

A Rare Infectious Trigger for Acute Disseminated Encephalomyelitis

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ABSTRACT

Acute disseminated encephalomyelitis (ADEM) is an infrequent demyelinating disorder of the central nervous system precipitated by infections and immunizations. ADEM following scrub typhus infection is a rare manifestation. Here, we are reporting a case of ADEM triggered by Scrub Typhus infection.

Keywords: Scrub Typhus, ADEM

*See End Note for complete author details

INTRODUCTION

Neurological features accompany 20% of scrub typhus infections and may affect the central or peripheral nervous system and may even occur in combination. Multiple mechanisms underlie neurological involvement, including direct invasion (meningitis, encephalitis), vasculitis (myositis) or immune-mediated mechanisms (op-soclonus, myoclonus, optic neuritis, Guillain–Barre syndrome).¹ Scrub typhus infection is associated with a broad spectrum of neurological complications ranging from aseptic meningitis, meningoencephalitis, AIDP, multiple cranial nerve palsies, venous sinus thrombosis, transverse myelitis and cerebellitis. Acute disseminated encephalomyelitis [ADEM] is an immune-mediated demyelinating disorder affecting the brain and spine. Only a few cases of ADEM have been described in the literature. Chen et al. described a case of ADEM

following scrub typhus infection with extensive periventricular white matter lesions.² We are reporting this case because of its rarity (**Figure 1**).

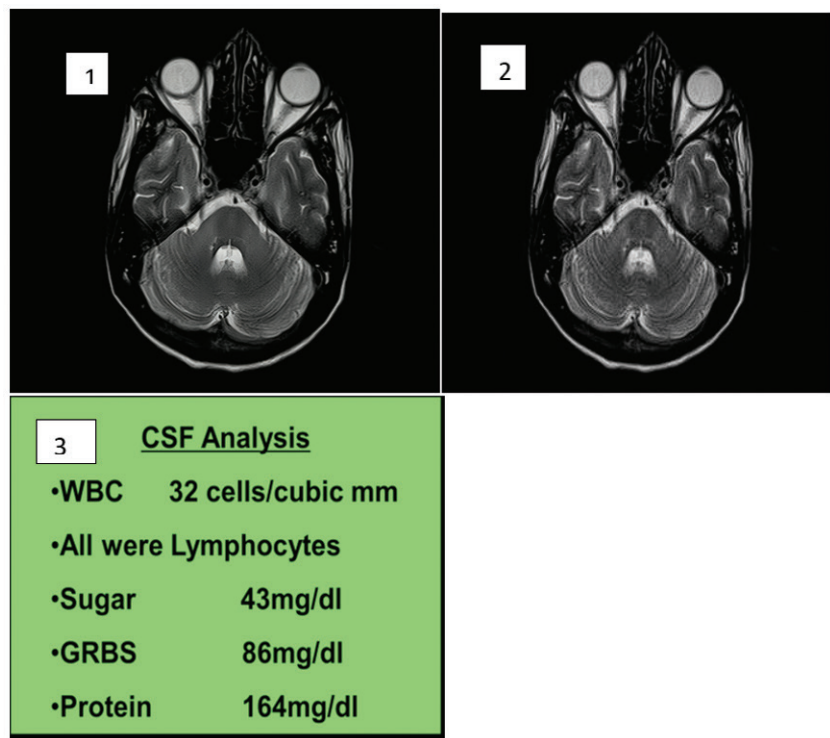


Figure 1. MRI Brain suggestive of ADEM (Images 1&2); CSF Analysis (Image 3)

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CASE REPORT

A 27 year male forest worker, an ethanolic, presented to the casualty with fever and myalgia of 7 days, followed by breathlessness and altered sensorium. He was referred from a local hospital as a case of short febrile illness with pseudo-hepato-renal dysfunction with pancreatitis. Because of oliguric acute kidney injury, haemodialysis was initiated. Workup for tropical fever syndrome revealed IgM Scrub Typhus ELISA as positive. Serology for dengue and leptospirosis was negative. Nasopharyngeal swab PCR was negative for influenza and SARS-CoV-2 infection. Three days later he progressed to hypoxaemia and became drowsy which necessitated endotracheal intubation and mechanical ventilation. Three days post-intubation, the patient developed flaccid quadriplegia. CSF study showed elevated protein with lymphocytic pleocytosis. Hypoglycorrachia was absent. CSF neuroviral panel by Film array was negative. Serum ELISA for Hanta, Japanese encephalitis, West Nile and Kyasanur Forest Disease were negative. MRI BRAIN showed T2/FLAIR hyperintensities involving the periventricular, subcortical and deep white matter of frontal lobes bilaterally, middle cerebellar peduncle and posterior limb of the internal capsule with no diffusion restriction or enhancement, suggestive of ADEM. MRI Spine was normal. The patient was treated with intravenous methylprednisolone pulse for ADEM and a combination of intravenous doxycycline and azithromycin for scrub typhus infection. He was successfully weaned off the ventilator and his sensorium improved. Following the steroid pulse he regained upper limb power (grade 5/5) bilaterally in 5 days. Lower limb power remained grade 3/5 bilaterally initially. NCS showed features of critical illness polyneuropathy. He underwent nutritional and physical rehabilitation and completely recovered in 3 months.

CONCLUSION

Most common infectious triggers for ADEM are viral infections. Viral-induced autoimmunity can be activated

through multiple mechanisms including molecular mimicry, epitope spreading and bystander activation. A bacterial infection like scrub typhus triggering ADEM is very rare and should be considered in endemic areas.

END NOTE

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Conflict of Interest: None declared

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