



Intracranial Haemorrhage: A Rare Manifestation of Scrub Typhus

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Abstract

Two Patients diagnosed with scrub typhus through serology, presented with intracranial haemorrhage in acute phase. *Orientia tsutsugamushi* should be considered as a common factor for cerebrovascular accidents in the regions where scrub typhus is endemic.

Keywords: Scrub typhus, *Orientia tsutsugamushi*, Intracranial haemorrhage.

Introduction

Scrub Typhus or tsutsugamushi disease is a febrile illness caused by bacteria of the family Rickettsiaceae and named *Orientia tsutsugamushi*, infects principally endothelial cells in all organs.¹ Acute infection such as a systemic respiratory tract infection, may temporarily increase the risk of myocardial infarction or stroke.¹

Case 1

A 53yr old female was admitted in S.M.S hospital jaipur with two week history of fever and chills, Complaints of severe headache, which was sudden onset (Fig a).Fever was not associated with any Signs of meningeal irritation or joint pain and burning micturition .There were no history of any drug intake or any poison intake in the past. No history of Coronary Artery Disease/Diabetes or Hypertension. No history of head injury/trauma in the past. No history of onset and progressive. No history of similar complaints in the past. No history of seizures in the past.

She had multiple purpuric rash over the left arm suggestive of platelet dysfunction.

Going With the possibility of cerebrovascular accident, a NCCT head was immediately ordered which revealed a large intracranial hematoma in frontal region and subarachnoid haemorrhage, with perilesional edema and gyral swelling and sulcal effacement in adjacent brain parenchyma (Fig 1).

Cerebral CT angiography showed no abnormalities.

She had blood pressure of 110/700 mm of Hg, a respiratory rate of 22/min, a pulse rate of 96/min, and a body temperature of 38°C. Serum parameters for random blood sugar/electrolytes /urea/creatinine/arterial blood gas analysis were normal. The peripheral blood tests performed at presentation indicated a white blood cell count of 6.96/mm³, a hemoglobin level of 9.5g/dL, and platelets of 30000/mL only. Liver function test were significantly deranged that is SGOT-131U/L, SGPT-71U/L and total bilirubin level as 6.8mg/dl. Although bleeding time (2.30min) and clotting

time (5.15min) were normal. HAV/HEV/Malaria antigen came out to be negative. In view of these lab reports and with keeping in mind the history of fever and endemicity of scrub typhus in this region of India residing & usual manifestation of scrub typhus we did immunofluorescence test for *O. Tsutsugamushi* which came out positive for immunoglobulin M suggesting an acute infestation of scrub typhus. Chest radiography did not show any evidence of aspiration or infection. Usg suggested a mild splenomegaly.

After the diagnosis of scrub typhus patient was stabilized with Intra Venous lines, nasogastric feeding/Foleys catheterization. As per the standard of care for the scrub typhus she was initiated on azithromycin intravenously 500mg once a day for 5 days and doxycycline 100mg twice a day for 14 days through NG tube, I/V dextrose and thiamine was given. Patient showed improvement in GCS scale, and only some motor power improvement.

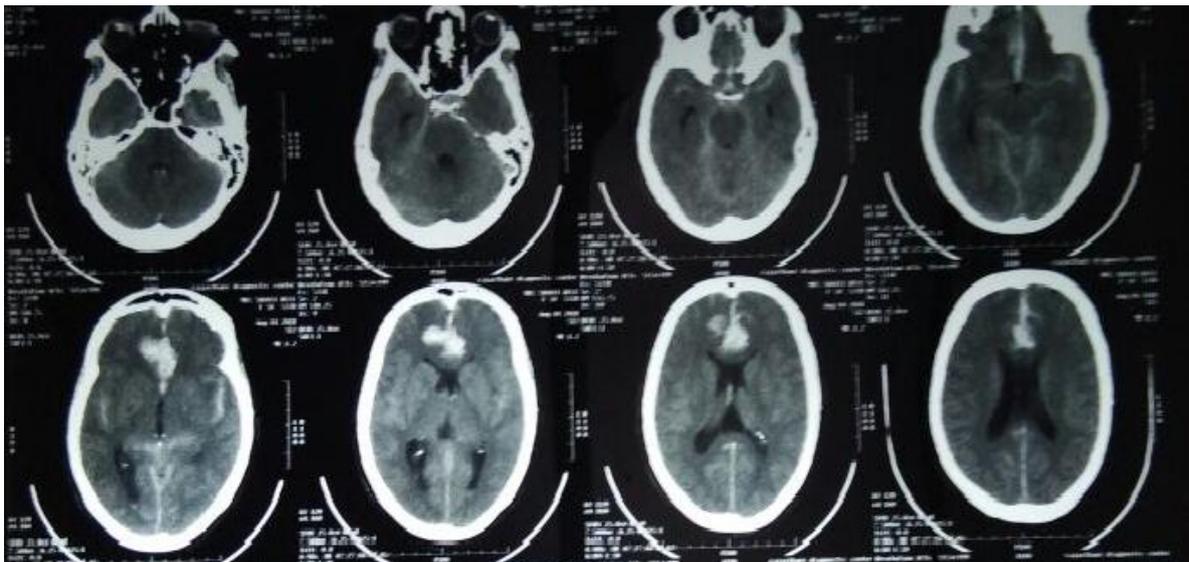


Fig 1. NCCT head revealed large intracranial hematoma in frontal region with subarachnoid haemorrhage

Case 2

Another patient a 26yr old male admitted to Sawai man singh hospital with history of fever for 8days and altered sensorium for 4 days, which was sudden onset and progressive. The fever was high grade and was associated with chills and rigor .He had no history of alcohol or tobacco use n no history of similar complaints in the past. No history of seizures in the past. No history of head injury/trauma in the past. No history of any drug intake or any poison intake in the past. No history of Coronary Artery/Disease/Diabetes or Hypertension.

A blood pressure of 110/70 mm of Hg, a respiratory rate of 16/min, a pulse rate of 104/min, and a body temperature of 39°C. Various parameters for random blood sugar/electrolytes/ amylase /urea/creatinine/arterial blood gas

analysis were absolutely normal. The peripheral blood tests performed at presentation indicated a white blood cell count of 8.5/mm³, a hemoglobin level of 13.4g/dL, and platelets of 90000/mL. The liver functions tests were within normal range (SGOT-30U/L, SGPT-16U/L, total bilirubin level was 0.67mg/dl), Prothrombin time-10.2sec and INR (international normalized ratio)-0.71 were also in normal range. Bleeding time (2.50min) and clotting time (5.35min) were absolutely normal.

NCCT head revealed large intracranial haemorrhage approx 3.6*2.4*2.6 cm is seen in left frontoparietal lobe and intersecting frontal horn of left lateral ventricle associated with intraventricular haemorrhage (Fig 2).

CT angiography of brain vessels revealed no aneurysm in cerebral vasculature.

DENGUE IgM and Malaria antigen were negative. In view of these lab reports and with keeping in mind the history of fever and endemicity of scrub typhus & unusual manifestation of the disease possibility of scrub typhus was kept. Thus an indirect immunofluorescence test for *O. Tsutsugamushi* was ordered which revealed immunoglobulin M to be positive. Chest radiography did not show any evidence of aspiration or infection. Usg abdomen was within normal limits.

After the diagnosis of scrub typhus was made, patient was immediately started on standard treatment that is 500mg of Intravenous azithromycin daily and 100mg of oral doxycycline and with Intra Venous lines, nasogastric feeding/Foleys catheterization. But patient's condition deteriorated with time and patient died on 5th day of the hospital stay.



Fig 2 NCCT head revealed large intracranial haemorrhage is seen in left frontoparietal lobe with intraventricular hemorrhage

Discussion

Scrub typhus is an infectious disease that presents as an acute febrile illness, caused by *Orientia tsutsugamushi*, a bacterium that is transmitted by feeding larval trombiculid mites, which are the reservoir of the agent and humans are infected with by the bite of the mite.²

Scrub typhus has diverse clinical manifestations ranging from a non-specific febrile illness to severe multiorgan dysfunction. Multiple organ

involvement in the form of severe respiratory distress due to pneumonitis, renal derangement, deranged liver enzymes and decreased platelet count is common and is secondary to diffuse vasculitis.³

The important neurological manifestations of scrub typhus observed are meningitis, meningoencephalitis, seizures, and altered sensorium. Focal neurological signs are seldom reported.⁴ In our article we report two cases presented to us with focal neurological signs as a result of cerebrovascular accidents which are rarely associated with this disease.

Rickettsia invades the vascular endothelium and multiples and results in widespread vasculitis involving multiple vessels.^{5,6} On histological examination various foci of vasculitis in the brain and lymphocytic infiltration of blood vessels are seen in scrub typhus.⁷

Conclusion

Scrub typhus is known to cause widespread endothelial injury, and this injury is also likely to occur in the cerebrovascular endothelium. Keeping in mind the clinical prodrome and endemicity of the disease, patients should be tested and treated as soon as possible to prevent these dreaded complications.

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