Scrub Typhus Presenting as Acute Cerebellitis

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Abstract
Scrub typhus is known to present with varied presentation including involvement of central nervous system. We present a case who presented with fever and features of isolated cerebellitis. Serum showed IgM antibodies to scrub typhus by ELISA. Patient showed rapid response to doxycycline and dexamethasone.

Introduction
Scrub typhus, an infection caused by Orenia tsutsugamushi has become a major public health problem in many parts of India for last few years. The infection can manifest clinically as headache, myalgias, lymphadenopathy, nausea, vomiting and breathlessness. The pathognomic “eschar” is noted in 40-50% of cases. Scrub typhus can cause a wide range of neurological manifestations. The detection of IgM antibodies by ELISA is now widely used for diagnosis with high sensitivity and specificity. Doxycycline is drug of choice for treatment.¹ Presently there are no guidelines for use of corticosteroids in patients of scrub typhus with involvement of central nervous system.

Case Report
A 22 years old female presented with swaying on either side while walking which developed over 3 days and was progressive. She had fever for 12 days with headache, bodyache and vomiting. General physical examination revealed jaundice and conjunctival suffusion but no eschar was noted. On neurological examination, she was conscious, oriented with scanning speech, square wave jerks, hypotonia, impaired finger nose finger and knee heel test, rebound phenomenon and dysdiadokinesia. She was having truncal as well as gait ataxia. The systemic examination was normal except hepatosplenomegaly. On Investigation she had leucocytosis (13420/mm³) and ESR was 40 mm in 1st hour. Her liver function tests showed total protein-5.0 gm%, albumin of 2.5 gm%, total serum bilirubin- 6.4 mg% and conjugated bilirubin was 2.1 mg%, SGOT 249 IU/l, SGPT 217IU/l and alkaline Phosphatase- 495 IU/l. Rest of serum biochemical profile was unremarkable. Her CSF examination showed proteins 90 mg%, sugar 52 mg% with 15 WBCs, all were lymphocytes and ADA 2.0 IU/l and Gram, Zeil-Neelson and India ink staining were negative. Other investigations like chest x-ray, Widal agglutination test, blood slide for malaria parasite, blood and urine culture were negative. Her serum showed IgM antibodies by ELISA (InBios) for scrub typhus. MRI scan of brain showed uniform enhancement of pachymeninges with edema of bilateral cerebellar hemispheres (Figure 1). She was treated with doxycycline 100 mgs BD and inj. dexamethasone 4 mgs TDS. She was afebrile on third day of hospitalisation and ataxia also improved. She was able to sit on bed without support on 7th day and was able to walk with support on 9th day of therapy. Her repeat liver function tests after 5 days of hospitalisation showed total protein 5.2 gm%, albumin of 3.0 gm%, total serum bilirubin 3.4mg% and conjugated bilirubin was 1.5 mg%, SGOT 152 IU/l, SGPT 146 IU/l and alkaline phosphatase-272 IU/l and these were normal at the time of discharge. Injection dexamethasone was stopped on her follow up visit after 4 weeks.

Discussion
The complications of scrub typhus usually develop after the first week of illness. Jaundice, renal failure, pneumonia, ARDS, septic shock, myocarditis and meningoencephalitis are various known complications.

There is a wide range of neurological manifestations reported with scrub typhus. The pathological findings in central nervous system in scrub typhus include diffuse or focal mononuclear cell exudates in leptomeninges and presence of typhus nodules (cluster of microglial cells) that are distributed throughout brain substance.² A large study showed that central nervous system (CNS) was involved at least slightly in almost all patients suffering from scrub typhus however focal neurological deficit occurs rarely.³ In a study of scrub typhus from Himachal Pradesh, 15% of patients had CNS involvement and who had altered sensorium with abnormal cerebrospinal fluid but none had focal neurological deficit.¹⁴ Pai et al have demonstrated the presence of rickettsia in CSF samples from patients with scrub typhus by using nested PCR. The CSF studies revealed mild-to-moderate pleocytosis (mainly mononuclear) in 48% of the patients, normal glucose levels and a mild increase in the protein levels in 30% of patients. These findings are similar to those of viral meningitis. There was presence of erythrocytes in the CSF of some cases this can be attributed to presence of generalized vasculitis.⁵ There are other manifestations like delirium, myelitis, cerebral haemorrhage, hearing loss, isolated 6th nerve palsy, bilateral 6th and 7th nerve palsy, trigeminal neuralgia, opsoclonus, transient parkinsonism, myoclonus, brachial plexopathy, polyneuropathy, acute disseminated encephalomyelitis and Guillain–Barre syndrome reported in patients of scrub typhus.⁶ ⁷

There are no guidelines regarding use of corticosteroids in scrub typhus. Choi et al used steroids in a patient of scrub typhus with acutely progressive severe cerebellar dysfunction which improved on her follow up visit after 4 weeks.

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local neurologic symptoms and the initial neurologic symptoms such as restlessness and irritability and abnormal lateral gaze and paralysis in upper extremities recovered and no new neurologic sequelae appeared.\(^8\) Our patient also showed rapid improvement in neurological deficit after treatment with dexamethasone. Further studies are needed for use of corticosteroids in scrub typhus.

We present a case of scrub typhus presenting with isolated acute involvement of cerebellum and there is scant literature describing isolated cerebellar dysfunction in scrub typhus.

![Fig. 1: T2 Weighted MRI scan showing diffuse oedema of cerebellar hemispheres (arrow)](image)

**References**