



SCRUB TYPHUS AS DIFFERENTIAL DIAGNOSIS OF COVID-19 IN PRESENT SCENARIO : A CASE REPORT

General Medicine

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ABSTRACT

Scrub typhus is a rickettsial disease predominantly seen in Asian pacific region. It is caused by pathogen *Orientia tsutsugamushi*. Vector involved in scrub typhus is larval trombiculid mite(chigger). It presents as acute febrile illness with cough, severe headache and myalgia. Complications include pneumonitis, acute respiratory distress syndrome, myocarditis, meningitis etc. Eschar or rash may not be present. Severity of illness can range from mild symptoms to multi-organ failure and death. We report a case of scrub typhus who presented with fever, shortness of breath and low oxygen saturation in emergency. Patient is a middle aged female with no known co-morbidities. Initially she was kept in COVID-19 suspected ICU and was managed supportively. HRCT was suggestive of Acute Respiratory Distress Syndrome (ARDS). RT-PCR for SARS-CoV2 came out negative. On evaluation it was found that she was having scrub typhus. In present scenario, not all patients who are having symptoms of fever, shortness of breath can be COVID19, scrub typhus is one of those illnesses which may present similar to COVID19. Early diagnosis and prompt treatment of scrub typhus is essential as any delay might lead to dreadful complication and can be fatal.

KEYWORDS

scrub typhus, acute respiratory distress syndrome, COVID-19, SARS CoV2, acute febrile illness.

INTRODUCTION

Acute Respiratory Distress Syndrome (ARDS) is caused by diffuse alveolar damage and lung capillary endothelial injury leading to increased capillary permeability and the influx of protein-rich fluid into the alveolar space. An imbalance of pro-inflammatory and anti-inflammatory cytokines, along with platelet sequestration and activation, is also thought in the development of ARDS.¹

Acute respiratory distress syndrome (ARDS) is a serious complication of scrub typhus and pulmonary manifestations vary from bronchitis, interstitial pneumonitis progressing to ARDS.²

The basic pathologic lesions are due to the rickettsial invasion of endothelial cells causing focal or disseminated multiorgan vasculitis which can cause damage to one or more organs such as the liver, lungs, kidney, brain, etc. The initial target is the microcirculation (capillaries and venules), but with time, the contiguous arteries and veins are affected.³

Wang CC et al., did an extensive study on ARDS in patients with scrub typhus. The mortality rate was around 25% and timely intervention with Doxycycline or Chloramphenicol decreased it.⁴

Scrub typhus formed >15% of cases with suspected diagnosis of tropical fevers admitted in I.C.U. in the data as per Indian Society of Critical Care Medicine (ISCCM) in 2014.⁵

We are reporting this case to highlight the need for thorough history taking, clinical examination, awareness of manifestations of scrub typhus like ARDS, in the current scenario of COVID19 pandemic.

CASE REPORT

40 years old female with no known prior co-morbidities came to emergency department with chief complaints of fever for 5 days, which was high grade and associated with chills. She developed shortness of breath 3 days after onset of fever which was progressive. Associated symptoms were nausea and vomiting for 2 days.

She neither had chest pain, palpitations, lower limb swelling nor double vision, any seizures, altered sensorium. She is not a known case of C.O.P.D., Bronchial Asthma, tuberculosis, or thyroid disorder.

On presentation, patient was conscious, alert but in respiratory distress. Vitals were, Pulse – 98/min, Blood pressure – 100/70mm of Hg, SpO₂ – 84% on room air, 95% at 5L/min oxygen via face mask, Resp. rate – 24/min, Temp. – 99F, random blood glucose – 114mg/dl. On respiratory examination, there was reduced bilateral air entry with crepitations. Neurological examination was well within normal limit.

Cardiovascular examination was normal, S1S2 heard, no murmur present, J.V.P. was under normal range.

Her Chest X-ray was done which was s/o bilateral air space infiltration suggestive of Bilateral pneumonitis (Fig.no.1). In view of low oxygen saturation and chest X-ray changes, patient was admitted in suspected COVID19 I.C.U. and her blood was sent for routine investigations which were suggestive of thrombocytopenia (Table 1).



Fig.No.1: C.X.R. on Day 1 of admission showing B/L central air space infiltration of lungs.

Her fever panel was also sent which came positive for Scrub typhus IgM antibody. At same time, her RT-PCR for SARS-CoV2 came out to be negative. She was shifted to ward and started with I.V. Doxycycline and I.V. Dexamethasone along with other supportive treatment. She was kept on oxygen support via venturi face mask. She was maintaining 96% saturation at 5L/min oxygen.

Table 1: Complete Blood count showing thrombocytopenia.

TEST	RESULTS				
Date-	Day 1	Day 2	Day 3	Day 4	Day 6
Hemoglobin	11.2	-	-	8.0	9.4
Total Leukocyte count	13130	-	-	9370	7800
D.L.C.					
Neutrophils	85			65	62
Lymphocytes	12			27	36
Eosinophils	00			01	00
Monocytes	03			07	02

Platelets	21000	89000	150000	127000	168000
M.C.V.	81.8	-	-	84.8	82.5

Her inflammatory markers such as C-reactive protein and d-dimer were also sent. Surprisingly, both came high. However, it showed a decreasing trend during course of treatment. (Table 2)

Table 2: Inflammatory Markers.

TEST	Day 1	Day 4
C-reactive Protein	438 mg/L	20.4 mg/L
D-dimer	2881 ng/ml FEU	2203 ng/ml FEU

High Resolution C.T. Scan of Thorax was done which was showing bilateral central areas of ground glass opacity with bilateral moderate pleural effusion with passive underlying lung collapse suggestive of Acute Respiratory Distress Syndrome (ARDS). (Figure 2 & 3)

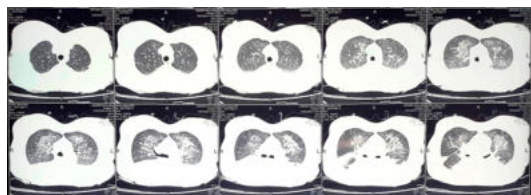


Figure 2: High Resolution CT Scan of Thorax suggesting Acute Respiratory Distress Syndrome

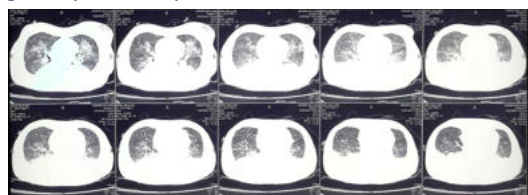


Figure 3: High Resolution CT Scan of Thorax suggesting Acute Respiratory Distress Syndrome

However, there is a point to note that, ground glass opacities in this case is mainly central whereas in conditions such as COVID19, these opacities are mainly peripherally located.

Progressive chest radiographs on day 3 and day 5 showed improvement and reduction in ground glass opacities. (figure 4 & 5)



Figure 4: Chest Radiograph on Day 3.

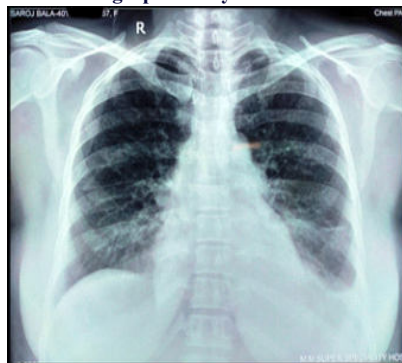


Figure 5: Chest Radiograph on Day 5.

Her condition improved gradually over course of stay. Her oxygen requirement gradually decreased. Dose of steroids were tapered off. On 7th day, she was maintaining 97% oxygen saturation on room air. Patient was discharged on 8th day with normal vitals and maintaining 98% Spo2 on room air.

DISCUSSION AND CONCLUSION

Nowadays, physicians are suspecting and even sometimes labeling every patient who comes with shortness of breath and fever as COVID19. There are many other diseases which can mimic COVID19, one of them being scrub typhus, is quite common in Indian subcontinent. Scrub typhus is an acute febrile illness caused by gram negative bacterium *Orientia tsutsugamushi*. It is transmitted to humans by bite of larval stage (chigger) of trombiculid mites. Wild rats are the reservoirs for chiggers and infection occurs when chiggers feed on humans. Literature suggests risk of exposure is more among people living in rural areas, agricultural workers, soldiers. In our case report, patient is from rural background. The clinical manifestations of this disease range from fever, headache, non-productive cough and eschar to fatal complications like pneumonitis, encephalitis and peripheral circulatory failure.

We are highlighting the need for early diagnosis and prompt treatment as any delay in diagnosis or treatment can lead to dreaded and fatal complications.. Treatment for scrub typhus remains the same. Our age old antibiotic doxycycline remains the mainstay of treatment along with other supportive measures such as oxygen support for hypoxemia, pyrexia control, platelet transfusion in case of bleeding, steroids to reduce inflammation etc.

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