

## **A rare clinical case of subdural hemorrhage in a patient with scrub typhus**

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### **ABSTRACT**

Scrub typhus is a common infectious disease with a self-limiting course but may potentially cause a fatal outcome in some cases. We here present a case report of a patient diagnosed with scrub typhus and was given effective antibiotic therapy. Initially, the patient improved significantly but had sudden clinical deterioration on day five and presented with subdural hemorrhage. *Orientia tsutsugamushi* the causative agent of scrub typhus may be considered as a causal or provoking factor for cerebrovascular accidents in regions where scrub typhus is endemic. Patients should be followed strictly during convalescence in such cases especially in those who have received delayed treatment.

**Keywords:** Scrub typhus, Subdural hematoma

### **INTRODUCTION**

Scrub typhus is a zoonotic vector borne disease caused by a rickettsial organism *Orientia tsutsugamushi*.<sup>1</sup> This acute febrile illness is endemic in Southeast Asian countries and northern Australian region.<sup>1</sup> The organism is transmitted through the bite of larval forms (chiggers) of trombiculid mites.<sup>2</sup> It may presents either as nonspecific febrile illness with constitutional symptoms such as fever, rash, myalgias and headache or is characterized by focal or disseminated vasculitis and perivasculitis which may involve the lungs, heart, liver, spleen, and central nervous system.<sup>3-5</sup> Mostly the symptoms are mild and the disease is self-limiting.<sup>1</sup> The recovery is spontaneous within few days in most of the cases. But few cases are more severe and protracted, and the disease may be fatal.<sup>1</sup> The

diagnosis of scrub typhus is based on the patient's history of exposure, the clinical features, and the results of serologic testing.<sup>6,7</sup> This case report presents a patient who had subdural hemorrhage during the treatment of scrub typhus while patient's clinical and laboratory parameters were improving after five days of antibiotic treatment and in whom the effective antibiotic therapy was relatively delayed after the initial onset of symptoms.

### **CASE REPORT**

A 52 -year-old female was admitted to Regional Hospital, Kullu, Himachal Pradesh, India. The patient belonged to a farmer's family and daily went to forests to fetch green fodder for the animals at home. She had a history of fever and chills for the last 8 days, along with a four days

history of skin rash. She was initially admitted to a local clinic, where she was given ceftriaxone and paracetamol for 2 days. Her clinical status deteriorated, and she was transferred to our hospital.

She had no significant medical, social, or family history. On examination patient was having eschar at right groin region. Her CNS examination was normal except for being lethargic. She presented with a blood pressure of 100/50 mm of Hg, a respiratory rate of 30/min, a pulse rate of 99/min, and a body temperature of 38.9°C. The peripheral blood tests performed at presentation indicated a white blood cell count of 5,090/mm<sup>3</sup>, a hemoglobin level of 10.9 g/dL, and platelets of 62,000/mL. Her creatinine was 2.1 with a urine output of 80ml/hr. The patient's coagulation test results were normal. Her CRP was elevated. Blood cultures showed no growth at presentation. An indirect immunofluorescence test for *O. tsutsugamushi*, performed at presentation, indicated immunoglobulin M (IgM) 1:256 and IgG 1:2,048, and a nested polymerase chain reaction (PCR) targeting the *O.* The patient was diagnosed with scrub typhus. A 500-mg azithromycin intravenously was initiated after hospital admission along with doxycycline 100 mg twice daily and cap rifampicin 600 mg single dose along with adequate hydration. The patient progressed well over next four days and became afebrile. Her platelet counts improved to 92000/mm<sup>3</sup>. On fifth day of antibiotic therapy patient had sudden onset severe headache followed by two episodes of projectile vomiting. The patient's sensorium deteriorated suddenly and GCS fell to 6 from 15. Patient was intubated and urgent CT head ordered. CT showed extensive subdural hemorrhage in left fronto-temporo-parital area with midline shift. Patient was resuscitated as per guidelines but could not be saved and died.

## DISCUSSION

Endothelial vasculitis and perivasculitis are the commonest pathological findings in patients of scrub typhus with multiple organ dysfunction during the course of disease.<sup>8</sup> Endothelial cell dysfunction and disseminated intravascular coagulation may occur in response to endothelial cell injury by *O. tsutsugamushi* in scrub typhus patients.<sup>9-11</sup> It has been shown that haemostatic and fibrinolytic changes occur as late manifestations of illness, rather than as initial clinical features. In our case an interesting point is that the patient had improved significantly and was about to be discharged when he suffered from subdural hemorrhage. One of the hypotheses for this rare event may be delayed institution of effective antibiotic therapy to the patient. In this case, the average time from symptom onset to the administration of effective antibiotics was eight days. Early effective antibiotic treatment may prevent the disease from progressing in scrub typhus patients.

However, the homeostatic dysfunction of endothelial cells may continue if appropriate treatment is delayed. This endothelial dysfunction and vascular events which are the main pathological change involved in subdural hematoma in this patient

## CONCLUSION

Scrub typhus is known to cause widespread endothelial injury, and this injury is also likely to occur in the cerebrovascular endothelium. Patients who receive delayed treatment for scrub typhus are at an increased risk for developing a cardiovascular accident and should be followed strictly in the convalescent period.

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