Case Report

Outcome of scrub typhus in pregnancy during COVID-19 pandemic: A case report

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Abstract

Coronavirus disease 2019 (COVID-19) pandemic has emerged as the major public health threat in recent times. Although associated with high morbidity and mortality affecting all age groups across populations, "pregnant women" represent a subgroup that needs extra surveillance. We present the case of a primigravida in her advanced pregnancy presenting with acute febrile illness with flu-like symptoms. The clinico-radiological picture was suspicious for COVID-19; however, she tested negative for COVID-19 on two occasions. On further investigations, she tested positive for Scrub typhus (IgM-ELISA) and responded to treatment with doxycycline. However, due to the ongoing COVID-19 pandemic, much time was lost before suspecting and reaching the final diagnosis. Therefore, the patient had to suffer due to delayed medical intervention and intrauterine fetal death. Despite the unprecedented rise of COVID-19 in pregnant women in recent times, we should not forget about other tropical illnesses, which can mimic COVID-19 in clinical presentation and affect feto-maternal outcomes adversely.

Keywords: COVID-19, feto-maternal outcome, pregnancy, scrub typhus

Introduction

As of November 2020, there have been more than 40 million confirmed coronavirus disease 2019 (COVID-19) cases worldwide, including more than 1 million deaths. India has crossed over 5 million cases with deaths amounting to more than 95,000.[1] The pandemic has impacted all age groups across the population irrespective of their ethnicities, race, and gender. A subgroup that needs special care and attention during the ongoing pandemic is that of pregnant women.[2] Because of the current epidemiological situation of this pandemic, patients presenting with flu-like symptoms, febrile illness, cough, breathlessness, etc., are primarily thought to be infected with COVID-19. We report the case of a pregnant woman whose clinical features closely mimicked that of COVID-19, but was later found to be infected with Scrub typhus.

Case History

A 29-year-old primigravida (32-week gestation) presented to the emergency department at our tertiary care hospital, with an acute history of sore throat, high-grade fever, abdominal pain, cough, and progressive shortness of breath for the last 10 days. She also complained of poor urine output and decreased fetal movements for 2 days before presentation. She had an uneventful pregnancy so far. The latest ultrasonography (USG) scan at 30 weeks was suggestive of a single live fetus at 29 weeks ± 3 days with normal biometry parameters. Given her symptoms suspicious for COVID-19, she was tested by reverse transcriptase polymerase chain reaction (RT-PCR) assay at the primary healthcare facility in her native town. However, due to worsening clinical condition,

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she was referred to our hospital (regional nodal referral center for COVID-19 cases). She was a strong suspect for COVID-19 as her residence was in one of the containment zones for COVID-19, designated by the Government of Uttar Pradesh, India. As per the institutional protocol for the management of COVID-19 suspects, she was investigated for COVID-19 with RT-PCR assay (the previous report at her district was not available at that time), which came out to be negative. Her previous COVID-19 RT-PCR test was traced and also found to be negative. A chest X-ray was done with abdominal shielding, which showed minimal bilateral basal haziness and prominent interstitial markings. [Figure 1].

In view of acute hypoxemic respiratory failure and hypotension, she was admitted to the respiratory intensive care unit with a provisional diagnosis of community-acquired pneumonia with septic shock. She was kept on inhaled oxygen supplementation, intravenous fluids, vasopressors, and broad-spectrum antibiotics. On local examination, the fundal height was corresponding to gestational age in weeks; however, the fetal movements and fetal heart rate could not be perceived. The investigations [Table 1] were suggestive of anemia, leucocytosis, mildly elevated C-reactive protein (CRP) levels, and serum procalcitonin levels. She also presented with acute kidney injury (? prerenal) and mildly deranged liver function tests. USG showed a single intrauterine fetus with no cardiac activity. The patient and her husband were informed regarding the intrauterine death and high-risk consent was obtained for induction of labor. The delivery was conducted and a stillborn male fetus of 2 kg was delivered. No intrapartum or postpartum adverse events were noted.

With the abovementioned management, her general condition stabilized with a reduction in the vasopressor and oxygen requirements. However, she continued to remain febrile even after 48 h of her admission. Given the acuity of her febrile illness, work-up to rule out common tropical fevers was done simultaneously. Peripheral smear and antigen-based assays for malaria, serology for dengue, leptospira, and serum Widal tests were all found to be negative. However, the serology for Scrub typhus (IgM-ELISA) was found to be positive. On careful examination, characteristic eschar was also detected on the lateral aspect of her right thigh [Figure 2], which is a valuable clue to the diagnosis of Scrub typhus.[3] The patient was started on doxycycline therapy (macrolide) 200 mg/day and clinical response was seen over the next week. The clinical–radiological parameters improved with the normalization of leukocyte counts and serum creatinine. Gradually, she started maintaining her vitals without oxygen support and was discharged in a stable condition.

Discussion

On March 11, 2020, the WHO officially announced that the COVID-19 infection had become a global pandemic.[4] COVID-19 is principally a respiratory illness and serious pulmonary manifestations like acute hypoxemic respiratory failure and acute respiratory distress syndrome (ARDS) constitute the main presentations of the disease.[5,6] SARS-CoV-2 infection is not limited to the respiratory system and other organs can be also affected.[7] Although the rising numbers of COVID-19 cases have made it mandatory to test all patients with flu-like symptoms, at the same time, one should work on other possible differential diagnoses simultaneously. Due to the ongoing pandemic of COVID-19, our patient was primarily suspected of COVID-19, however, on detailed investigations, she was diagnosed with Scrub typhus infection with multiorgan involvement.

Scrub typhus is a mite-borne rickettsial zoonosis caused by *Orientia tsutsugamushi*, which is endemic in parts of Southeast Asia and Northern Australia.[8] A wide spectrum of clinical manifestations affecting nearly every organ system, including rash and often the pathognomic eschar, have been described. Some of these manifestations are serious and life-threatening.[9] Clinical diagnosis is often delayed due to nonspecific symptomatology, lack of awareness among clinicians, and poor testing facilities, especially in rural areas.[9,10] Several methods are available for the diagnosis of Scrub typhus; the immuno-based methods like IFA and ELISA are used more often due to their higher sensitivity and specificity.[11] The clinical course is variable, ranging from

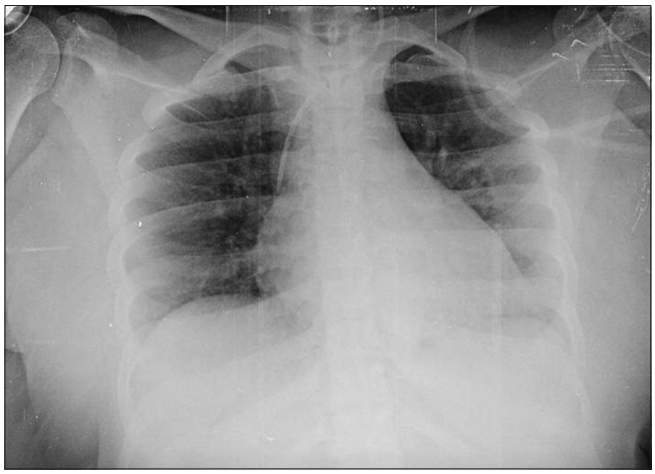

Figure 1: X-Ray chest anteroposterior view of the patient

Figure 2: Eschar in lateral aspect of the right thigh

Table 1: Investigations of the patient during treatment

Investigations	At admission	During treatment	At discharge
RT-PCR for COVID-19 (nasopharyngeal swab, throat swab)	Negative	-	Negative
Haemoglobin (gm/dl)	11.2	9.8	10
Total leucocyte counts (/mm^3)	20,300	17,800	11,900
Platelet counts (lac/mm^3)	2.15	3.96	2.54
Serum Bilirubin (mg/dl)	2.0	1.6	0.9
SGOT/SGPT (U/L)	93/70	88/60	42/37
Serum Creatinine (mg/dl)	2.5	1.8	0.7
C-Reactive Protein (mg/L)	9.8	11.2	0.9
S. Na+/K+ (mmol/l)	132/4.3	135.2/3.65	138.1/4.72
Prothrombin Time (s)	12.5	11.8	12.4
International Normalized Ratio	1.01	1.2	0.98
d-dimers (ng/ml)	235	268	275
Blood culture (pyogenic)	Sterile	-	Sterile
Urine culture (pyogenic)	Sterile	-	Sterile
High vaginal swab culture (pyogenic)	Sterile	-	-
Work-up for Malaria, Dengue, Typhoid, Leptospira, H1N1 Influenza	Negative		
IgM Antibodies for Scrub typhus (ELISA)	Positive		

spontaneous recovery to multiple organ failure with mortality ranging from 0% to 30%. Rapid clinical improvement is seen with doxycycline (antibiotic), the drug of choice for Scrub typhus.[9,10] When contracted during pregnancy, it may lead to adverse feto-maternal outcomes like preterm labor, small for gestational age baby, increased fetal loss, increased maternal mortality due to sepsis, multiorgan dysfunction, etc., up to 50% of the patients.[12–14] Our case report highlights the need to consider the diagnosis of scrub typhus in pregnant women with unexplained fever especially since the disease is quite common in India. The other important point to note is that timely and appropriate management of this patient was delayed due to the ongoing COVID-19 crises since her clinical presentation overlapped with COVID-19 features closely.

This case report emphasizes the need for primary care physicians to consider the most prevalent tropical illnesses in India while dealing with acute febrile illnesses. A high index of clinical suspicion, as well as rapid diagnosis, is required in managing tropical fevers, e.g., Scrub typhus, so that early treatment is initiated and end-organ damage be prevented.[15] We believe that if this patient could undergo detailed testing at her primary healthcare center, the stillbirth could have been avoided. Even with the ongoing global public health crises due to COVID-19, simultaneous suspicion and evaluation of other common infections should not be delayed at primary healthcare, so that we achieve a timely diagnosis, early management, and favorable outcomes in our patients.

Key points

- Tropical fevers are prevalent in the Indian subcontinent, with high morbidity and mortality in vulnerable populations like the elderly, pregnant women, and immunocompromised patients.
- The management algorithm of tropical febrile illnesses is often complicated by overlapping clinical presentations, difficulties in reaching specific diagnoses, and the need for early interventions to prevent multiorgan damage.
- Tropical febrile illnesses with hypoxemic respiratory failure or ARDS are closely mimicked by COVID-19 pneumonitis in their clinico-radiological presentation.
- Despite the ongoing COVID-19 pandemic situation, the existing burden of tropical febrile illnesses mandates the evaluation for all possible causes at the primary healthcare level to ensure early diagnosis and timely intervention, to promote the best clinical outcomes in patients.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

References

1. Webmeter. Coronavirus Age, Sex, Demographics (COVID-19) - Worldometer. [homepage on the Internet]. American Library Association [updated 2020 December 1]. Available from: https://www.worldometers.info/coronavirus/.
2. Mullins E, Evans D, Viner RM, O'Brien P, Morris E. Coronavirus in pregnancy and delivery: A rapid review. Ultrasound Obstet Gynecol 2020;55:586-92.
3. Kundavaram AP, Jonathan AJ, Nathaniel SD, Varghese GM.

Eschar in scrub typhus: A valuable clue to the diagnosis. J Postgrad Med 2013;59:177-8.

4. WHO. Coronavirus Disease 2019 (COVID-19) Situation Report–99; 2020. Available from: https://www.who.int/docs/default-source/coronavirus/situation-reports. [Last accessed 2020 Nov 29].
5. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, *et al*. Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. N Engl J Med 2020;382:1199-207.
6. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, *et al*. Clinical characteristics of coronavirus disease 2019 in China. N Engl J Med 2020;382:1708-20.
7. Behzad S, Aghaghazvini L, Radmard AR, Gholamrezanezhad A. Extrapulmonary manifestations of COVID-19: Radiologic and clinical overview. Clin Imaging 2020;66:35-41.
8. Narvencar KP, Rodrigues S, Nevrekar RP, Dias L, Dias A, Vaz M, *et al*. Scrub typhus in patients reporting with acute febrile illness at a tertiary health care institution in Goa. Indian J Med Res 2012;136:1020-4.
9. Rajapakse S, Weeratunga P, Sivayoganathan S, Fernando SD. Clinical manifestations of scrub typhus. Trans R Soc Trop Med Hyg 2017;111:43-54.
10. Rajapakse S, Rodrigo C, Fernando D. Scrub typhus: Pathophysiology, clinical manifestations, and prognosis. Asian Pac J Trop Med 2012;5:261-4.
11. Kala D, Gupta S, Nagraik R, Verma V, Thakur A, Kaushal A. Diagnosis of scrub typhus: Recent advancements and challenges. 3 Biotech 2020;10:396.
12. Kim YS, Lee HJ, Chang M, Son SK, Rhee YE, Shim SK, Scrub typhus during pregnancy and its treatment: A case series and review of the literature. Am J Trop Med Hyg 2006;75:955-9.
13. Meena M, Rohilla M, Jain V, Kalra J, Prasad G. Scrub typhus in pregnancy: A case series. Trop Doct 2016;46:153-6.
14. McGrady R, Prakash JA, Benjamin SJ, Watthanaworawit W, Anantatat T, Tanganuchitcharnchai A, *et al*. Pregnancy outcome in relation to treatment of murine typhus and scrub typhus infection: A fever cohort and a case series analysis. PLoS Negl Trop Dis 2014;8:e3327.
15. Poomalar GK, Rekha R. A case series of scrub typhus in obstetrics. J Clin Diagn Res 2014;8:OR01 3.