



ORIGINAL RESEARCH PAPER

General Medicine

A RARE PRESENTATION OF A TROPICAL FEVER WITH MYOCARDITIS

KEY WORDS: Scrub Typhus, Co-Existence Of Myocarditis And Acute Respiratory Distress Syndrome, Perivasculitis

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ABSTRACT

Scrub typhus is a tropical fever caused by Orientia tsutsugamushi, which is transmitted by bite of infected chigger larve. It is considered as a potentially fatal rickettsial infection. The incidence of scrub typhus in India is estimated to be around 1 million cases annually. Here, we present a case of 35 year old male, with no known co-morbidities who presented with fever initially and developed chest pain and shortness of breath during the course of illness and later was found to have developed acute respiratory distress syndrome and myocarditis.

INTRODUCTION:

Scrub typhus, a zoonotic infection caused by Orientia tsutsugamushi, which is an intracellular obligate gram negative bacilli. This tropical fever is transmitted to humans by the bite of chigger mites.¹ Scrub typhus is an emerging public health problem that is of concern especially in and around Tamil nadu.² This mite-borne disease produces substantial mortality and is more endemic in areas from Asia to Pacific. The main pathologic change is focal or disseminated vasculitis caused by the destruction of endothelial cells and the perivascular infiltration of leukocytes. The clinical presentation is usually manageable with doxycycline or tetracycline, however when it presents with complications, it is usually fatal. Hence, early anticipation of its complications play an important role.

Case Presentation:

A 35 year old gentleman presented to the emergency department with history of fever for 10 days, which was a high grade, intermittent fever associated with generalized myalgia and headache. Patient started developing shortness of breath since last 2 days which was gradual in onset and progressive such that he developed shortness of breath even on walking to the restroom. Patient gave history of infection with covid-19 10 months ago for which he was hospitalised and treated with minimal oxygen and other specific medications.

On arrival to the emergency department, temperature was noted to be 101 degree fahrenheit. Patient was tachypneic with a respiratory rate of 35 cycles per minute and a heart rate of 112 beats/minute. Oxygen saturation on arrival was 88% at room air and patient required 6litres oxygen to maintain saturation >95%. Local examination revealed an eschar over the right axillary region and axillary lymph nodes were palpable. On auscultation, fine crepitations were present over bilateral lung base. Arterial blood gas showed a PaO₂/FiO₂ ratio of 200 indicating moderate ARDS.

Laboratory investigations revealed a raised total count of 12360 cells per cubic millimeter with neutrophil predominance of 83.6% and a platelet count of 1.17 lakhs per cubic millimeter. Liver function test revealed a total bilirubin of 2.34mg/dl with a direct bilirubin of 1.70mg/dl. Alanine transaminase and aspartate transaminase levels were

elevated and renal function test along with electrolytes were altered.

Patient complained of chest pain after 1 day of admission and hence electrocardiogram was done. ECG showed ST segment depression in lead 3, avf with ST elevation in lead 1, aVL and aVR. Cardiac biomarkers were sent and that turned out to be positive. NT pro Brain natriuretic peptide levels were checked and was found to be normal. Patient was started on intravenous injection dexamethasone. 2D echo cardiogram was done which showed adequate ventricular function and grade 1 diastolic dysfunction with normal ejection fraction.



Fig 1- chest x-ray PA view showing obliteration of cardiophrenic and costophrenic angles bilaterally

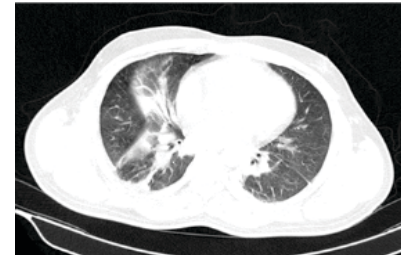
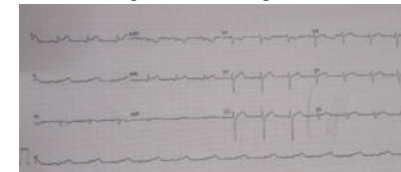
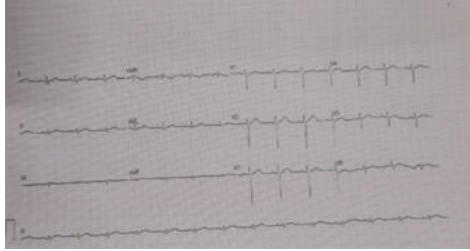


Fig 2- CT scan showing bilateral lung infiltrates



Ecg showing ST, T changes on day 2



Repeat ECG on Day 5 showing reversed changes.

DISCUSSION:

Scrub typhus is a zoonotic infection seen mostly in the western pacific and east asian areas caused by *Orientia tsusugamushi*.³ Until now, there has not been much cases identified with myocarditis. Our patient had features of acute respiratory distress syndrome and myocarditis together. The main pathophysiology of scrub typhus is invasion of the vascular endothelium and thereby causing disseminated vasculitis. It causes multi-organ involvement and hence the major complications of it being acute respiratory distress syndrome, encephalitis, myocarditis, hepatitis, disseminated intravascular coagulation, subacute thyroiditis, etc.⁴

Our patient had elevated liver enzymes with an increased proportion of direct bilirubin along with elevated transaminases on the day of presentation. In view of changes suggestive of myocarditis in ecg, serial ecg monitoring was done. The changes reverted after 1 day. Patient was started on intravenous steroids with injection doxycycline and other supportive measures. Patient was kept on intermittent non-invasive ventilation in view of tachypnea. Patient improved symptomatically after 2 days of treatment and was shifted to ward for monitoring and liver enzymes were repeated after 3 days of admission and was found to be on the decreasing trend.

CONCLUSION:

Scrub typhus induced myocarditis is a very rare presentation. It usually presents with mild pre-monitory symptoms like fever, cough, myalgia, chest pain. It can range from mild non-specific symptoms to exertional dyspnea and sudden cardiac death. Hence, every case of scrub typhus must be monitored carefully for these changes and treated with caution.⁵ Every case of myocarditis can mimic myocardial ischemia. Hence, cardiac MRI and monitoring cardiac enzymes also plays a pivotal role in the management.

REFERENCES:

1. Mahdi AS, Al-Khalili SM, Chung CC, Molai M, Ibrahim H, Eskild P, Khamis F, Nenas P. Scrub Typhus Complicated by ARDS, Myocarditis, and Encephalitis Imported to Oman from Nepal. *Oman Med J*. 2019 May;34(3):254-256.
2. Kamarasu K, Malathi M, Rajagopal V, Subramani K, Jagadeeshramasamy D, Mathai E, et al. Serological evidence for wide distribution of spotted fevers and typhus fever in Tamil Nadu. *Indian J Med Res* 2007;126:128-30.
3. Chin JY, Kang KW, Moon KM, Kim J, Choi YJ. Predictors of acute myocarditis in complicated scrub typhus: an endemic province in the Republic of Korea. *Korean J Intern Med*. 2018 Mar;33(2):323-330. doi: 10.3904/kjim.2016.303. Epub 2017 Feb 23. PMID:28226202;PMCID:PMC5840598.
4. Rekwan Sittiwangkul, Yupada Pongprot, Suchaya Silvilariat, Peninnah Oberdorfer, Podjanee Jittamala & Virat Sirisanthana (2008) Acute fulminant myocarditis in scrub typhus, *Annals of Tropical Paediatrics*, 28:2, 149-154
5. Ki, YJ., Kim, DM., Yoon, NR. et al. A case report of scrub typhus complicated with myocarditis and rhabdomyolysis. *BMC Infect Dis* 18, 551 (2018). <https://doi.org/10.1186/s12879-018-3458->