



**ACUTE ENCEPHALOPATHY SECONDARY TO SCRUB TYPHUS IN AN ELDERLY
FARMER: A CASE REPORT**

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ABSTRACT

Scrub typhus is an infectious disease and an important cause of acute febrile illness in tropical regions.^[1,2] It often represents non-specific clinical symptoms, which makes it difficult to diagnose.^[2,7] Although neurological involvement is widely recognised, it may mimic other causes of acute encephalopathy.^[7] The case reports a 65 year old male farmer with a history of chronic alcohol use who presented with fever and an acute onset of altered sensorium. Clinical examination indicated an eschar over the right thigh and cutaneous erythematous lesions over the trunk and upper limbs. Laboratory investigations revealed thrombocytopenia, transaminitis, hyponatremia, and elevated inflammatory markers. No acute intracranial pathology was detected by neuroimaging. Scrub typhus infection was confirmed by serological testing. The patient was treated with intravenous doxycycline and supportive management included intravenous fluids, antipyretics and thiamine supplementation. The patient showed significant clinical improvement within 48 hours with fever resolution and normalisation of sensorium. The case highlights the significance of considering scrub typhus in differential diagnosis of acute febrile encephalopathy in endemic areas.^[3,5] It is crucial for early diagnosis of eschar and prompt initiation of doxycycline therapy for favorable outcomes.^[1,7]

KEYWORDS: Scrub typhus, encephalopathy, eschar, thrombocytopenia, doxycycline.

INTRODUCTION

Scrub typhus is a zoonotic infection caused by *Orientia tsutsugamushi*.^[2,4] It is transmitted by the bite of infected chigger mites.^[2] It remains an important cause of acute febrile illness in tropical regions, particularly in parts of Asia, including India.^[1,3,8] Signs and symptoms range from mild febrile illness to severe multiorgan dysfunction involving the respiratory, renal, hepatic, and central nervous systems.^[5,7] Neurological manifestations such as encephalopathy and meningoencephalitis are increasingly identified but often remain underdiagnosed because of non-specific presentations.^[7] The presence of an eschar, although characteristic, may be overlooked during clinical examination.^[2,7]

The case reports scrub typhus presenting as acute encephalopathy in an elderly farmer with rapid clinical recovery following doxycycline therapy.

CASE PRESENTATION

A male farmer, age 65, arrived at the emergency department complaining of a fever that had persisted for four days and altered sensorium for one day. The fever was slight, low-grade, episodic, and only partially controlled by medication. The altered sensorium appeared suddenly and was marked by irritation, aggressive behavior, and the inability to heed spoken directions. There was no history of seizures, involuntary movements, or focal neurological deficits. For the past 30 years, the patient had been a chronic alcohol drinker, consuming around one-quarter of an alcoholic beverage each day, with the most recent intake one day before

admission. There were no known comorbidities such as diabetes mellitus, hypertension, chronic kidney disease, or previous cerebrovascular disease. There was no significant surgical or drug history as well. The occupational history revealed regular exposure to cattle and farm surroundings, which are recognised risk factors for scrub typhus infection.^[3,6]

On examination, it was found that the patient was awake but irritable and aggressive. He was febrile with a temperature of 101°F and mildly dehydrated. Vital parameters were as follows: blood pressure 110/70 mmHg, pulse rate 112 beats/minute, respiratory rate 24/minute, and oxygen saturation 97% on room air.

Cardiovascular examination revealed normal S1 and S2 without murmurs or rubs. Respiratory system

examination showed bilateral equal air entry without added sounds. Abdomen was soft without organomegaly.

Neurological examination revealed altered behavior without neck rigidity. Kernig's sign and Brudzinski's signs were negative. Pupils were bilaterally equal (2.5 mm) and reactive to light. There were no focal neurological deficits. Bilateral plantar responses were extensor. Fundoscopic examination did not reveal papilledema.

Dermatological examination revealed faint erythematous macular lesions over the anterior chest wall, abdomen, and bilateral upper limbs. A characteristic eschar was noted over the right thigh near the inguinal region, which strongly suggested scrub typhus infection.^[2,7]



Figure 1: Cutaneous lesions over the trunk.



Figure 2: Eschar lesion over the right thigh near the inguinal region characteristic of scrub typhus.

INVESTIGATIONS

Peripheral smear showed normocytic normochromic red blood cells with thrombocytopenia and no evidence of hemoparasites. Total leukocyte count was within normal limits without atypical cells. Complete blood count showed transient Thrombocytopenia with both stable RBCs and leukocyte counts. Inflammatory markers were elevated with CRP of 26.9 mg/L. LDH was 119 U/L and CPK was 32.7 U/L.

Liver function tests showed mild transaminitis with elevated SGOT and SGPT levels along with mild hyperbilirubinemia. Serum albumin was mildly reduced. Renal function tests remained within normal limits throughout hospitalization. Electrolyte analysis revealed mild hyponatremia and transient hypokalemia. Thrombocytopenia, transaminitis, and hyponatremia are among the commonly reported laboratory abnormalities in scrub typhus.^[5,7]

Venous blood gas analysis showed

pH: 7.36

pCO₂ : 31 mmHg

pO₂ : 34 mmHg

HCO₃⁻ : 18.3 mmol/L

Blood glucose: 58 mg/dL

Lactate: 1.8 mmol/L

RADIOLOGICAL IMAGES

CT BRAIN

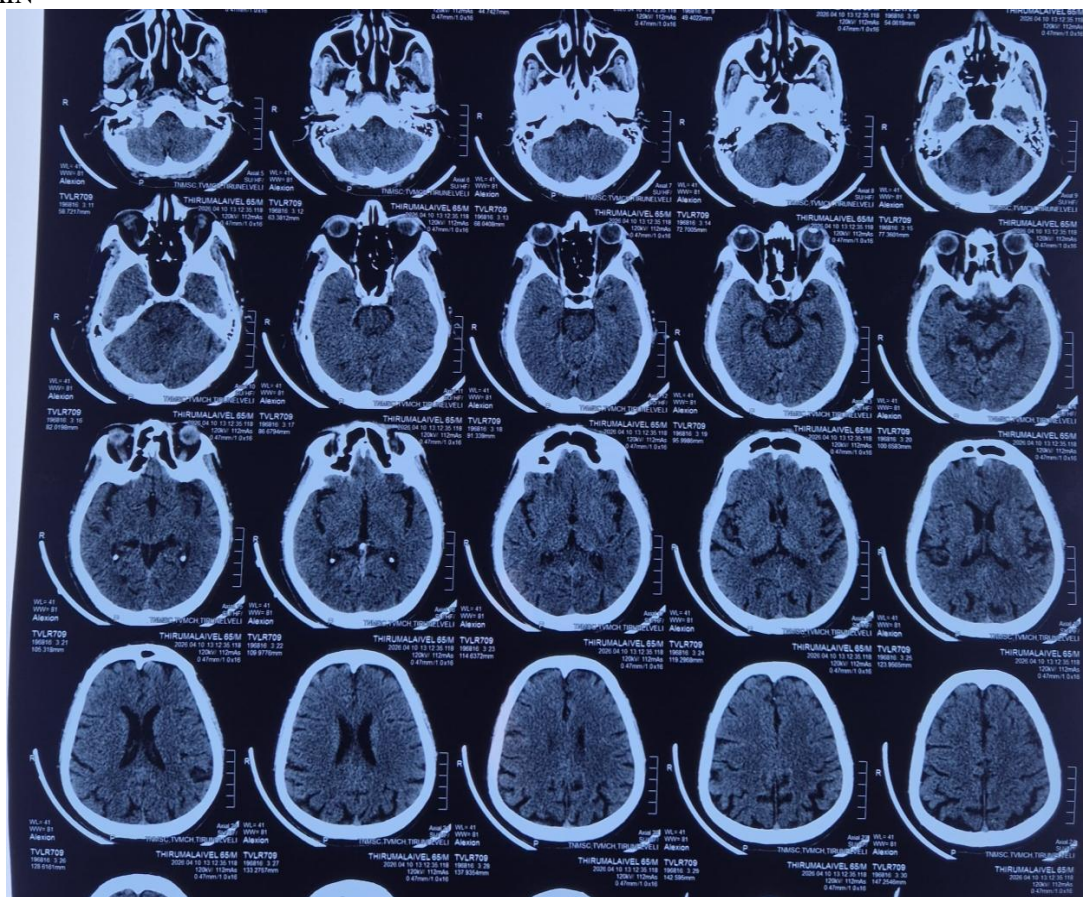


Figure 3: Non-contrast CT brain showing no acute intracranial abnormality.

Serological investigations for dengue, leptospirosis, and enteric fever (Widal test) were negative. Scrub typhus IgM serology was positive.

Ultrasonography of the abdomen and pelvis showed no significant abnormality. CT brain was normal without acute intracranial pathology. CT chest revealed mild bilateral pleural effusion with mild subsegmental atelectatic changes and mild cardiomegaly.

Electrocardiography showed normal sinus rhythm with incomplete right bundle branch block. Two-dimensional echocardiography revealed mild tricuspid regurgitation, no regional wall motion abnormality, preserved left ventricular systolic function with ejection fraction of approximately 64%, and Grade I left ventricular diastolic dysfunction.

Neurology consultation advised withholding lumbar puncture for 48 hours and recommended MRI brain, MRA, and MRV. MRI brain with MRA and MRV showed Grade I small vessel ischemic changes, chronic lacunar infarct in the right centrum semiovale, and age-related cerebral atrophic changes without any acute pathology.

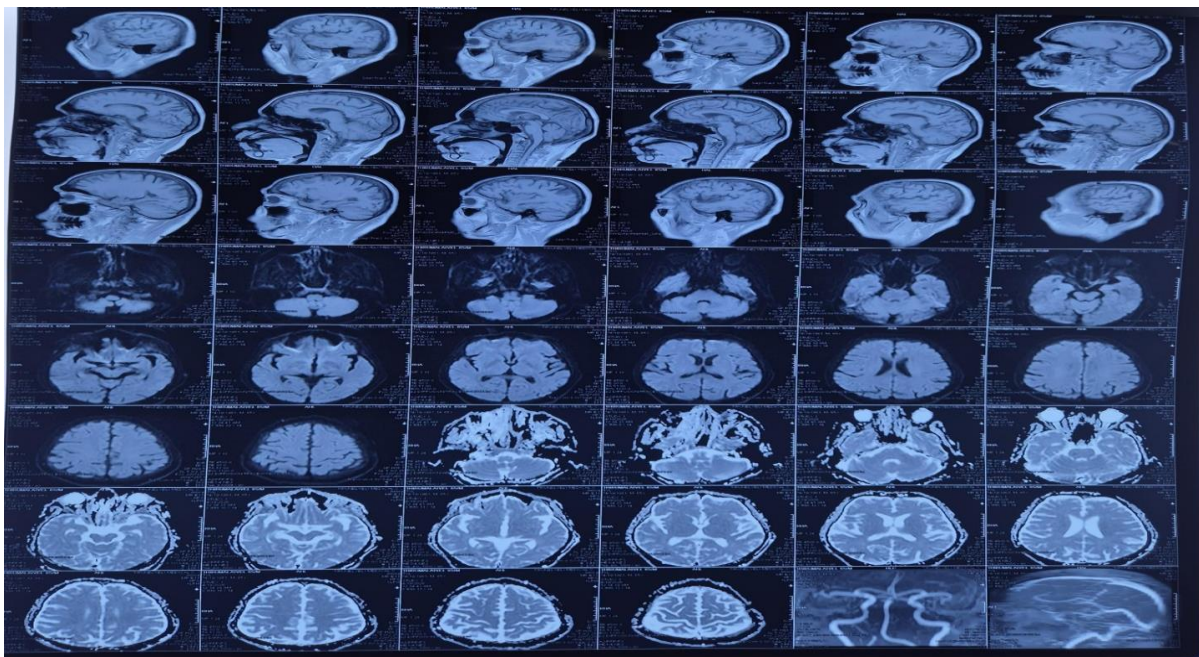


Figure 4: MRI brain with MRA and MRV showing chronic age-related cerebral atrophic changes and Grade I small vessel ischemic changes without acute infarction or hemorrhage.

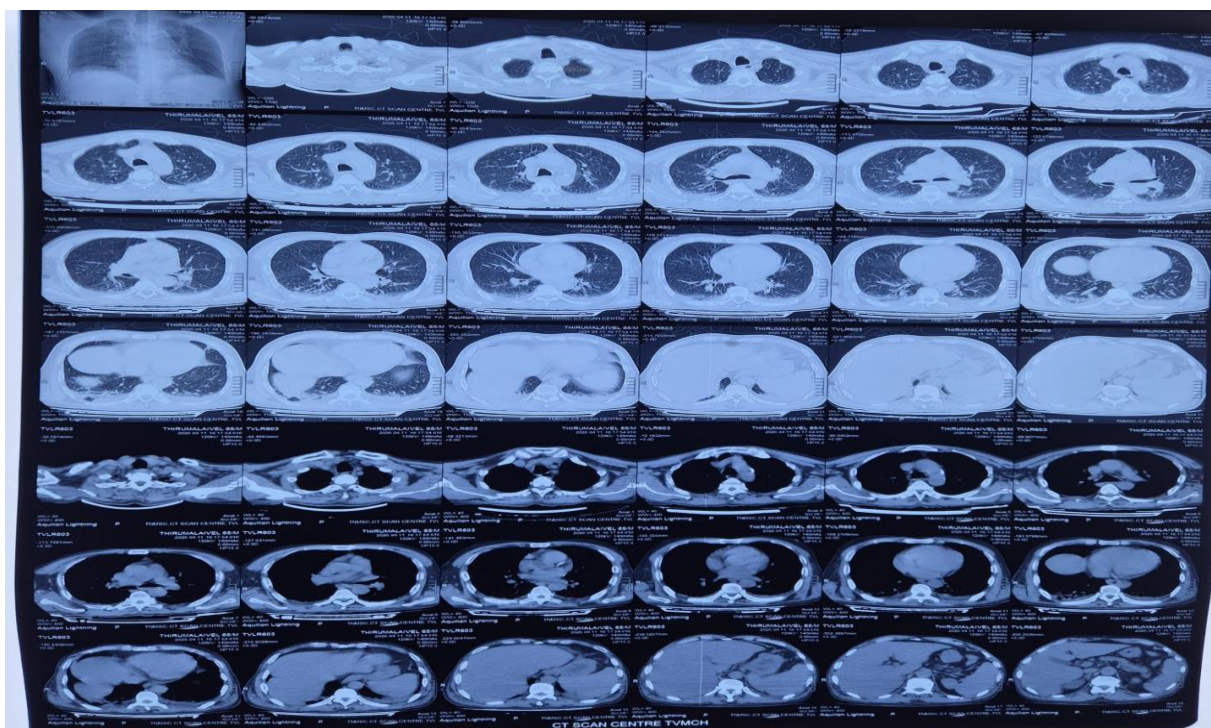


Figure 5: CT chest showing mild bilateral pleural effusion with mild subsegmental atelectatic changes.

DIFFERENTIAL DIAGNOSIS

Differential diagnoses considered included acute meningoen­cephalitis, sepsis-associated encephalopathy, alcohol withdrawal delirium, cerebrovascular event, and metabolic encephalopathy.

Bacterial or viral meningoen­cephalitis was considered because of fever with altered sensorium; however, absence of meningeal signs, lack of seizures, and normal neuroimaging made this less likely.

Alcohol withdrawal delirium was considered due to chronic alcohol use, but the presence of fever, thrombocytopenia, eschar, and positive scrub typhus serology favored an infectious etiology. Acute cerebrovascular events were excluded due to absence of focal deficits and normal CT imaging. Hypoglycemia may have contributed transiently to altered sensorium but did not explain the complete clinical picture.

The combination of fever, thrombocytopenia, eschar, occupational exposure, and positive scrub IgM serology strongly supported the diagnosis of scrub typhus-associated encephalopathy.^[5,7]

TREATMENT AND OUTCOME

The patient was treated with intravenous fluids, intravenous doxycycline, antipyretics, and thiamine supplementation in view of chronic alcohol use. Hypoglycemia was corrected appropriately. Doxycycline remains the treatment of choice for scrub typhus and is associated with rapid clinical improvement when initiated early.^[2,4]

Following initiation of therapy, the patient showed marked clinical improvement within 48 hours. Fever subsided and sensorium improved significantly with recovery of orientation and command following. Platelet counts gradually improved during hospitalization.

The patient remained hemodynamically stable throughout the hospital stay and was discharged in stable condition without residual neurological deficits.

DISCUSSION

Scrub typhus is a major re-emerging tropical infection in India, and it should be investigated in all instances of acute undifferentiated febrile illness, particularly in endemic areas.^[1,3,5] Farmers and individuals exposed to vegetation or livestock are particularly at risk.^[6]

Neurological involvement in scrub typhus ranges from mild encephalopathy to severe meningoencephalitis.^[7] The pathogenesis is believed to involve vasculitis and endothelial injury resulting from widespread dissemination of *Orientia tsutsugamushi*.^[7]

The patient had characteristic laboratory results such as thrombocytopenia, transaminitis, hyponatremia, and increased inflammatory markers, which are frequently reported in scrub typhus.^[5,7] The presence of eschar remains one of the most important clinical clues for diagnosis, however it is not always present.^[2,7]

The present case emphasizes the importance of meticulous physical examination in patients presenting with fever and altered sensorium. Scrub typhus-associated encephalopathy was identified based on epidemiological exposure, eschar, thrombocytopenia, and positive serology, even in the absence of classical meningeal symptoms and normal neuroimaging. Rapid response to doxycycline within 48 hours further supported the diagnosis and highlights the importance of early empirical therapy in suspected cases.^[2,5]

CONCLUSION

In endemic regions, scrub typhus should be taken into account when making a differential diagnosis for acute febrile encephalopathy.^[1,5] A thorough search for eschar and prompt serological testing are crucial to the

diagnosis.^[2,7] Neurological manifestations such as encephalopathy can occur even in the absence of classical meningeal signs or abnormal neuroimaging.^[7] Clinical suspicion supported by epidemiological exposure, presence of eschar, thrombocytopenia, transaminitis, hyponatremia, and positive serology is crucial for early diagnosis. Doxycycline medication should be started as soon as possible to avoid major problems and promote a quick clinical recovery.^[2,4]

ETHICAL APPROVAL AND CONSENT

Written informed consent was obtained from the patient/attendant for publication of clinical details and images.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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