

Acute Onset Pneumonia with Scrub Typhus in the Peripartum Period: A Case Report

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ABSTRACT

Scrub typhus is a major contributor to acute fevers throughout endemic areas of Asia. This condition is triggered by *Orientia tsutsugamushi*, transmitted by the bite of infected chigger larvae (*Leptotrombidium* mites). In the present case report 26-year-old primigravida presented to the Outpatient Department with acute intermittent fever and dyspnoea. Following a thorough clinical evaluation and differential exclusion, the patient was diagnosed with scrub typhus pneumonia-an atypical manifestation of scrub typhus, which is commonly associated with eschar formation and maculopapular rashes. The patient demonstrated significant improvement with multidisciplinary intervention, rapid diagnostic measures, and prompt therapeutic management. In the literature, scrub typhus presenting as acute pneumonia in the peripartum period is extremely uncommon, making this case unique for its presentation during labour and absence of classical features. This case underscores the importance of considering scrub typhus as a differential in endemic regions, even in the absence of characteristic clinical markers, and highlights the need for early serological testing and timely therapy.

Keywords: Acute respiratory distress syndrome, Azithromycin, Doxycycline, *Orientia tsutsugamushi*, Peripartum pneumonia, Serological diagnosis

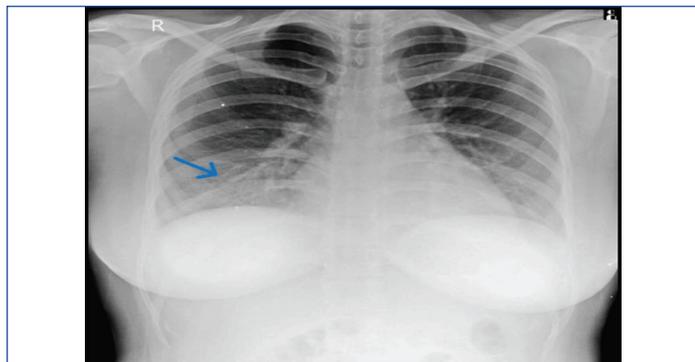
CASE REPORT

A 26-year-old primigravida at 39 weeks and three days of gestation presented in the latent phase of labour with a 48-hour history of high-grade fever, non-productive cough, and progressive breathlessness. She had no recent history of travel or direct exposure to livestock. On clinical assessment, tachycardia and tachypnoea were evident, and auscultation of the respiratory system revealed crepitations in the right infrascapular area and right infra-axillary area. On general examination, her temperature was 104°F, blood pressure was 110/70 mmHg, pulse rate was 108 beats per minute, respiratory rate was 28 breaths per minute, and oxygen saturation on room air was 95%.

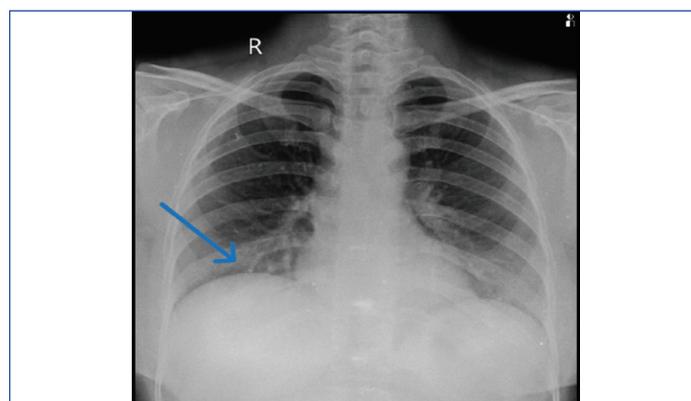
Laboratory findings included haemoglobin of 10.8 g/dL, leukocytosis (14,300 cells/ μ L) with neutrophil predominance, thrombocytopenia (1.32 L/ μ L), elevated C-reactive protein (100 mg/L), and an erythrocyte sedimentation rate (24 mm/hr). A chest radiograph (PA view) demonstrated right lower zone consolidation, raising suspicion of pneumonia [Table/Fig-1]. Within four hours of hospital admission, the patient had a spontaneous vaginal delivery, giving birth to a healthy male neonate weighing 2.5 kg.

engorgement or abnormal lochia. She was subsequently transferred to the high-dependency unit for intensive monitoring and further evaluation. Given the pulmonary findings and clinical deterioration, a differential diagnosis was considered, including community-acquired pneumonia, Coronavirus Disease-19 (COVID-19), tuberculosis, leptospirosis, dengue with pulmonary involvement, and scrub typhus. COVID-19 RT-PCR was negative. Enzyme Linked Sorbent Assay (ELISA)-based serological testing revealed elevated IgM and IgG antibodies against *Orientia tsutsugamushi*, confirming scrub typhus. Arterial blood gas analysis showed hypoxemia (PaO₂=58 mmHg), suggestive of mild ARDS. The neonate tested negative for scrub typhus antibodies.

She was started on intravenous doxycycline (100 mg twice daily) for three days and azithromycin (500 mg once daily) for five days, along with supportive oxygen therapy. Human milk from the hospital milk bank was used for the neonate during maternal treatment. Significant clinical improvement was noted over the following days, with resolution of dyspnoea and fever. Follow-up chest X-ray on day 10 showed resolution of the right lower zone consolidation [Table/Fig-2].



[Table/Fig-1]: Chest X-ray (PA) showing right-sided lower zone consolidation along the bronchoalveolar margins. (Blue arrow).



[Table/Fig-2]: Chest X-ray (PA) showing resolution of right-sided lower zone consolidation along the bronchoalveolar margins. The blue arrow marks the area of previously existing right-sided lower zone consolidation along the bronchoalveolar margins.

Despite an uneventful immediate postpartum period, the patient experienced recurrent high-grade fever, persistent dyspnoea, and a worsening non-productive cough, with no evidence of breast

She was discharged on the 14th day of hospitalisation in a stable condition with oral doxycycline (100 mg twice daily for 7 more days) and nutritional supplements. A follow-up visit was advised after 10 days.

At follow-up, the patient was afebrile and asymptomatic with no respiratory complaints. Clinical examination revealed no abnormalities and her oxygen saturation was 98% on room air. She reported no postpartum complications.

DISCUSSION

Scrub typhus is a significant but often underrecognised cause of acute febrile illness, especially in Asia's endemic regions. It is caused by *Orientia tsutsugamushi*, an obligate intracellular gram-negative bacterium transmitted by the bite of infected chigger larvae (*Leptotrombidium* mites). The disease persists in nature through transovarial transmission within the vector and occasionally in small mammalian hosts [1,2].

The pathogen exhibits substantial genetic variability, particularly in the 56-kDa type-specific antigen- a key immunogen that

out of 72 (11.1%) patients studied were seen to develop ARDS, often requiring intensive care [9].

Serological testing remains the cornerstone for diagnosis. IgM antibodies usually appear by day 7-10 of illness, while IgG titers rise around the second week. In reinfections, IgG may become detectable as early as day 6. Therapeutically, doxycycline is the first-line drug, with azithromycin serving as an effective alternative, particularly in pregnant or lactating women. Combination regimens have shown benefit in severe cases [10]. Khilnani GC et al., found that early administration of doxycycline significantly reduced mortality and hospital stay duration [10].

Complications such as ARDS, myocarditis, meningitis, DIC, acute kidney injury, and even maternal or fetal loss have been reported in the literature [11]. Rajan SJ et al., reported that 16% of pregnant women with scrub typhus developed complications, with one-third requiring intensive care [11]. However, as in the present case, early diagnosis and prompt intervention are associated with favourable outcomes. [Table/Fig-3] shows a summary of few published cases from the literature [12-15].

Author and year	Age/sex	Presentation	Diagnosis Method	Pulmonary Involvement	Treatment	Outcome
Singh K et al., [12]	Below 40	Breathlessness, cough, ARDS	ELISA + ABG	Yes (ARDS)	Doxycycline, Azithromycin	recovered
Shetty VN et al., [13]	51-year-old male	Vomiting, conscious, restless	IgM, Serology (Weil-Felix)	Mild	Doxycycline	Responded well to the treatment
Sheekand S et al., [14]	26-, 29-, and 30-years old females	cough, dyspnoea, jaundice, skin rash, joint pains, vomiting, diarrhea	Serology	Yes (mild pneumonia)	Azithromycin 500 mg	Patient responded in 48 hours
Vaddadi S et al., [15]	27-year-old female	fever, chills, severe headache and body pains of 9 days duration	IgM +Serology	No	Azithromycin 500mg	Became afebrile
Present case (2025)	26-year-old female	Fever, pneumonia, peripartum ARDS	IgM/IgG ELISA + CXR + ABG	Yes (mild ARDS)	Doxycycline + Azithromycin	Recovered fully, with no complaints.

[Table/Fig-3]: Comparative analysis of published case reports and studies on scrub typhus with pulmonary or peripartum involvement [12-15].

ARDS: Acute respiratory distress syndrome

elicits neutralising antibodies [3]. This genetic plasticity has led to the identification of several new antigenic subtypes beyond the classical Karp, Kato, and Gilliam strains across different geographic regions [4].

Although comprehensive epidemiological data are limited, study in Asia have indicated that scrub typhus accounts for a notable proportion of non-malarial febrile illnesses, with seroprevalence ranging from 9.3% to 27.9% [5]. In India, outbreaks are reported most frequently during the monsoon and post-monsoon seasons [6].

The pathophysiology involves endothelial invasion by *O. tsutsugamushi*, leading to widespread vasculitis and perivascular infiltration by T lymphocytes and monocytes. These immune responses cause the release of pro-inflammatory cytokines, contributing to both pathogen clearance and tissue injury [7]. Consequently, patients may develop complications such as hepatitis, renal dysfunction, meningoencephalitis, myocarditis, and Acute Respiratory Distress Syndrome (ARDS) [7].

Clinical diagnosis is often challenging due to non-specific symptoms. Eschar, though pathognomonic, is present in only 10 to 90% of cases and is easily missed, particularly in darker-skinned individuals or concealed anatomical locations [8]. In endemic areas, clinicians must consider scrub typhus in the differential diagnosis of undifferentiated fever, especially when patients present with respiratory involvement, thrombocytopenia, or elevated inflammatory markers.

In the present case, the patient-despite lacking classic features like rash or eschar-presented with persistent high-grade fever and pneumonia in the peripartum period. ELISA confirmed scrub typhus. ARDS complicated the clinical picture, but the patient responded well to doxycycline and azithromycin. Similar pulmonary involvement has been reported by Wang CC et al., nine where eight

CONCLUSION(S)

Clinicians must maintain a high-index of suspicion for scrub typhus in febrile patients presenting with pneumonia, even in the absence of characteristic eschar or rash. Early diagnosis and prompt antibiotic therapy are crucial in mitigating severe complications such as ARDS and improving maternal outcomes during the peripartum period. This case reinforces the importance of considering scrub typhus as a differential diagnosis in atypical febrile illnesses and implementing timely serological investigations to facilitate early intervention.

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PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Mar 05, 2025
- Manual Googling: Nov 27, 2025
- iThenticate Software: Nov 29, 2025 (6%)

ETYMOLOGY: Author Origin**EMENDATIONS:** 6**AUTHOR DECLARATION:**

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Feb 25, 2025**Date of Peer Review: **May 03, 2025**Date of Acceptance: **Dec 02, 2025**Date of Publishing: **Mar 01, 2026**