A Rare Case of Longitudinally Extensive Transverse Myelitis in Scrub Typhus

Dear Editor,

Scrub typhus is an important and widespread cause of febrile illness in rural areas of Asia. Scrub typhus is seen in all terrains of the Tsutsugamushi triangle, a geographical region of south and east Asia and the southwest Pacific, and is related mostly to agricultural activities.[1] A review of the literature suggests that acute transverse myelitis associated with scrub typhus occurring in the younger population is extremely rare. We report here a successfully managed rare case of a young patient with scrub typhus who presented with a thoracic longitudinally extensive transverse myelitis (LETM).

A 20-year-old male presented to the emergency department with complaints of paresthesia, weakness in both lower extremities, and urinary retention for 6 days duration. The history of presenting illness further revealed that he had fever, myalgia, and headache for a month for which he was undergoing treatment from a registered medical practitioner. There was no history of recent animal bites or illicit drug or alcohol abuse. He had no past history of major head and spinal trauma, hypertension, diabetes mellitus, tuberculosis, or chronic kidney disease.

On examination at presentation, his heart rate was 68/min, respiratory rate was 21/min, oxygen saturation was 97%, blood pressure was 128/86 mmHg, and he was afebrile. On physical examination, brownish rashes were seen over the skin of the trunk, arms, and legs with an eschar [Figure 1]. Neurological examination revealed fully intact mental status, 5/5 power in both upper extremities with normal muscle tone and deep tendon reflexes, and 2/5 power in both lower extremities with increased tone, hyperreflexia, and bilateral extensor planter reflexes. The patient also exhibited paresthesia below the nipple line. Cranial nerves and fundoscopy were normal. Examination of the abdomen, respiratory, and cardiovascular systems was unremarkable.

The initial laboratory tests, including hemoglobin, total leukocyte count, erythrocyte sedimentation rate, liver function tests, blood urea nitrogen, and creatinine, were all within normal limits. HIV, hepatitis panel, Lyme disease enzyme-linked immunosorbent assay (ELISA), and antinuclear antibody profile were negative. Chest X-ray and abdominal ultrasound examination did not reveal any abnormality. Serum immunoglobin M (IgM) (ELISA) for exposure to Orienta tsutsugamushi was 0.82 OD (biological reference ≤ 0.46 OD).

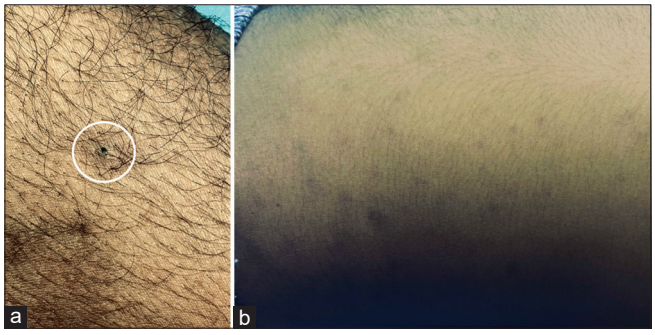

Figure 1: (a) Eschar Mark on Left Thigh; (b) Rashes Across Abdomen

Lumbar puncture showed glucose 72 mg/dL, protein 26 mg/dL, and WBC < 5 cell/mm^3. Magnetic resonance imaging with contrast of the entire spine showed subtle abnormal hyperintense signals in the spinal cord at multiple cervical and thoracic cord levels [Figures 2 and 3]. Based on MRI findings and O.tsutsugamushi antibodies titer, acute transverse myelitis associated with scrub typhus was diagnosed.

The patient was started with doxycycline 200 mg/day and steroid pulse therapy with 1000 mg of methylprednisolone. On the third day of hospitalization, his power in both lower extremities improved to 4/5 power. After 4 weeks of treatment, he was discharged on a tapering dose of steroids with improved symptoms, including urinary function. However, ejaculation dysfunction persisted even on the eighth week of follow-up.

Scrub typhus is known to occur in diverse ecological settings, with large numbers of cases being reported from various parts of India.[2] Scrub typhus presents as a common acute febrile illness in India, causing severe morbidity, and accounts for a large number of deaths. The burden of the disease has been under-appreciated. The proportion of scrub typhus among acute undifferentiated febrile illness studies is 25.3%, and community seroprevalence is 34.2%.[2] Scrub typhus presents with myriad manifestations and may involve the central nervous system (CNS) and peripheral nervous system. CNS involvement occurs in 12.5%–26% of the affected patients. CNS involvement is often a prominent aspect of the clinical manifestations in scrub typhus infection presenting as meningitis or meningoencephalitis.[3,4]

The infectious causes of myelitis are numerous and include viral, bacterial, parasitic, and fungal etiologies. The hallmark of infectious myelitis is the onset of neurologic deficits: motor, sensory, autonomic, or a combination of these. Infectious myelitis can occur due to direct infection of the spinal cord or through post-infectious immune-mediated injury. The presence of other associated symptoms or signs, such as fever or gastrointestinal or respiratory symptoms, may point toward a specific infectious etiology.[5]

Pathogens associated with infectious LETM include *Borrelia burgdorferi*, *Chlamydia psittaci*, Mumps virus, Cytomegalovirus, Coxsackie virus, *Mycobacterium*

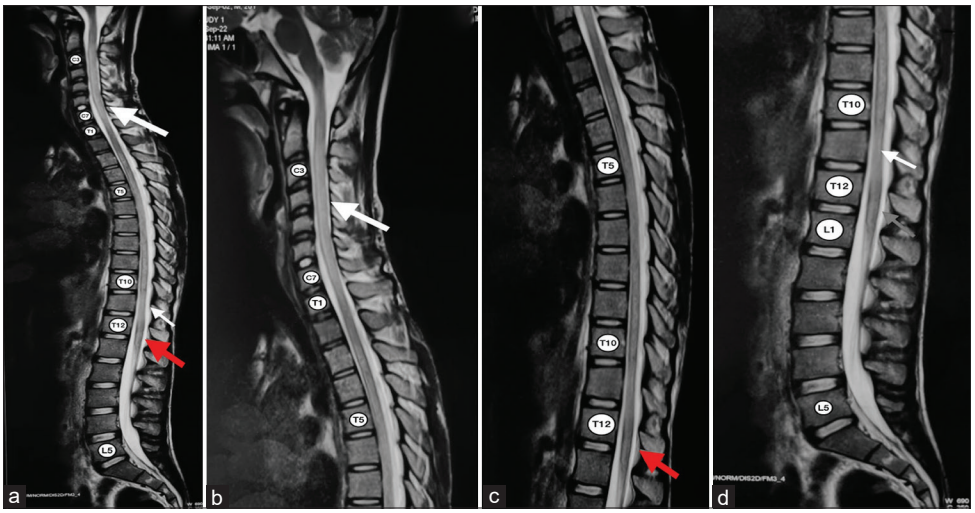

Figure 2: Contrast MRI Scans : (a) Shows subtle abnormal hyper-intense signals at multiple levels of the spine (white arrow) with fusiform dilation of spinal cord in sagittal T2 image (Red arrow); (b-d) Different Sections of the image in (a)

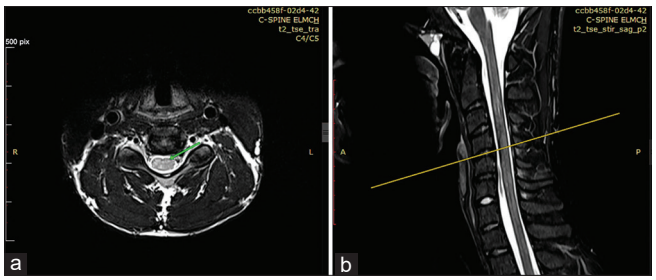

Figure 3: Contrast MRI scans : (a) Axial Section at Cervical Level shows zones of hyper intense signal corresponding to the same level as in sagittal section (b)

tuberculosis, *Mycoplasma pneumoniae*, Enterovirus 71, Hepatitis C virus, *Brucella melitensis*, Epstein–Barr virus, Echovirus type 30, *Ascaris suum*, *Toxocara canis*, and Schistosoma species.[6] Transverse myelitis as a complication of rickettsial infection is extremely rare.

A review of the literature revealed only a few case reports of acute transverse myelitis related to scrub typhus. Lee *et al.* and Yun *et al.*[7,8] reported LETM in adults presenting with typical clinical presentation and skin lesions of scrub typhus. Both patients had near-complete resolution of motor power and sensory and bladder dysfunction after doxycycline and steroid treatment. Mahajan S *et al.*[9] reported a case of LETM with scrub typhus in a middle-aged patient successfully managed with steroid treatment and physiotherapy.

A diagnosis of scrub typhus was established in our patient based on typical clinical features, IgM and ELISA positivity, the presence of an eschar, and the presence of LETM on MRI; the response to doxycycline and steroid treatment was rapid and near complete.

In conclusion, although transverse myelitis in scrub typhus infection is rare, correct diagnosis and timely treatment of scrub typhus is essential for a better outcome.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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