



## Scrub Typhus Presenting as Severe Thrombocytopenia

Anshu Agarwal<sup>a†</sup>, Shivani Kshirsagar<sup>bt</sup>, Sourya Acharya<sup>a#</sup>  
and Sunil Kumar<sup>a‡</sup>

<sup>a</sup> Department of Medicine, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (Meghe), Wardha, India.

<sup>b</sup> Department of Surgery, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (Meghe), Wardha, India.

### Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

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## ABSTRACT

Scrub typhus is a zoonotic disease caused by *Orientia tsutsugamushi*. Scrub typhus presenting with thrombocytopenia has been reported up to half of patients with Scrub Typhus. Thrombocytopenia is usually complicated with multiorgan dysfunction and high mortality rate. Here we report a case of a diagnosed scrub typhus infection with severe thrombocytopenia and management of such a case.

**Keywords:** Scrub typhus; thrombocytopenia.

## 1. INTRODUCTION

Scrub typhus is a zoonotic illness caused by *Orientia tsutsugamushi* and spread by mites [1].

It is a threat to public health and mostly affects Asia-Pacific regions; every year it burdens the economy and health by affecting one billion people and causes illness around the world [2].

<sup>†</sup>Resident;

<sup>#</sup>Professor and Head;

<sup>‡</sup>Professor;

\*Corresponding author: Email: [anshuagarwal9458@gmail.com](mailto:anshuagarwal9458@gmail.com);

Scrub typhus is characterised by a sudden high fever, headache which is severe in intensity, lymphadenopathy, generalised myalgia, rash and eschar [3]. Due to the lack of characteristic symptoms, accurate and effective methods for diagnosing scrub typhus are lacking, which frequently leads to a difficulty in diagnosis. Disseminated vasculitis is a pathologic feature of scrub typhus, and it can affect one or more organs, including the skin, liver, lung, kidney, brain and meninges [4]. Scrub typhus, on the other hand, is manifested by a scab at the site of the mite's bite. Approximately one third of the patients suffer from multiorgan dysfunction during the course of the illness [5]. One of the differential diagnoses for fever with thrombocytopenia or hemorrhagic fever is scrub typhus [6]. Scrub typhus mortality ranges from 30% to 60% in untreated individuals, and it varies according to age and infection location [7].

Scrub typhus is a disease which is difficult to diagnose and not endemic in states such as Maharashtra where this case was reported and hence makes treatment challenging. In this report, we discussed a case of scrub typhus manifested as thrombocytopenia posing a challenge in diagnosis and treatment. Also the course of the disease in such case is discussed.

## 2. HISTORY

A 19 year old female, resident of Chandrapur district in Maharashtra state, presented to us with complaints of fever, vomiting and abdominal pain in the last 5 days. She took some treatment outside but treatment particulars were not available. There was no history of travel to another place.

On examination, her blood pressure was 100/60 mm hg, pulse rate was 80/min, axillary temperature of 101 F was recorded, there was no skin rash (which is not very consistent with the finding of Scrub Typhus as it is almost always present in such cases), per abdominal examination was suggestive of mild splenomegaly. Routine blood investigations revealed haemoglobin 14 gm%, TLC 3100 per cu mm, platelet count 16000 per cu mm, MCV 83.8, SGPT-218, SGOT-49, Alkaline Phosphatase-254, Total bilirubin 3.4, conjugated 2.3, unconjugated 1.1, aPTt- control 30.0, aPTt-patient 30.7, prothrombin time-control 12.5, prothrombin time-patient 13.4, malaria strip test was negative. Serology for Scrub Typhus-Immunofluorescence assay was positive (light

bands were seen). Other investigations were all within normal range.

Based on history and laboratory findings, diagnosis was made as Scrub typhus presenting as severe thrombocytopenia.

Initial treatment was started in the form of antibiotics, Inj Ceftriaxone 1 gm IV 12 hourly, Inj Metronidazole 500 mg IV 8 hourly, Cap Doxycycline 100 mg 12 hourly. 2 units of Single donor platelets were transfused. Supportive treatment was given in the form of IV fluids, multivitamin supplements and antacids.

After 3 days of admission, platelet counts started showing an increasing trend with a count of 80000 per cu mm, liver enzymes showed a declining trend.

On day 5, platelet count was 1,36,000 per cu mm and liver function improved furthermore. Patient was discharged on day 5 in a hemodynamically stable condition and advised to follow up on a later date with fresh platelet count and liver function test reports. On follow up after 7 days, platelet counts and liver enzymes were within normal range.

## 3. DISCUSSION

Scrub typhus diagnosis is difficult and when multiple organs are damaged, the rate of diagnosis error occurs. One of the most common causes of scrub typhus misdiagnosis is doctors' lack of understanding of the disease's clinical symptoms [8,9]. Till 10 days after the onset of fever, the detection of nucleic acid like HtrA (periplasmic serine protease), type-specific antigen rrs (16S rRNA), and groEL (the heat shock protein Hsp60) is accurate. After that, serology plays a more specific role [10].

Furthermore, recent investigations have indicated that Raman scattering-based lateral flow test approaches are both quick and accurate in the diagnosis of the disease [11]. Scrub typhus biomarkers include *O. tsutsugamushi* immunoglobulin G (IgG) in patient blood, and an immunofluorescence assay is the best and most widely accepted approach for diagnosis (IFA). Improved anti-*Orientia* immunoglobulin M (IgM) and IgG-based rapid diagnostic tests and ELISAs have recently superseded subjective IFA due to their excellent sensitivity, specificity, and repeatability [11,12,13,14]. Scrub typhus with rapid advancement should be given special

attention since it might cause hypothermia, tachycardia, crepitation, a low lymphocyte count, hypoalbuminemia, high aspartate aminotransferase, raised serum creatinine, and positive urine albumin [14].

Thrombocytopenia and MODS are possible side effects of scrub typhus. Previous research has shown that thrombotic microangiopathic syndrome (TMAS) is the cause of thrombocytopenia-related MODS [15,16]. Thrombotic thrombocytopenic purpura (TTP), secondary thrombotic microangiopathy (TMA), and DIC are some of the pathological alterations that can arise [15]. To our knowledge, however, only a single case of scrub typhus presenting thrombocytopenia and MODS has been documented thus far [17]. Medications should be used as soon as possible to avoid complicated scrub typhus, and practitioners usually have access to a variety of effective antibiotics [18]. Doxycycline, chloramphenicol, tetracycline, and azithromycin are all effective drugs against scrub typhus. Furthermore, with the same effect, azithromycin may be more tolerated than doxycycline [19].

#### 4. CONCLUSION

We conclude that Scrub typhus being a disease not very commonly encountered in states such as Maharashtra might be complicated in the form of thrombocytopenia and needs more research into this aspect. It is associated with higher morbidity and mortality thus necessitating the need for aggressive treatment for better outcomes.

#### CONSENT

It is not applicable.

#### ETHICAL APPROVAL

It is not applicable.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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