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CASE REPORT

Diagnostic challenge of scrub typhus-induced myocarditis in a postpartum patient in primary healthcare: a case report

Mahesh Silwal

[1]General Practitioner, Dept. of General Practice & Emergency Medicine, Lamahi Hospital, Lamahi, Dang, Nepal

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Correspondence:
Dr. Mahesh Silwal
Dept. of General Practice & Emergency Medicine, Lamahi Hospital, Lamahi, Dang, Nepal
Email: me_silu@hotmail.com

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Abstract

Scrub typhus is a zoonotic disease caused by the bacteria named Orientia tsutsugamushi. Recently, it has become one of the greatest public health concerns in the Asia-Pacific countries, particularly in rural tropical regions. The diagnosis is largely clinical; however, varied clinical presentation is not uncommon, which leads to delayed diagnosis and treatment. Myocarditis is a rare complication and, if not treated early, can lead to heart failure and cardiogenic shock. A comprehensive case report will be discussed in this article to highlight the diagnostic dilemma scrub typhus presents. Prompt treatment with antimicrobial is the cornerstone of the management, which rapidly improves the symptoms, as seen in the case described in this article.

Keywords: Dyspnea, Heart Failure, Postpartum, Primary Healthcare, Scrub Typhus

INTRODUCTION

Scrub typhus is an infectious disease which is endemic in rural tropical areas of Asian countries.[1,2] It is caused by bacteria *Orientia tsutsugamushi*, which is transmitted via chigger bites. Scrub typhus typically presents with an acute febrile illness, with insidious onset of generalized headache, diffuse myalgias, eschar, maculopapular rashes, and/or lymphadenopathy. Myocardial involvement is rare and subclinical; therefore, it is often overlooked until heart failure or arrhythmia develops which may increase mortality.[2] Herein a case of scrub typhus with atypical presentation of acute heart failure is described to emphasize the challenges in early diagnosis.

CASE REPORT

A 27-year-old female with second parity in her seventeenth day of postpartum presented in emergency department of Lamahi Hospital with history of exertional dyspnea for three days, which gradually worsened to rest dyspnea. She had nonproductive cough, with edema that progressed from her feet and ankles to shins. She did not report fever, rash, eschar, headache, chest pain, vomiting and diarrhea.

On examination, she was visibly tachypneic with respiratory rate of 28 breaths per minute and oxygen saturation (sPO2) of 90% in room air. She was given oxygen at three liters per minute which maintained sPO2 at 96-98%. She was afebrile and anicteric without rashes or lymphadenopathy. Coarse inspiratory crackles were noted on auscultation of bilateral infra-axillary and infra-scapular regions. The cardiac examination was unremarkable except for tachycardia (heart rate= 108 beats per minute). Her abdominal and neurological examination was normal.

A provisional diagnosis of peripartum cardiomyopathy was made. The electrocardiography was evident for sinus tachycardia without changes in QRS morphology, ST segment and T wave. The qualitative troponin test was negative. Based on her clinical findings, the patient was being managed in the line of heart failure. However, her labs showed low leukocyte (3800 cells/mm^3) and platelet (90,000 per microliter) counts. The metabolic panel showed elevated transaminases (ALT=62 IU/L; AST=57 IU/L) and low albumin (3.1 g/dL). The chest x-ray showed diffuse reticular opacities (Figure 1).

Despite the use of diuretics (Furosemide 20 milligrams twice a day for two days) and oxygen, the symptoms had not improved. Considering her presentation of dyspnea, leukopenia, thrombocytopenia, transaminitis and reticular opacities on chest x-ray, the patient was investigated further with rapid diagnostic tests for dengue and scrub typhus. The IgM ELISA kit for the scrub typhus tested positive. She was given oral Doxycycline 100 milligrams twice a day, as per CDC guidelines which proposes the initiation of doxycycline primarily based on clinical suspicion. After two days of initiation of antibiotics, her dyspnea and cough resolved.

Figure 1: Chest x-ray at presentation

Figure 2: Chest x-ray after one-week antimicrobial treatment

The edema had decreased. She was hemodynamically stable at discharge. The antibiotic course was continued for a total of seven days. She followed up in outpatient department a week later with a chest x-ray which was normal (Figure 2), and her cell counts and metabolic panel had returned to values within reference ranges. She continued breastfeeding during her antibiotic course.

The patient was glad to have received warm and empathetic care, and had expressed her appreciation to the primary care team of Hospital. One of the limitations was the unavailability of echocardiography, therefore it was not done in this case.

DISCUSSION

Scrub typhus is often misdiagnosed because of varied presentations. Myocarditis, one of its rare manifestation, can present with features of heart failure and the etiology could be concealed in the first place due to absence of classical features- fever, rash and eschar.[2-4] The condition is often overlooked due to the presence of nonspecific symptoms like myalgia, palpitations, and exertional dyspnea. The rarity of specific cardiac findings such as third heart sounds (S3), murmurs and pericardial rubs masks the myocardial dysfunction. In severe cases, patients may present with cardiogenic shock. A high index of suspicion should be maintained when the cause of multiorgan failure is not apparent.[4-6]

The laboratory diagnosis of scrub typhus is also challenging. Though the isolation of organism in culture is definitive, it requires special lab facilities and trained personnel. The serological tests are considered the mainstay of diagnosis. These tests, however, need to be modified in accordance to the strains endemic in particular regions, and multiple assays are usually needed to support the diagnosis.[7]

The patient discussed in this case report had low leukocyte and platelet counts, low albumin and elevated transaminases, which are considered the features of a more severe illness. The other features predictive of severity of disease are rise in creatinine and bilirubin, altered sensorium, shock, metabolic acidosis and acute respiratory distress syndrome (ARDS).[8,9]

The enzyme-linked immunosorbent assay (ELISA) for the detection of immunoglobulin M (IgM) antibodies against scrub typhus has become the preferred initial diagnostic test because of its rapidity, simplicity and availability. [8,9] In this case, the patient tested positive for rapid diagnostic test (ELISA).

Doxycycline is considered the drug of choice for the treatment of scrub typhus. Early institution leads to rapid resolution of symptoms and prevents the complication, consequently reducing morbidity and mortality. A growing body of literature supports the use of doxycycline in severe scrub typhus, including myocarditis.[9,10,11] It is now considered safe during breastfeeding for short-term courses.[12,13] The patient presented in this article had a dramatic response to doxycycline.

The altered immune response to ricketsial infection during peripartum state leads to atypical presentations, including absence of eschar and fever. The symptoms of cough and dyspnea in scrub typhus are attributed to lung involvement in the form of interstitial pneumonia.[14] Although peripartum cardiomyopathy is essentially idiopathic, the ricketsial disease can be a possible etiology, especially in endemic regions of Asian countries.[15] The improved awareness among healthcare professionals and the availability of effective diagnostic tools enable early diagnosis and prompt management, which improve outcomes in heart failure secondary to scrub typhus in the peripartum period.[16]

This case report has its own limitations— the case was managed in a resource-limited primary health center without a multidisciplinary care. This article highlights the need of further prospective studies to develop a standardized diagnostic approach for scrub typhus presenting with atypical symptoms.

CONCLUSION

The absence of typical features like fever, rash and eschar may result in delayed diagnosis of scrub typhus and, consequently, complications including heart failure. Early recognition and prompt treatment is the cornerstone of management to prevent morbidity in the peripartum period.

DECLARATIONS

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Conflict of Interest
None

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None

Consent
Informed consent form was signed by the patient for publication of this case report and the original article is attached with the patient's chart.

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