



(CASE REPORT)



## Transverse myelitis with positive dengue infection

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### Abstract

Transverse myelitis is a rare inflammatory disease of the spinal cord that presents with sensory deficits, and rapid onset of weakness with/without bowel and bladder dysfunction.. Dengue being a common vector borne infection, may also interfere with the neurological function of the patient.

The report is about how transverse myelitis is difficult to diagnose and its non-specificity to a particular etiological factor, how dengue can be a rare but possible etiological factor in causing transverse myelitis.

A 33 year old female came with the complaints of upper and lower limb weakness, she was found difficult to make sudden movements. Examinations revealed the spinal inflammation that is responsible for the weakness. Serum immunoglobulins confirmed the presence of dengue infection in the patient. Estimating the etiology of the infection turned out that dengue infection might be the possible cause for the spinal inflammation, thereby resulting in transverse myelitis. Appropriate pharmacotherapy and physiotherapy showed improvement in the patient's condition which rapidly progressed to speedy recovery and provided her an independent stability to function on her own.

**Keywords:** Transverse myelitis; Dengue; Spinal cord; Pharmacotherapy; Non-specific; Inflammation

### 1. Introduction

With increasing population, construction and modernisation of the world, vector borne diseases like dengue are rapidly evolving, climatic catastrophe like floods and heavy rains results in water stalling all around, that creates a favourable environment for these vectors to grow large in numbers. Dengue is a viral disease caused by a virus from Flaviviridae family namely flavivirus, transmitted by *Aedes aegypti* mosquito [1]. Transverse myelitis on the other hand is a rare, acute inflammatory disorder involving various regions of spinal cord but most commonly involving the thoracic/dorsal region. Early diagnosis and treatment may shorten the duration from 6months to 3months but when left unnoticed and untreated, may lead to severe permanent disability [2]. Transverse myelitis is characterised by the presence of both motor and sensory deficits. Untreated Motor deficit might lead to muscle flaccidity which further progresses to spasticity, while sensory deficits are common and produce symptoms like pain, paraesthesia and dysesthesia [3]. When transverse myelitis remains to be the prognosis, Magnetic Resonance Imaging (MRI) and Lumbar Puncture (LP) for CSF analysis are the two important investigative tests that must be carried out [4]. Transverse myelitis and dengue might seem to be two different unrelated conditions but it is true that dengue is a rare but possible causative factor of transverse myelitis and is confirmed by the presence of dengue antigens/serum IgM in the cerebrospinal fluid (CSF) [5].

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## 2. Case Presentation

A 33 year old female presented to the outpatient department with fever and complaints of weakness with pain over upper and lower limbs which created her difficulty in walking for the past few days. Her ability to sit and stand was observed to be quite tough because of the pain. Fever was found to be on and off with chills and body aches which were temporarily treated with antipyretics. She had a blood pressure of 120/70 mmHg and her heart was at 86 beats per minute with a temperature of 99.3F. Neurologist opinion was suggested and upon examination, no flaccidity was observed from the upper limbs while lower limbs showed reduced muscle power and co-ordination with abnormal deep tendon reflexes and withdrawal action when superficial reflexes were tested. Magnetic Resonance Council (MRC) score of 1/5 was observed. Resonance Imaging (MRI) examination was carried out on day 1 which revealed expansion, slight inflammation and alteration of D5 spinal segment. . Sensory neuropathy of the right ulnar nerve and mild motor neuropathy of left tibial nerve were observed from nerve conduction study. Doppler test ruled out the possibility of Deep Vein Thrombosis(DVT) or varicosities. Laboratory workup showed a reduced blood profile with haemoglobin being 10.6g/dl, packed cell volume (PCV) of 34%, mean cell volume being 73 cubic micro meter and mean cell haemoglobin(MCH), mean cell haemoglobin concentration(MCHC) being 22.7pg/cell and 31.2g/dl. She had a borderline platelet count of 1.75 Lakh cells/mm<sup>3</sup> and an elevated levels of polymorphs (55%), Lymphocytes (41%) and monocytes (7%). Cerebrospinal Fluid (CSF) protein levels were found to be 50mg/dl and white blood cells in CSF were 75cells/microlitre. Serum IgM and IgG antibodies were found to be positive (IgM-2.92g/L and IgG- 18.9g/L). From the results obtained, she was diagnosed with transverse myelitis with a positive dengue infection. Treatment started with intravenous methyl prednisolone at a moderate dose of 500mg for 3 days and the dose was gradually tapered by substituting with oral mycophenolate mofetil tablets 500mg twice a day along with physiotherapy exercises to keep the body muscles in constant motion to regain the muscle strength and coordination. She was administered oral Doxycycline 100mg every 12hrs for 5days . Iron supplement (Ferrous Fumarate 152mg + Folic Acid 1500mg) was administered to improve her anaemic status. She developed no fever except on day 1 of treatment for which oral paracetamol 650mg was administered. The patient's blood profile improved after 5days with a good regain of muscle strength. MRC score reached 3/5 upon which she was discharged. Multivitamins, Iron supplement, and Mycophenolate mofetil(250mg once daily for 7 days) were the discharge drugs for the patient. Gradual increase in muscle strength was observed after weekly follow ups and she was able to move around without help by 3<sup>rd</sup> week with complete recovery of muscle strength.

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## 3. Discussion

Etiology of Transverse myelitis is not specific as it can occur as a side effect of number of conditions [6]. Magnetic Resonance Imaging(MRI) and Spinal Tapping (Lumbar Puncture), like in other studies, in our study also seem to be the first line diagnostic procedure to confirm a patient to have Transverse myelitis or to even prognose a patient to have transverse myelitis. Intravenous corticosteroids remain to be the first line treatment option for transverse myelitis [2].

In our study, the transverse myelitis was identified to secondary to a dengue infection. Although it is rare, there are no other possible causes for this patient to have acquired spinal cord inflammation and thereby this case remains to be rare and also an evidence that, the etiology behind transverse myelitis may not always be specific.

Among all other mosquito borne viral diseases, dengue is the most common one affecting millions worldwide [7]. There are certain studies where transverse myelitis has been associated with dengue infection. Our study stands to be one among supporting the association of dengue infection with transverse myelitis [8].

Dengue fever, though caused by various serotypes remains to be a benign clinical condition when its compared with its severe alternatives like dengue haemorrhagic fever and dengue shock syndrome [9].

Treating a condition at its earliest phase is always beneficial as regardless of the cause, untreated transverse myelitis might always lead to permanent disability and may confine the patient to an artificial support like a wheelchair [10].

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## 4. Conclusion

Hence this report enlightens that dengue fever may also cause life threatening neurological disorders. We also can understand the fact that transverse myelitis is not a challenging disease when it is diagnosed and treated at its earliest. The report explains how proper treatment planning and implementation leads to rapid recovery of the patient where our patient started to function independently within just 3 weeks of discharge.

## Compliance with ethical standards

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### *Conflict of Interest Disclosure*

No conflict of interest to be disclosed.

### *Statement of informed consent*

Informed consent was obtained from the patient.

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