



## Scrub typhus presenting as Sepsis and ARDS

**Dr Priyadarshini Behera**

MD (Pulmonary Medicine) Assistant Professor Dept of Pulmonary Medicine IMS and SUM Hospital Bhubaneswar

**Dr Sonali Parida**

Senior resident MD (Pulmonary Medicine) Dept of Pulmonary Medicine IMS and SUM Hospital Bhubaneswar

**Dr Sadananda Barik**

Consultant Pulmonologist and Intensivist Kalinga Hospital Limited, Bhubaneswar

**ABSTRACT** Scrub typhus is a disease caused by *Orientia tsutsugamushi* is one of the frequent causes of fever of unknown origin. It is mostly reported in India, Asia pacific region. Clinical manifestations are fever, myalgia, eschar, anorexia or complications like ARDS and multiorgan failure. Here we report a case of scrub typhus in an adult male presenting as ARDS and its management with invasive ventilatory support in the ICU. He recovered completely with timely treatment.

**KEYWORDS :** scrub typhus, sepsis, ARDS

### Introduction

Scrub typhus is caused by *Orientia tsutsugamushi* which is an obligate intracellular gram negative coccobacilli. It is transmitted by mite bite. Human beings get infected when they accidentally encroach upon the mite infested areas. In India epidemics has been observed in north, east and south parts. Common presentation of scrub typhus include acute onset fever, generalized lymphadenopathy, cough, breathlessness, myalgia, headache, rashes, thrombocytopenia and capillary leak. ARF and ARDS observed in severe cases. ARDS is very rare without other manifestations (1-3). The mortality rate of scrub typhus reported was 6.1-30% (4, 5). The mortality rate for the scrub typhus with ARDS is up to 25% (6). Scrub typhus starts are bronchitis and interstitial pneumonitis progressing to ARDS (6). The infection presents as high grade fever not relieved with antipyretics. The typical eschar is not found in all cases (7). In severe cases multiorgan involvement occurs and can be fatal if not treated early (8). Here we present scrub typhus that manifested as acute respiratory distress and was treated successfully.

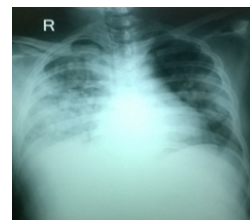
### CASE REPORT:

A 35 year old diabetic, smoker and alcoholic from Puri district farmer by occupation was admitted with high grade intermittent fever with chills and rigors, shortness of breath and cough with scanty mucoid expectoration 1 week prior to admission. On examination his GCS was 15 and he was febrile (101 degree F). His vitals were BP- 90/60 mmhg, PR- 120 bpm, RR- 64/min, SpO2 WAS- 68% with room air. There was no lymphadenopathy and his neurological examination was normal. A crusted greyish eschar was found on the back of the patient. Respiratory system examination revealed bilateral diffuse crepitation and use of accessory muscles and paradoxical respiration. His ABG revealed a pH of 7.43, PaCO<sub>2</sub>- 20mm Hg, PaO<sub>2</sub>- 50mm Hg, HCO<sub>3</sub><sup>-</sup>- 12mEq/L, PaO<sub>2</sub>/FiO<sub>2</sub>- 83.3. Chest X Ray (Fig 1) revealed bilateral diffuse infiltrates. He was immediately shifted to ICU and was intubated and put on mechanical ventilation for ARDS and on Noradrenaline infusion and fluids for shock. The random blood sugar value was 434mg/dl and routine urine examination showed presence of Ketone bodies and 4+ sugar, 2+ protein and was he was started on insulin infusion for DKA.

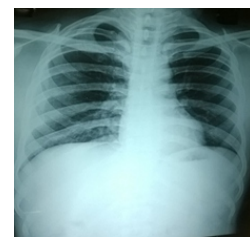
Routine blood reports revealed leukocytosis (21,690/cu mm with predominant neutophils- 84%), Hb- 13.5 gm/dl, platelet count of 1.79 L/cu mm. Liver function tests and renal function tests were within normal limits. There were no dyselectrolytemias. Tests for malaria parasite as well as dual antigen tests for *P. vivax* and *P. falciparum* were negative. Dengue serology IgM antibody was reactive but there was no thrombocytopenia. Serology tests for *Leptospira* and HIV were negative. Scrub typhus serology IgM was reactive (2.86). Endotracheal aspirate was negative with respect to bacterial, fungal or mycobacterial infections. Blood culture as well as urine culture did not reveal any organism. Ultrasonography of abdomen did not reveal any abnormality. The patient was started on Imipenem plus cilastatin and

clarithromycin which continued for 10 days, Doxycycline 100 milligrams twice daily which continued for 2 weeks.

The patient had improvement in serial Chest X rays, ABG and leucocyte counts as well as clinically in terms of vitals and chest signs and on 10th day of mechanical ventilation he was successfully extubated and on the 14<sup>th</sup> day of admission he was transferred to the general ward and then discharged on 16<sup>th</sup> day. On follow up after 2 weeks there was no residual infiltrates on his Chest X Ray (Fig 2) and the patient had no respiratory complaints.



**FIG 1 Bilateral lung opacity suggestive of ARDS**



**FIG 2: Resolution of bilateral lung opacity**

### Discussion

Scrub typhus is endemic to a part of the world known as the tsutsugamushi triangle. It was reported from northern India, eastern India and southern India (9, 10). Scrub typhus is the cause of pyrexia of unknown origin in the Indian subcontinent (11). One million new cases are estimated to occur every year and 1 billion people are estimated to be at risk of infection (12). It occurs mostly in adult population. It is caused by *Orientia tsutsugamushi* (family Rickettsiaceae). Humans acquire infection by bite of larval stage (chigger) of trombiculid mites. Wild rats are reservoirs for chiggers and infection occurs when chiggers feed on humans. Literature suggests scrub typhus is more commonly seen in rural areas and suburban areas. In our case report patient is an agricultural worker.

Multiplication of organisms occurs at the site of entry and later develops into an eschar. Endothelial cells infection result in perivascular inflammation and endothelial dysfunction. Eschar is

found in axilla, breast and groin (2). In one series eschar was seen in 6-46% and rash was seen in 36% cases (1, 3). Clinical manifestations are fever, headache to severe complications like pneumonitis, encephalitis, ARDS, and peripheral circulatory failure. Hypotension, renal failure, multiorgan dysfunction syndrome and DIC account for most deaths (1, 2). Positive Weil Felix test is seen in 78% cases (12). Titre of 1:320 or more is reliable although 1:80 is suggestive of infection. IgM antibody demonstration against *Orientia tsutsugamushi* is diagnostic (1). Other Tests include enzyme linked immunosorbent assay (ELISA), passive hemagglutination assay (PHA), Immunochromatographic assay (ICA) and IgM dot immunobinding assay. Our patient was diagnosed based on history, presence of eschar and IgM antibody against *Orientia tsutsugamushi*. ARDS is caused by direct or indirect lung injury in scrub typhus. Main mechanism is systemic vasculitis in the pathogenesis of scrub typhus. Immunologic mechanisms play an important role in pathogenesis. Management of scrub typhus is being delayed in various part of India due to nonspecific clinical presentation simulating other diseases. Antibiotic of choice for scrub typhus is doxycycline (4mg/kg/day in two divided doses max 200mg BID) it is given for 10 day (3). Person travelling to endemic areas should receive empirical doxycycline (1,2). Prompt treatment with doxycycline decrease mortality.

### CONCLUSION

ARDS is a serious complication of scrub typhus. The mortality is up to 25%. We are reporting this case to emphasize the need of detailed history taking, clinical examination, prompt treatment awareness of rare life threatening manifestations of scrub typhus like ARDS, renal failure and multiorgan dysfunction. Knowledge about complications, risk factors and prompt timely aggressive treatment can help clinicians to reduce mortality associated with scrub typhus. Specific and prompt treatment with doxycycline should not be delayed.

### References:

1. Sengottaiyan P, Krishnamoorth N, Varadarajan P, Rangaswamy R, Padmanabhan R. Clinical Profile of Scrub Typhus in Children. The Indian Journal of Pediatrics. November 2012; Volume 79, issue 11: 1459-1462. Date: 29 Feb 2012.
2. Vivekanandan M, Mani A, Priya YS, Singh AP, Jayakumar S, Purty S. Outbreak of scrub typhus in Pondicherry. The Journal of the Association of Physicians of India. 2010; 58: 24-8.
3. Kandareshwar P.S. Narvencar, Savio Rodriguez, Ramnath P. Narvekar, Lydia Dias, Amit Dias, Maria Vaz et al. Scrub typhus in patients reporting with acute febrile illness at a tertiary health care institution in Goa. Indian J Med Res. Dec 2012; 136(6):1020-1024.
4. Tsay RW, Chang FY. Serious complications in scrub typhus. J Microbiol Immunol Infect. 1998; 31:240-4.
5. Lee CS, Hwang JH, Lee HB, Kwon KS. Risk factors leading to fatal outcome in scrub typhus patients. Am J Trop Med Hyg. 2009; 81:484-8.
6. Chayakul P, Panich V, Silpapojakul K. Scrub typhus pneumonitis: an entity which is frequently missed. Q J Med 1998; 68:595-602.
7. Mathai E, Rolain JM, Verghese GM, Abraham OC, Mathai D, Mathai M, et al. Outbreak of scrub typhus in southern India during the cooler months. Ann N Y Acad Sci 2003; 990:359-64.
8. Kandareshwar P.S. Narvencar, Savio Rodriguez, Ramnath P. Narvekar, Lydia Dias, Amit Dias, Maria Vaz et al. Scrub typhus in patients reporting with acute febrile illness at a tertiary health care institution in Goa. Indian J Med Res. Dec 2012; 136(6):1020-1024.
9. Chogle AR. Diagnosis and treatment of scrub typhus-The Indian scenario. J Assoc Physicians India. 2010; 58:11-2.
10. Pandey D, Sharma B, Chauhan V, Mokta J, Verma BS, Thakur S. ARDS complicating scrub typhus in Sub-Himalayan region. J Assoc Physicians India. 2006; 54:812-3.
11. Chayakul P, Panich V, Silpapojakul K. Scrub typhus pneumonitis: an entity which is frequently missed. Q J Med 1998; 68:595-602.
12. Watt G, Parola P. Scrub typhus and tropical rickettsioses. Current Opinion in Infectious Diseases. 2003; 16: 429-436.