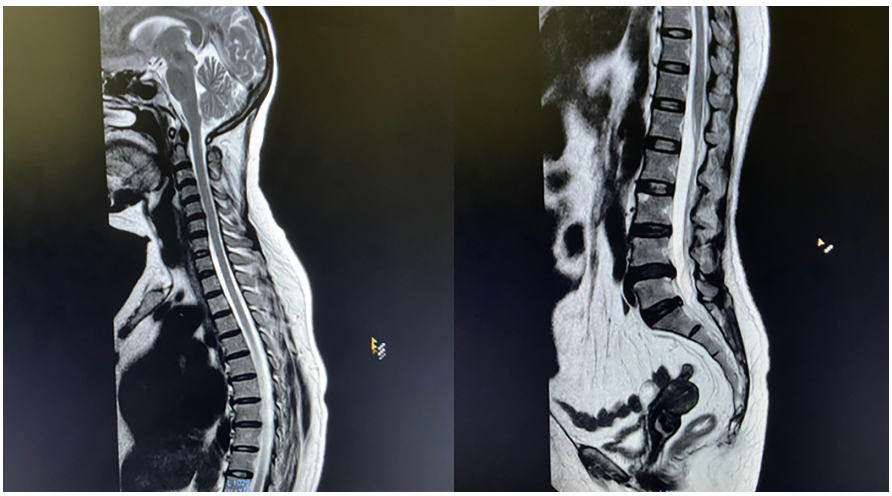

FIGURE 2 MRI spine showing mild disc bulge at L4/L5.

including bowel and bladder problems.[6] The main causes of acute TM include relapsing immune-mediated disease, such as multiple sclerosis (MS) and systemic inflammatory conditions, such as systemic lupus erythematosus, toxins, or infections.[7]

Transverse myelitis can be associated with dengue fever and it can occur during the infection (parainfectious) via direct invasion, or after the infection (postinfectious) which is supposedly immune-mediated inflammatory process. Dengue fever with TM as its complication has been found in a number of case reports and just like in our case, the main presenting complaint was sensorimotor disturbance of the lower limbs and urinary retention.[8]

Our patient developed acute retention of urine after 5 days of her initial symptoms of dengue fever and further developed weakness of bilateral lower limbs severe enough to make her unable to stand or walk along with tingling sensation over both limbs. A sensory level was noted at T2 segment. There were no signs of meningeal irritation and CSF analysis showed normal findings. There were no features suggestive of autoimmune pathology. Our provisional diagnosis was TM due to dengue fever and other possible differentials included compressive myelopathy, demyelinating conditions.

The spinal cord MRI findings in para infectious myelitis often show nonspecific findings with most commonly showing long segment T2 hyperintensity, usually with some degree of expansion, and often with enhancement.[9] In our case, MRI dorsal spine showed mild disc bulge at the L4/5 and L5/S1 levels, mild bilateral neural foraminal stenosis without major neural impairment, and lumbar spondylosis-like characteristics. However, the MRI report of mild disc bulge at L4/L5 could not explain the examination findings of reduced vibration and joint position sensation in chest, abdomen and bilateral lower limbs below T2 level. Point to be noted that a normal MRI of spine also does not rule out or invalidate the clinical diagnosis of transverse spinal cord syndrome.[10] So, we managed the patient in the line of TM following dengue fever based on the positive history of dengue fever and examination findings likely due to acute TM and so started patient on high dose IV steroids. Treatment with steroids showed dramatic improvement with almost completely subsidence of symptoms which further favored our diagnosis.

4 | CONCLUSION

With early diagnosis and appropriate treatment, the prognosis of TM secondary to dengue fever is excellent. So, this article can be of value to the scientific community and it is important for the treating physicians to be aware of such neurological manifestations that can occur for better and prompt outcome of the patients.

AUTHOR CONTRIBUTIONS

Kipa Shrestha: Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft; writing – review and editing. **Bipin Poudel:** Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft; writing – review and editing. **Shubham Shrestha:** Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft; writing – review and editing. **Binay Pravakar Rai:** Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft; writing – review and editing. **Pranaya Rajbhandari:** Conceptualization;

data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft; writing – review and editing. **Deepak Kumar Mishra:** Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflict of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not available to this article as no datasets were generated or analyzed during the current study.

ETHICS STATEMENT

Since this report involves no experiments, the ethical approval is waived.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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