



## A Case Study On Scrub Typhus

Tannu<sup>1</sup>, M.Sreelakshmi<sup>1,\*</sup>, Nikita<sup>2</sup>

<sup>1</sup>Department of Pharmacy Practice, SGT College of Pharmacy, SGT University, Gurugram, Haryana, 122505, India

<sup>2</sup>Department of Pharmaceutics, SGT College of Pharmacy, SGT University, Gurugram, Haryana, 122505, India

\*Corresponding Author: [sreelakshmi\\_710@yahoo.in](mailto:sreelakshmi_710@yahoo.in)

### ABSTRACT

Scrub typhus is an acute infectious disease caused by *Orientia tsutsugamushi*. Signs and Symptoms of scrub typhus are Fever and chills, headache, body aches and muscle pain, a dark, scab like –region at the site of chigger bite (also known as Eschar), mental changes, ranging from confusion to coma, enlarged lymph nodes, rash, shortness of breath.

**Keywords** *Scrub typhus, Orientia tsutsugamushi, fever, eschar.*

Received 21.07.2023

Revised 11.08.2023

Accepted 23.09.2023

### INTRODUCTION

ORIENTIA tsutsugamushi is the causative agent of the rickettsial zoonotic illness scrub typhus, which is spread by mites. [1]. Hepatotoxicity has been reported as one of the key manifestations of this disease. [2]. It has re-emerged in India in the 3rd millennium after years of inactivity [3]. The incubation period of ORIENTIA tsutsugamushi is between 6 and 21 days after exposure and is transmitted by chiggers in long grasses and in dirt – floor homes, with infection characterized by a flu-like illness of fever, headache, and myalgia lasting approximately 1 week [4]. This increases the mortality rate of patients with scrub typhus [5]. Acute disseminated encephalomyelitis, various cranial nerve palsies, Cerebellitis, cerebrovascular disease, including cerebral venous sinus thrombosis, transverse myelitis, longitudinally extensive transverse myelitis, Guillain-Barré syndrome, opsoclonus-myoclonus syndrome, and many other neurological syndromes have recently been described as being associated with scrub typhus [6]. To lower morbidity and death, it is crucial that practitioners are aware of the various ways this disease manifests [6]. 20% of scrub typhus infections are accompanied by neurological symptoms, which can damage the central or peripheral nervous system or perhaps both at the same time [7]. Sometimes, it causes a major sickness that causes involvement of numerous organs and death [8].

### CASE REPORT

A 35-year –old female patient from Gurugram, Haryana was presented with symptoms of high grade fever since 20 days followed by shortness of breath ,pain in abdomen and vomiting since 20 days .There was history of B/L lower limb swelling since 2 days .There was no history of hypertension (HTN) ,Type 2 Diabetes Mellitus (T2DM), Chronic Obstructive Pulmonary Disease (COPD), asthma or tuberculosis (TB) On examination her blood pressure was found to be 110/70 mmHg, pulse rate was 80/min and the patient was febrile .There were no rashes or jaundice, liver and spleen were not palpable. An eschar was identified near the thorax region.

### INVESTIGATIONS

Patient was advised for an ultrasound of abdomen, after the ultrasound, mildly coarse liver echotexture was found. Blood was sent for examination and treatment was started with doxycycline 200 mg daily suspecting scrub typhus due to the eschar mark, along with supportive treatment to subside the symptoms. Dengue NS1 test by ELISA was negative. Malaria parasite antigen test was also found to be negative. Patient condition improved on 3rd day after admission. Her fever reduced. Blood pressure was 110/70mmHg and pulse rate was 63 beats/min. Blood sample was sent for IgM ELISA or Scrub typhus was positive. On 4th

day blood pressure was 112/80mmHg and pulse rate was 78 beats/min. On 5th day blood pressure was 108/68mmHg and pulse rate was 70 beats/min. On 6th day blood pressure was 110/76mmHg and pulse rate was 76/min. The following day patient was discharged as the condition gradually improved.

### DISCUSSION

The bite of a trombiculid mite larva transmits scrub typhus to people. Since patients typically arrive with vague flu-like symptoms, including fever and rash, diagnosing scrub typhus poses a significant challenge to clinicians. The eschar mark that was discovered on our patient was close to the thoracic area, one of the typical infra-axillary presenting sites, with other common sites being neck and axillary regions [9]. Additionally, the patient displayed several typical non-specific symptoms of this infection, such as fever, headache, vomiting, and abdominal pain but no rashes were found [10]. The primary way of diagnosis for scrub typhus is serological testing. While IgG antibodies typically take two weeks to reach substantial levels, a considerable IgM antibody titer is visible before the end of the first week in primary scrub typhus infection. IgG titers can be found as early as the sixth day after infection in cases of reinfection, and the levels of IgM antibody titers in these situations may vary [11]. IgM ELISA, which was used for our patient, is currently the method of choice for serological diagnosis in acute scrub typhus infection. A recent *O. tsutsugamushi* infection can best be detected with high sensitivity using the IgM ELISA test [12]. Scrub typhus can be treated with tetracycline, azithromycin, doxycycline, and rifampicin [13]. Given at a dose of 100 mg IV or orally twice daily for 7 to 14 days, doxycycline has been the backbone of treatment for the majority of rickettsial infections, including scrub typhus which was given for our patient. Although, doxycycline resistance has been suspected in a number of situations, the patient condition improved the next day after initiating doxycycline therapy. The current case is presented to highlight the significance of considering the typhus group of fevers as a differential diagnosis in cases of fever and rash in people who are predisposed because of their outdoor activities.

**Table 1. Laboratory investigations and their respective results**

Parameters	Values	Reference Range
<b>Hematology</b>		
Hemoglobin	9.3 mg/dl	12-16 g/dl
Platelet count	1,53,000 mm <sup>3</sup>	1.4-4.5 lac/cumm
Hematocrit	28.5%	33-43%
White blood cell	5,000 cells/cumm	4500-11000 cells/cumm
Mean cell volume	81.0 fl	76-100 fl
Mean cell Hb	26.3 pg/cell	27-33 pg/cell
Mean cell Hb conc.	32.5 g/dl	33-37 g/dl
Polymorphs	51%	40-70%
Eosinophils	0.5%	1-6%
<b>Renal Function</b>		
Blood urea	114 mg/dl	8-18 mg/dl
Serum creatinine	2.5 mg/dl	0.6-1.2 mg/dl
<b>Liver Function</b>		
Alkaline phosphatase	235 U/L	30-120 U/L
Total Bilirubin	2.0 mg/dl	0.1-1 mg/dl
Direct Bilirubin	1.8 mg/dl	0-0.2 mg/dl
Indirect Bilirubin	0.2 mg/dl	0.1-0.8 mg/dl

### REFERENCES

- Rajagopal R, Khatai C, Vasdev V, Trehan A.(2003): Scrub typhus: a case report. Indian J Dermatol Venereol Leprol. ;69(6):413-5. PMID: 17642955.
- W. Rathi P, Siddiqui KA, Shah P.(2021):Scrub typhus-related hepatotoxicity: The Indian scenario. Trop Doct. Apr;51(2):228-231. doi: 10.1177/0049475521991353.
- Ranjan J, Prakash JA. (2018): Scrub typhus re-emergence in India: Contributing factors and way forward. Med Hypotheses. Jun;115:61-64. doi:10.1016/j.mehy.2018.03.019.
- Chang PH, Cheng YP, Chang PS, Lo CW, Lin LH, Lu CF, Chung WH. (2018): A Case Report and Literature Review of Scrub Typhus With Acute Abdomen and Septic Shock in a Child-The Role of Leukocytoclastic Vasculitis and Granulysin. Am J Dermatopathol. Oct;40(10):767-771. doi: 10.1097/DAD.0000000000001167. PMID: 29697421.
- Farquhar Liu X, Zhang Y, Zhang J, Lou Z, Xia H, Lu Z. (2021): The Early Diagnosis of Scrub Typhus by Metagenomic Next-Generation Sequencing. Front Public Health. Nov 11;9:755228. doi 10.3389/fpubh.2021.755228. PMID: 34858931; PMCID: PMC8632043.http://www.hrpub.org
- Basu S, Chakravarty A. (2022): Neurological Manifestations of Scrub Typhus. Curr Neurol Neurosci

Rep. ;22(8):491-498. doi: 10.1007/s11910-022-01215-5. Epub Jun 21. PMID: 35727462.

7. Garg D. (2021). Amidst the Embers. *Ann Indian Acad Neurol.* 24(6):930. doi:10.4103/aian.aian\_507\_21. Epub 2021 Dec 17. PMID: 35359547; PMCID: PMC8965934.
8. Rajapakse S, Weeratunga P, Sivayoganathan S, Fernando SD. (2017): Clinical manifestations of scrub typhus. *Trans R Soc Trop Med Hyg.* Feb 1;111(2):43-54. doi: 10.1093/trstmh/trx017. PMID: 28449088.
9. Munegowda KC, Nanda S, Varma M, Bairy I, Vidyasagar S. (2014): A prospective study on distribution of eschar in patients suspected of scrub typhus. *Trop Doct.* Jul;44(3):160-2.
10. Singh OB, Panda PK. Scrub Typhus. [Updated 2022 Sep 26]. In: Stat Pearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK558901/>
11. Janardhanan J, Trowbridge P, Varghese GM. (2014): Diagnosis of scrub typhus. *Expert Rev Anti Infect Ther.* Dec;12(12):1533-40.
12. Blacksell SD, Lim C, Tanganuchitcharnchai A, Jintaworn S, Kantipong P, Richards AL, Paris DH, Limmathurotsakul D, Day NPJ.(2016): Optimal Cutoff and Accuracy of an IgM Enzyme-Linked Immunosorbent Assay for Diagnosis of Acute Scrub Typhus in Northern Thailand: an Alternative Reference Method to the IgM Immunofluorescence Assay. *J Clin Microbiol.* Jun;54(6):1472-1478.
13. Bonell A, Lubell Y, Newton PN, Crump JA, Paris DH. (2017): Estimating the burden of scrub typhus: A systematic review. *PLoS Negl Trop Dis.* Sep;11(9):e0005838.

#### **CITATION OF THIS ARTICLE**

Tannu, M.Sreelakshmi, Nikita. A Case Study On Scrub Typhus. *Bull. Env.Pharmacol. Life Sci.*, Vol 12 [11] October 2023: 429-431