

Scrub typhus and intracranial hypertension: A rare but crucial mimicry of idiopathic intracranial hypertension

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Abstract

Scrub typhus is a rickettsial disease caused by *Orientia tsutsugamushi*, transmitted by infected chiggers, and is commonly associated with acute febrile illness, thrombocytopenia, and eschar formation at the site of the bite. Neurological manifestations, including meningitis, encephalitis, and encephalopathy, are common, though rarer complications such as stroke and optic neuritis can occur. This report highlights an unusual complication of scrub typhus, presenting with idiopathic intracranial hypertension leading to papilledema and retinal hemorrhages in a 32-year-old female.

Keywords: Scrub typhus, intracranial hypertension, neuro-ophthalmic manifestations, tropical infections

INTRODUCTION

Scrub typhus is a rickettsial disease caused by *Orientia tsutsugamushi*, transmitted to humans through the bite of infected chiggers (larvae of the *Leptotrombidium* mite). The central and peripheral nervous systems can be involved, leading to various manifestations. The pathophysiology of raised intracranial pressure in scrub typhus remains unclear but is likely multifactorial. These complications are thought to arise from direct invasion of the organism, immune-mediated mechanisms, or vascular endothelial damage caused by the infection. The disease commonly manifests with acute febrile illness, accompanied by thrombocytopenia, transaminitis, and an eschar at the site of the mite bite. Neurological involvement in scrub typhus occurs in approximately 20% of cases and can lead to a variety of central and peripheral nervous system (CNS) manifestations.¹ Common CNS manifestations include meningitis, encephalitis, and encephalopathy, while rarer complications such as stroke, myoclonus, and optic neuritis may also occur.² This report discusses an unusual manifestation of scrub typhus in a 32-year-old female, presenting with idiopathic intracranial hypertension (IIH) leading to papilledema and retinal haemorrhages.

CASE REPORT

A 32-year-old female, farmer by occupation presented with a 15-day history of left-sided headache, worsening over time, associated with diminution of vision and double vision on left gaze for the past 3 days. Her past medical history revealed a febrile illness 4 weeks prior, during which she developed high-grade fever, malaise, joint pain, nausea, and vomiting. She was admitted to a hospital 3 weeks ago prior for thrombocytopenia and treated as a case of viral fever with hepatitis and thrombocytopenia. Despite requiring platelet transfusions, she did not experience hemorrhagic complications and was discharged after 5 days with rising platelet counts. Her symptoms of malaise persisted, and around 2 weeks prior, she developed a headache, initially mild to moderate in intensity, but gradually worsening over the next 10 days. The headache became throbbing and holocranial in nature. Three days prior to admission, she noted acute visual disturbance, including a black blotch in the left temporal visual field, followed by diplopia when looking to the left. There was no associated fever, conjunctival suffusion, or photophobia.

On examination, the cranial nerve assessment revealed bilateral pupils that were equally

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Date of Submission: 4 January 2025; Date of Acceptance: 27 March 2026

<https://doi.org/10.54029/2026pez>

reactive to light, with no relative afferent pupillary defect (RAPD). However, there was evidence of mild left lateral rectus (LR) palsy. Visual acuity was reduced, measuring 6/12 in the right eye and 6/36 in the left eye. Fundoscopic evaluation demonstrated grade 4 papilledema along with flame-shaped hemorrhages in both eyes [Figure 1].

Visual evoked potentials (VEP) were normal, indicating intact visual pathway conduction. Perimetry revealed no significant visual field deficits, except for a loss in the left temporal field.

Investigations

The complete blood count revealed total leucocyte count (TLC) of $7.40 \times 10^9/L$ with platelet count was $178 \times 10^9/L$. There was mild hepatic dysfunction with aspartate transaminase of 32IU/L and alanine transaminase of 48IU/L. Total serum bilirubin was 0.9mg/dL and albumin was 4g/dL. The renal functions, thyroid function tests were normal. Blood and urine cultures were sterile. Serologies for dengue IgM antibody and NS1 antigen, herpes simplex, varicella zoster, Epstein-Barr virus and Japanese B encephalitis IgM antibody were negative. Simultaneous search for other tropical infections like malaria, leptospirosis and chikungunya was negative. However, diagnosis was achieved when IgM ELISA for scrub typhus was reported as positive. A guarded lumbar puncture was performed in view of her papilloedema. CSF analysis yielded a cell count of <5 cells μ/L . Total protein was slightly

elevated to 50.41 g/dL, glucose was 54mg/dL (blood capillary glucose was 104mg/dL). No organism was seen on Gram stain, Ziehl-Neelsen stain and India ink stain. The CSF culture was sterile and PCR for herpes simplex virus (HSV) and *Mycobacterium tuberculosis* was negative. Serologies for HIV, HbsAg & anti-HCV, varicella zoster and Epstein-Barr virus were also negative. Imaging studies including MRI brain with orbit with contrast and CT venography were unremarkable. Optical coherence tomography RNFL analysis was suggestive of optic disc oedema in both eyes [Figure 2]. B scan to study optic sheath dimensions was normal of both eyes.

Treatment

The patient was started on acetazolamide 250 mg twice a day to manage intracranial hypertension, and doxycycline 100mg once a day was initiated as antibiotic therapy for scrub typhus for total 2 weeks. Subjective improvement in vision was noted by patient and resolution of papilledema on fundoscopic evaluation.

Outcome

Following treatment, the patient showed significant improvement in her visual symptoms. The visual disturbance and diplopia gradually resolved, and her papilledema showed signs of regression. She was closely monitored, and by the end of her hospitalization, there was notable improvement in her condition.

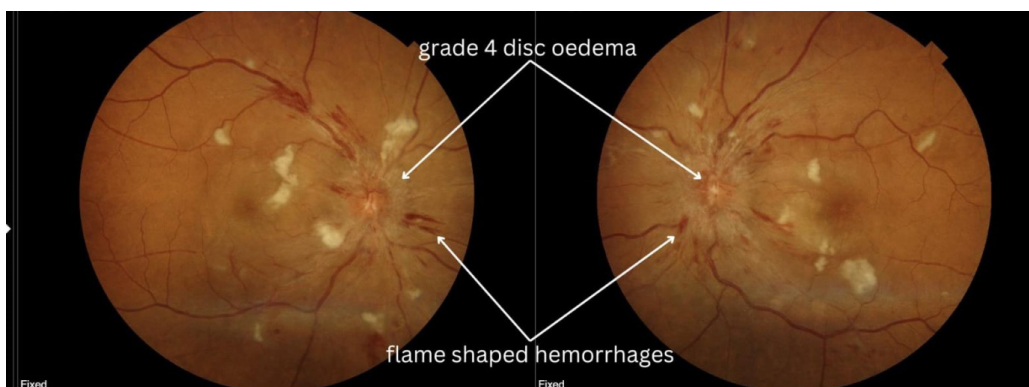


Figure 1. Fundoscopy shows enlarged hyperemic disc with obscured margins and obliteration of physiologic cup. Multiple streak shaped superficial red lesions located within 1 disc diameter oriented perpendicular to disc margin suggestive of splinter hemorrhages. Vessels arise from centre of disc branching dichotomously –dilated and tortuous veins with obscuration along its course at disc margin with absent venous pulsations suggestive of grade 4 papilledema

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