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Case report

# A CASE OF MULTIORGAN DYSFUNCTION DUE TO SCRUB TYPHUS INFECTION

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## ABSTRACT

Rickettsia tsutsugamushi causes an acute febrile illness known as scrub thypus. Humans get infected when they accidentally encroach the mite infested areas (mite islands) mainly in rural and sub-urban areas[1]. Scrub typhus is being increasingly reported in India. It should be considered in the differential diagnosis of patients with acute febrile illness, including those with thrombocytopenia, abnormalities in liver function tests, altered sensorium, atypical pneumonia, acute respiratory distress syndrome. We report a case Multi Organ Dysfunction due to scrub typhus infection. A thorough knowledge of scrub typhus including varied presentations and its complications is important for providing life saving treatment for patients.

**KEYWORDS:** Rickettsia tsutsugamushi, Scrub typhus, ARDS.

## INTRODUCTION

Rickettsia tsutsugamushi causes an acute febrile illness known as scrub thypus[1]. It is a gram negative proteobacterium of family Rickettsiaceae. The infection is transmitted by Trombiculid mites which are found in the areas of heavy scrub vegetation[2]. It is endemic to a part of world called as tsutsugamushi triangle which extends from northern japan and far east Russia in north, to the territories around the Solomon sea into northern Australia in the south and to Pakistan and Afghanistan in the west[3-5]. Scrub typhus is being increasingly reported in India. The bite of the mite usually causes characteristic eschar. In endemic areas the eschar will be absent. It produces following complications in patients like hepatitis, atypical pneumonia, meningoencephalitis, interstitial pneumonitis, myocarditis, disseminated intravascular coagulation and multi organ failure[6, 7].

## CASE REPORT

A 16 year old female, a school student presented with complaints of high grade intermittent fever of 7 days duration, associated with chills, rigor, head ache and myalgia. She had dry cough for the past 6 days. On examination, patient was found to be febrile, not icteric, no skin rashes, no palpable lymph nodes and her pulse rate was 112/min, blood pressure was 80/60 mmHg. Respiratory system examination revealed a respiratory rate of 18/min with no lung signs. Other systems were normal. Blood counts revealed a total leucocyte count of 10,500/µl with 50% neutrophils, L- 45% lymphocytes, and 5% eosinophils. Erythrocytes sedimentation rate was 32mm/Hr. Non-homogenous opacities were seen in the x-ray of the chest, in the lower zone on both sides, more on right side.

The patient was admitted as fever under evaluation and was started with injections of ceftriaxone. In view of hypotension with severe dehydration patient was given with adequate fluid hydration with IV Fluids. Renal function tests were normal. Serum bilirubin level was 0.8mg%, SGOT level was105U/L, SGPT level was 99U/L, Serum alkaline phosphatase level was 108U/L, and serum sodium level was 134mEq/L and serum potassium level was 3.4mEq/L. Electrocardiogram was normal. On third day patient suddenly became tachypnoeic with respiratory rate of 30/min. Respiratory system examination revealed bilateral basal

coarse crepitation more on right side. Other systems were within normal limits. Urgent CT Thorax was done which revealed smooth interlobular septal thickening, Ground glass appearance more on right side compared to left side, suggestive of Acute Respiratory Distress Syndrome.

Scrub thypus report came positive. Other blood investigation, Smear for mp/mf: negative, Malarial antigen : negative, HIV : negative, HBSAg : negative, Blood C/S :negative Urine C/S : negative. The diagnosis was revised to Scrub Typhus with MODS. Patient was shifted to ICU and was put on with non invasive ventilation. She was started with inj. Azithromycin 500mg IV od, C. Doxycycilin 100mg bd. On day 4 her general condition was detoriating with further increase in respiratory rate upto 40/min. She was electively intubated and was kept in mechanical ventilation support. The above treatment was continued for about two days with patient health condition was gradually improving. Further no temperature spike was recorded. On day7 she was changed to 'T' piece assisted ventilation. On day8 she was extubated and she was maintaining saturation with 6l of oxygen mask. As she was maintaining saturation oxygen support was gradually reduced. On day 10 she was maintaining 100% saturation in room air and she was shifted to room side. Other symptoms also subsided. She was discharged on the 14th day after admission. Lung opacities were absent in the x-ray chest of the patient at the time of discharge.

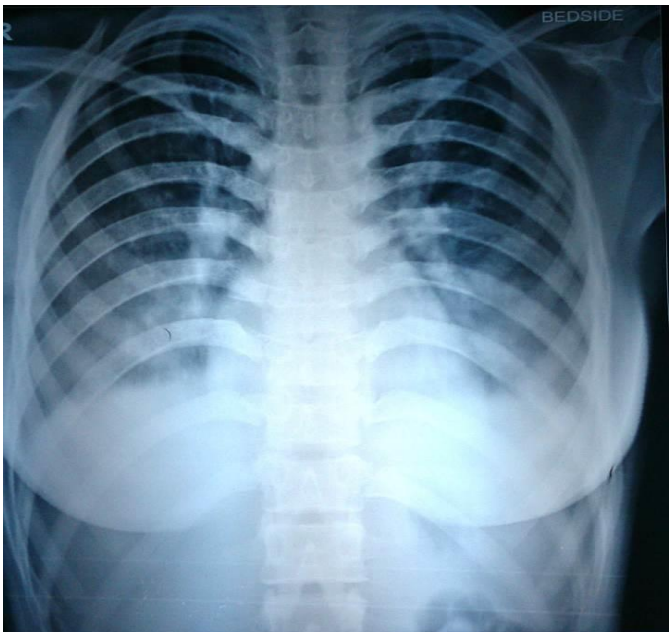


**Figure 1. X ray chest PA view showing B/L lower zone heterogeneous opacities.**

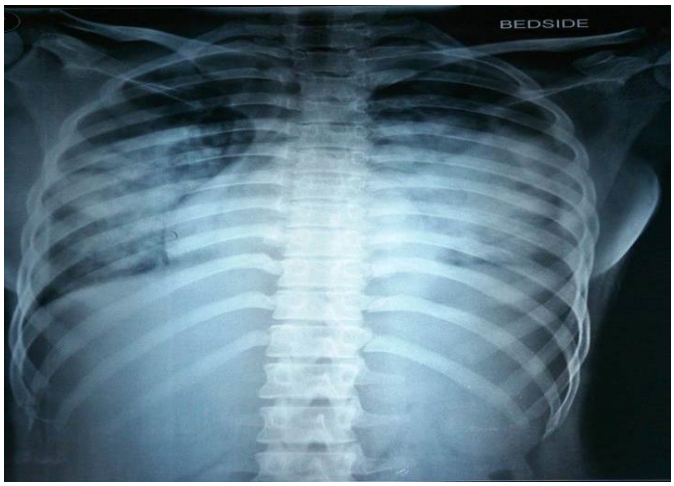


**Figure 2. X ray chest PA view showing features of ARDS**

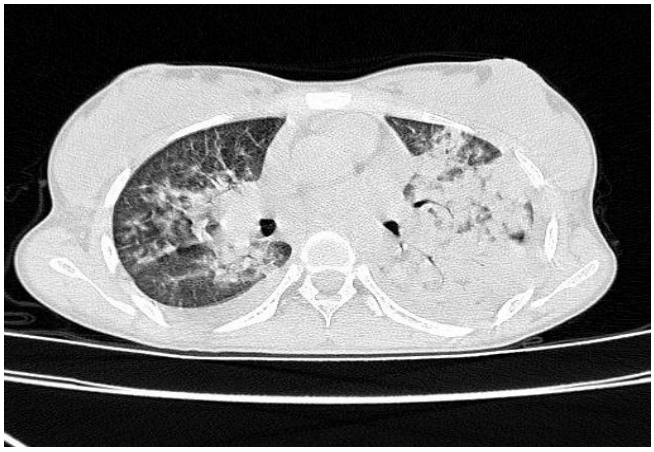

**Figure 3. CT THORAX showing interlobular septal thickening and groung glass opacity.**

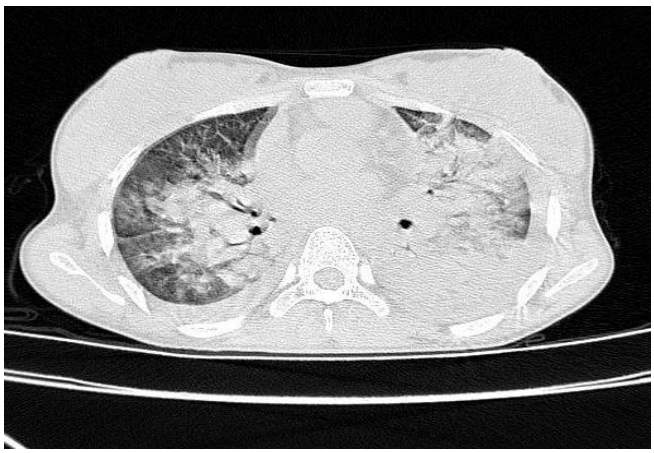

**Figure 4. CT THORAX showing interlobular septal thickening and groung glass opacity.**

## DISCUSSION

The clinical and laboratory features of scrub typhus are non-specific. The painless chigger bite is usually seen in the axilla and genital region which is often missed in routine general examination[2]. In about fifty percentage of primary infections the eschar begins as small papules, enlarge, undergo central necrosis and acquire a blackened crust to form lesions resembling a

cigarette burn [2]. The associated symptoms are high grade fever of sudden onset, apathy, severe headache; generalized lymphadenopathy and hepatosplenomegaly are seen in the patients [4]. The characteristic eschar and rash may not be always present [3]. In endemic areas the eschar will be absent. Non-specific lung infiltrates with predilection to the lower zone have been described in scrub typhu [5]. Our patient presented with high fever and features of atypical pneumonia, which was confirmed in the chest x ray. Previously described complications in patients include hepatitis, atypical pneumonia, meningoencephalitis, interstitial pneumonitis, myocarditis, disseminated intravascular coagulation and multi organ failure[6, 7].

Laboratory diagnosis of scrub typhus is based on molecular diagnostic and serological tests. Weil felix test though has a low sensitivity and specificity but may be helpful in suggestive clinical settings.8 It is desirable to demonstrate a rise in titer of antibodies for the diagnosis of scrub typhus.9A fourfold rise in agglutinin titers in paired sera is diagnostic. Serological tests such as indirect fluorescent antibody test and enzyme linked immunosorbent assay (ELISA) using specific 56 kDa recombinant antigen is gold standard for diagnosis. Scrub typhus are treated with doxycycline, azithromycin and chloramphenicol. Therapeutic trial with antibiotic therapy is also warranted if specific tests are unavailable and the index of suspicion is high [8,9]. In children and pregnant women macrolides is the drug of choice.

## CONCLUSION

All scrub typhus fever will not present with classical eschar. As in this case the patient presented only with fever and later went in to MODS. A high degree of clinical suspicion with early diagnosis and treatment with appropriate antibiotics helps in saving the patients. Early intubation has good prognosis in ARDS which was evident from this case.

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