



A RARE PRESENTATION OF ACUTE DISSEMINATED ENCEPHALOMYELITIS (ADEM) IN SCRUB TYPHUS

Radiodiagnosis

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ABSTRACT

Scrub typhus is an acute febrile illness caused by *Orientia tsutsugamushi*. The most common presenting complaints are fever, headache, myalgia, nausea, vomiting, rash, jaundice and lymph adenopathy. Most common Neurological manifestations include Meningitis and Meningoencephalitis, among which ADEM is a rare CNS manifestation. ADEM is an autoimmune mediated demyelinating disease of the central nervous system which typically occur post infection or vaccination. This is a case report of 13yr old boy presented with fever, vomiting and altered sensorium. Laboratory investigation for Scrub typhus IgM was positive and imaging features in MRI brain showed multifocal asymmetrical T2/FLAIR white matter hyper intensities, suggestive of ADEM. We are reporting a rare case of scrub typhus with ADEM. By this we emphasize that clinicians should consider ADEM as one of the possible CNS manifestation.

KEYWORDS

CASE STUDY:

A 13 year old boy has presented with complaints of high grade intermittent fever for 10 days and altered sensorium for 3 days. On examination he was conscious, disoriented, febrile (103°F) with vitals stable. No evidence of rash, eschar and lymphadenopathy noted. Higher mental functions showed altered sensorium with GCS 10/15 - E3, M6, V1, normal power in all the four limbs. No signs of meningeal, pyramidal, extra pyramidal and cerebellar involvement. Sensory system, cranial nerves couldn't be evaluated.

Investigations showed haemoglobin-10, Leucocytes(10,000), platelets-2.7cells/cu.mm, renal parameters urea (22), creatinine (0.15) were normal. Electrolytes Na (135), Ca (8.6). Liver enzymes were normal. HIV – nonreactive, HbsAg - negative, HCV- Nonreactive, VDRL- negative, dengue IgM & IgG & NS1 antigen-negative, Scrub typhus (ELISA) IgM –Reactive. CSF study: proteins- 15 mg/dL, glucose- 82 mg/dL, acellular, CSF culture and sensitivity – Negative, CSF AFB- Negative. CSF oligoclonal band – Negative, CSF aqua protein 4Ab- Negative.

Patient was referred to radiology department to rule out neurological complications in scrub typhus as patient presented with altered sensorium.

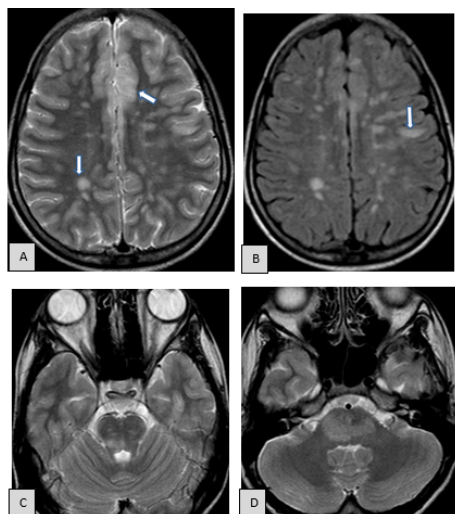


Image- A-D : T2 and Flair axial sections showed Multifocal asymmetrical hyperintensities in bilateral cortical and subcortical frontoparietal region, centrum semiovale, Medulla and Pons.

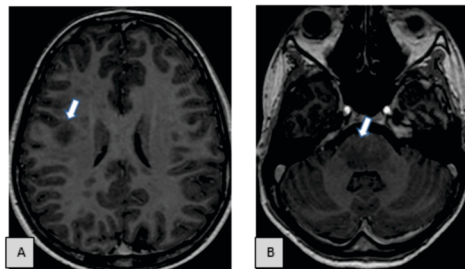


Image A-B : T1 post contrast axial sections showed no significant enhancement of the lesions.

Patient was started with doxycycline, azithromycin and ceftriaxone and intravenous methyl prednisolone 1gm once daily. His GCS improved gradually to 15/15 with stable vitals. Patient was treated with steroid therapy for 2 weeks and followed up for a period of 6 months, patient recovered without any neurological deficits.

DISCUSSION:

Scrub typhus is most common in India during monsoon season.^{6, 7} causative organism is *Orientia tsutsugamushi*. They usually infect rats, their reservoir hosts. Humans are considered as an accidental host. Patients commonly present with fever, rash and lymph adenopathy. Identification of the eschar has the most important diagnostic role in the disease.² The primary site of attack is the vascular endothelial cells leading to multi organ damage. Most common neurological manifestations are meningitis, encephalomyelitis, demyelination and meningoencephalitis.³ Acute disseminated encephalomyelitis (ADEM) is a rare CNS manifestation in scrub typhus.¹ ADEM is an autoimmune mediated demyelinating disease of the central nervous system.

Neurological manifestations secondary to scrub typhus is suspected to be due to a phenomenon called molecular mimicry, which is cross reactivity between the host's myelin cells or peripheral nerve axons with *O. tsutsugamushi* antibody or antigens presented on infected cells.⁸ Both the host and the pathogen trigger the receptors on T or B lymphocyte to activate this reaction.

It can mimic as various neurological conditions like multiple sclerosis, TB meningitis etc, starting on anti-tubercular treatment can worsen liver functions.

Laboratory tests and other investigations that help to rule out ADEM from other similar neurological conditions are CSF oligoclonal bands(Multiple sclerosis), aquaprotein 4 Ab9(Neuro myelitis optica),

CSF culture, CSF AFB(Tuberculosis) and adequate imaging through MRI and follow up is needed to come to an appropriate diagnosis.

CONCLUSION:

Early diagnosis and treatment with doxycycline, azithromycin and ceftriaxone and intravenous methyl prednisolone is necessary to prevent life threatening complications.⁹ Azithromycin is also reported to be equally effective treatment in individuals with Doxycycline contraindication - pregnant women, children less than 8 years or in doxycycline-resistant Scrub typhus prevalent areas.

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