

## Clinical Prevalence and Atypical Presentations in Scrub Typhus

**Sonika Dhillon<sup>1</sup>, Rayees Ahmed Sofi<sup>2</sup>, Parimal Tara<sup>3</sup>, Balwant Kumar<sup>4</sup>**

### Author's Affiliation:

<sup>1,3</sup>MEM PGY3 Resident <sup>2</sup>Associate Consultant & Academic in-charge, Department of Emergency Medicine  
<sup>4</sup>Associate Consultant, Department of Internal Medicine, The Mission Hospital, 219(P), Immon Kalyan Sarani, Sector 2C, Bidhannagar West Bengal 713212, India.

### Corresponding Author:

**Rayees Ahmed Sofi**, Associate Consultant & Academic in-charge, Department of Emergency Medicine, The Mission Hospital, 219(P), Immon Kalyan Sarani, Sector 2C, Bidhannagar West Bengal 713212, India.

E-mail: [sofi\\_rayees@yahoo.com](mailto:sofi_rayees@yahoo.com)

Received on 21.08.2018,

Accepted on 17.09.2018

### Abstract

**Study Objective:** We studied and describe the clinical and Para clinical profile, complications and outcome among 17 cases of Scrub typhus diagnosed in The Mission Hospital, Durgapur from March 2017 to April 2018. **Methods:** This was a cross-sectional study of clinical prevalence and presentations of Scrub Typhus at the Emergency Department at the Mission Hospital, Durgapur. We observed suspected cases presenting with high grade fever and recorded patient demographics, vital signs, pulse oximetry, findings on thorough physical examinations. Clinical features at admission, complications occurring during stay, treatment and outcome were recorded for all cases and descriptive statistics are presented in this study. All treatment decisions were at the discretion of the treating provider who was blinded to study measurements to simulate usual care. At the end of the study, provider and patients were assessed for treatment satisfaction. **Results:** We observed 17 patients (3 children and 14 adults) from all age groups. The most common clinical features included were high grade fever (100%), headache (47.05%), rash (29.41%), hepatomegaly (23.52%), lymphadenopathy (17.64%), skin hyperemia (11.76%), nausea / vomiting (17.64%), cold and dry cough (17.64%), pain abdomen (17.64%) and An Eschar was found in 41.17% which were the predominant clinical features. Complications noted in the patients were mainly of pulmonary pathology noted in 41.17% of cases, liver enzymes were elevated in MODS which were seen in 11.76% but none of the patients with MODS died. Overall, Use of empiric treatment was considered to reduce the high mortality observed with the disease and resulted in high patient and provider satisfaction. **Conclusion:** In this study, diagnosis of scrub typhus largely based on a high index of suspicion and careful clinical, laboratory, and epidemiological evaluation with early diagnosis, identifying the complications and predictors of outcome among the diagnosed cases of scrub typhus which led to better outcome with no mortality [4].

**Keywords:** Scrub Typhus; Tsutsugamushi Triangle; Eschar; Rickettsial Disease; Acute Undifferentiated Febrile Illness.

### Introduction

Scrub typhus/bush typhus/chigger-borne rickettsiosis/tsutsugamushi disease/mite-borne typhus/Japanese river fever/tropical or rural typhus is a form of typhus caused by the intracellular parasite *Orientia tsutsugamushi*, a Gram-negative  $\alpha$ -proteobacterium of family Rickettsiaceae. Scrub typhus is transmitted by some species of trombiculid mites ("chiggers", particularly *Leptotrombidium deliense*), which are

found in areas of heavy scrub vegetation. Scrub typhus is spread to people through bites of infected chiggers (larval mites) [1].

Scrub typhus is an important cause of acute undifferentiated febrile illnesses in the Indian subcontinent. Recent reports from various parts of India suggest that there was a resurgence of scrub typhus infection caused by *Orientia tsutsugamushi* and associated with considerable morbidity and mortality [2].

A review of the disease in 2013 noted that “scrub typhus is probably the single most prevalent, under-recognized, neglected and severe but easily treatable disease in the world. There is a need for greater awareness of the potentially fatal illness, which is misconceived as an exotic disease only affecting people in rural areas and whose symptoms can be mistaken for dengue, malaria or typhoid.

India is an integral component of “tsutsugamushi triangle” being endemic to scrub typhus (ST). Owing to frequent outbreaks witnessed in different parts of the country in the recent past, ST is described as a re-emerging infectious disease in India.

The primary aim of this study was to understand local patterns of disease and factors that place individuals at risk and early diagnose, identify complications and predictors of outcome among the diagnosed cases of scrub typhus.

## Methods

### Study Design

This was a cross sectional observational study of clinical prevalence and presentations of Scrub Typhus at the Emergency Department at The Mission Hospital, Durgapur. The research committee of The Mission Hospital, Durgapur approved the study and informed consent was sought from all the patients who were included in the study.

### Study Setting and Population

The study was conducted in the Emergency

Department of The Mission Hospital, Durgapur. The hospital is a 350 bedded tertiary care hospital which also serves as the top referral hospital in the east Bengal and was established in 2008. The ED is home to the only emergency residency-training program in the east Bengal. The ED is staffed 24 hours per day and 7 days a week by locally trained emergency physicians who provide clinical supervision and training to emergency medicine residents.

### Study Protocol

All treatment decisions were made at the clinical judgment of the treating provider based on usual provider. Our goal was to enroll patients with all age groups presenting to the emergency department or medicine outpatient clinic with acute febrile illness with a temperature of  $\geq 101^{\circ}\text{F}$  of 3–14 days duration. A detailed history and results of a thorough physical examination were entered on a standard data collection sheet. Subjects were enrolled during period of one year from March 2017 to April 2018. The study was described to selected patients in their preferred language, either Bengali or English.

Data were entered into standardized collection forms and included patient demographics, vital signs, pulse oximetry, findings on thorough physical examinations. Clinical features at admission, complications occurring during stay, treatment and outcome were recorded for all cases and descriptive statistics are presented in this study. During data collection, providers were unblinded to all study measurements.

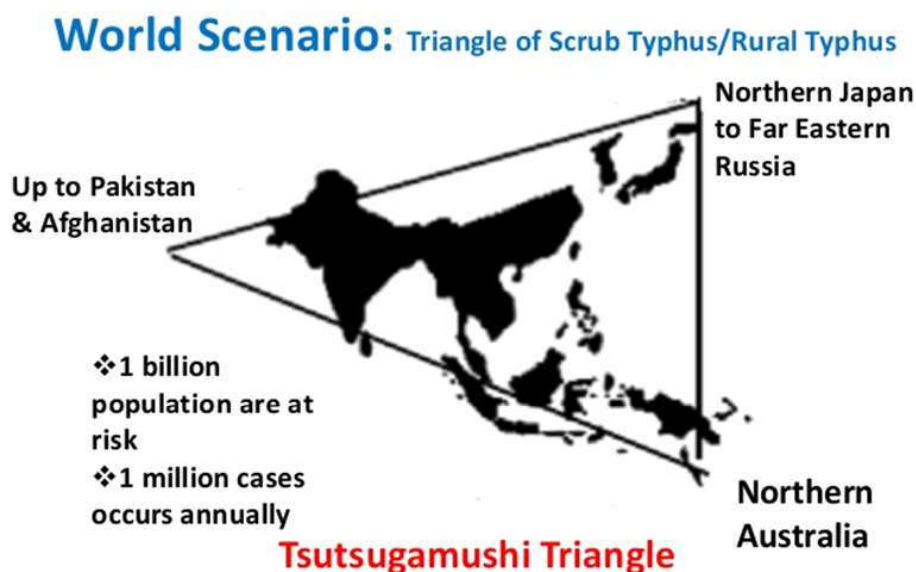


Fig. 1: Tsutsugamushi Triangle

*Data Collection*

All the data collection was done after getting practical training on the data collection protocol. Selected patients were monitored and all the required information until full recovery required for the study was collected by contacting personally by telephone post discharge after 1 week. To emulate the usual care, we were instructed to obscure the nurse’s view of the vital signs during data collection.

*Patients demographics:* We observed a total of 17 patients, although cases were found in all age groups, only 3 (3/17; 17.64%) confirmed cases were found in children ( $\leq 15$  years). Out of 17 patients, 12 patients (12/17; 70.60%) were males and their mean (SD) age was 39.5 years.

**Results**

Patients with acute febrile illness presented throughout the year but the incidence of the patients with Scrub typhus was highest in the months of August 2017 and November 2017.

The most common clinical features, other than high grade fever ranging from 100°F to 104.5°F were headache (47.05%; 8/17), lymphadenopathy (17.64%; 3/17), blanching macular rash involving trunk and progressing centrifugally (29.41%, 5/17), skin hyperemia (11.76%; 2/17), nausea/vomiting (17.64%; 3/17), cold and dry cough (17.64%; 3/17), hepatomegaly (23.52%, 4/17), pain abdomen

(17.64%; 3/17) were the predominant clinical features [5].

Though Eschar is considered a pathognomonic clinical sign of scrub typhus but was found in only 41.17% ( 7 /17) no of cases.



**Fig. 2:** Eschar



**Fig. 3:** Eschar near right pectoral region

**Table 1:** Frequency of scrub typhus cases per month from March 2017 to April 2018 in Durgapur.

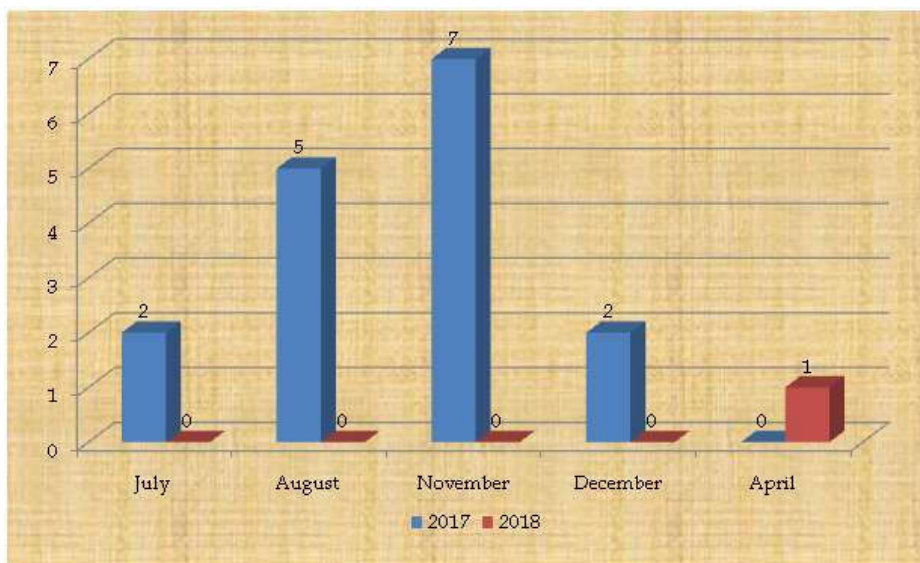
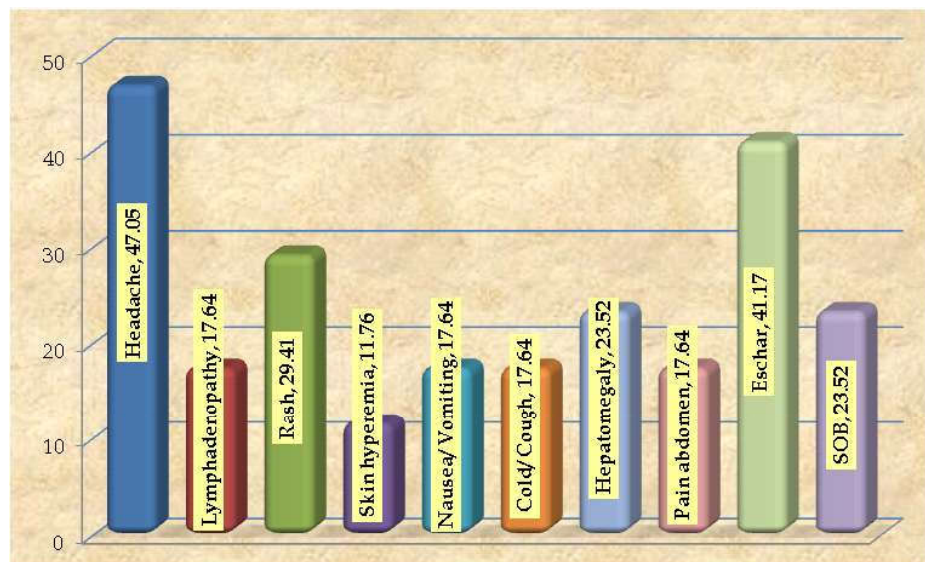




Fig. 4: Eschar over right lumbar region

### Clinical details of the affected patients

Table 2: Percentage of Clinical details of the affected Patients



### Outcomes

Among all the patients, the follow-up interview was done. The patients or their family members were interviewed. Over all the treatment was well tolerated by the patients. Early diagnosing, identifying and treatment resulted in high patient and provider satisfaction rate.

### Discussion

Our results suggest that Scrub typhus is a reemerging disease in India. It is an important cause of community acquired undifferentiated

febrile illness in India. It has to be considered in the differential diagnosis of sepsis and multiorgan dysfunction syndrome. This study highlights the finding that ~50% of the undiagnosed prolonged fevers that occur during the months of July to November in the year in the areas Durgapur, West Bengal, India could be due to scrub typhus. However, in earlier years, the disease virtually disappeared, probably because of widespread use of insecticides to control other vector borne diseases, empiric treatment of febrile illnesses with tetracyclines and chloramphenicol by practitioners, and changes in lifestyle. There seems to be a resurgence of the disease now.

## Conclusion

From this study, we concluded that Scrub Typhus is reemerging as an undiagnosed cause of persistent fever in and around Durgapur and if timely diagnosed with high clinical suspicion and treated, then it carries 100 percent recovery. It was also concluded that patients of Scrub Typhus can develop features of MODS if remain undiagnosed that can culminate into mortality.

### *Key Messages*

What is already known on the subject

- Scrub typhus is a major public health threat in South and Southeastern Asian countries including India. With the growing number of cases detected in India, scrub typhus is fast emerging as a public health threat and further research to protect the population from this deadly infection is essential.

What this study adds

- Scrub typhus exists in the eastern districts of West Bengal, India. Diagnosis might be missed due to absence of Eschar as it plays one of the most useful diagnostic clues in patients with acute febrile illness in areas endemic for Scrub typhus.

## References

1. V Ramasubramanian, P Senthur Nambi, Scrub Typhus, 2013. [http://www.apiindia.org/medicine\\_update\\_2013/chap06.pdf](http://www.apiindia.org/medicine_update_2013/chap06.pdf).
2. Anugrah Chrispal, Harikishan Boorugu, Scrub typhus: an unrecognized threat in South India - clinical profile and predictors of mortality, April 1, 2010. <http://journals.sagepub.com/doi/abs/10.1258/td.2010.090452>.
3. Rita Issac, George M. Varghese, Scrub Typhus: Prevalence and Diagnostic Issues in Rural Southern India, November 1, 2004. <https://academic.oup.com/cid/article/39/9/1395/406619>.
4. Behzad Nadjm, Pham T. Thuy, Van D Trang, Scrub typhus in the northern provinces of Vietnam: an observational study of admissions to a national referral hospital, 1 November 2014. <https://academic.oup.com/trstmh/article/108/11/739/2765224>.
5. Nilendu Sarma, Sayantani Chakrobarty, Scrub Typhus in Southern Districts of West Bengal, 2017; Sep-Oct; 62(5):512-14. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5618840/>.

# REDKART.NET

(A product of RF Library Services (P) Limited)

(Publications available for purchase: Journals, Books, Articles and Single issues)

(Date range: 1967 to till date)

The Red Kart is an e-commerce and is a product of RF Library Services (P) Ltd. It covers a broad range of journals, Books, Articles, Single issues (print & Online-PDF) in English and Hindi languages. All these publications are in stock for immediate shipping and online access in case of online.

**Benefits of shopping online are better than conventional way of buying.**

1. Convenience.
2. Better prices.
3. More variety.
4. Fewer expenses.
5. No crowds.
6. Less compulsive shopping.
7. Buying old or unused items at lower prices.
8. Discreet purchases are easier.

URL: [www.redkart.net](http://www.redkart.net)