**Title:** Transverse Myelitis in a Healthy Adult Female, Rare Viral Etiology: A Case Report

**Authors:** Amina Namrouti, BS1, Mary DesRosiers, BS1, Claudette Barreto, MD2, Ian Brandon, DO2, Tariq Mahmood, MD3

**Affiliations**

1. Herbert Wertheim College of Medicine, Florida International University, Miami, FL, USA
2. Family Medicine, West Kendall Baptist Hospital, Miami, FL, USA
3. Internal Medicine, West Kendall Baptist Hospital, Miami, FL, USA

**Abstract:**

**Introduction**

Transverse myelitis (TM) is an uncommon but extensively documented neurological disorder marked by acute spinal cord inflammation, resulting in a spectrum of neurological impairments including motor, sensory, and autonomic disturbances. TM can stem from various factors, including parainfectious triggers, systemic autoimmune disorders, or reactions induced by drugs/toxins. We outline an exceedingly rare yet impactful case of viral-induced transverse myelitis linked to both COVID-19 and Coxsackie B viral infections.

**Case Presentation**

A 25-year-old female presented with acute onset bilateral upper and lower extremity motor weakness, paresthesia, and urinary retention. Neurological examination revealed diminished sensation at T4 level, generalized motor weakness (2/5 in upper extremities, and 3/5 in lower extremities), bilateral reduced hand grip with wrist drop, and hyperreflexia 3+/5 to BLE with ankle clonus. MRI Cervical spine revealed abnormal marrow signal intensity in C4-T1 level without associated enhancement. Laboratory investigation highlighted the presence of SARS-CoV-2 RNA in nasopharyngeal swabs, leukocytosis of 15, elevated inflammatory markers with CRP of 16.6, Coxsackie B virus subtypes 1,2,4,5,6, and positivity for one Lyme disease IgG subtype among 16 antibodies tested. Lumbar puncture was unremarkable with negative meningoencephalitis panel. Further workup for viral and systemic autoimmune causes of myelopathy including neuromyelitis optica, myelin oligodendrocyte glycoprotein antibody disease, and multiple sclerosis, was unrevealing.

The clinical, laboratory, and imaging findings suggested COVID-19 and Coxsackie B virus as probable or contributing causes of TM onset. The patient was treated with 1g high dose IV steroids daily for 5 days, plasmapheresis with albumin bidaily x5, foley catheter placement, and continual physical therapy. Despite neurological improvement, the patient did not reach baseline and was discharged for outpatient physical/occupational rehabilitation.

**Discussion**

Our study highlights the intricate interplay between infectious triggers and transverse myelitis pathogenesis. While viral infections are recognized as established triggers of TM, to our knowledge, this is the only case which describes viral induced TM associated with COVID-19, Coxsackie B, and Lyme disease simultaneously. The rarity of this case highlights the necessity for further investigation into the pathogenesis and mechanism of viral-induced TM, particularly concerning the interplay between COVID-19 and Coxsackie B virus; and whether their simultaneous onset contributed synergistically or independently to the onset of TM.