

Rhabdomyolysis in Scrub Typhus: An Unusual Presentation

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Date of Submission: Feb 04, 2013

Date of Acceptance: May 01, 2013

How to cite this article: Praveen Kumar BA, Praveen Kumar AS, Sharvanan E. Rhabdomyolysis in scrub typhus: An unusual presentation. Int J Prev Med 2013;4:1472-5.

ABSTRACT

Scrub typhus is the most common zoonosis of public health importance in rural areas of Asia, Northern Australia and Pacific Islands. The clinical spectrum of the disease varies from acute febrile illness to multi-organ involvement with systemic complications. Delay in diagnosis and treatment often lead to increased morbidity and mortality. Rhabdomyolysis is a rare complication seen in an infectious disease. We report a 50-year-old farmer with scrub typhus presented with rhabdomyolysis and acute renal failure who succumbed to the disease in hospital.

Keywords: Eschar, rhabdomyolysis, rickettsia, scrub typhus, zoonosis

INTRODUCTION

Of the diseases caused by rickettsiae in man, the most wide spread is scrub typhus. Scrub typhus is a zoonosis caused by the agent *Orientia tsutsugamushi* (*O. tsutsugamushi*) transmitted by trombiculid mites (chigger). Epidemic, endemic, and sporadic cases of scrub typhus were reported across India.^[1] The usual clinical presentation is acute febrile illness with rash. Because of reports of *O. tsutsugamushi* strains with difficulty in diagnosis, non-specific clinical presentation and reduced susceptibility to antibiotics various complications are inevitable. Mortality rates in untreated patients differ in various studies with a range from 0% to 60%.^[2,3] The complications of scrub typhus may include atypical pneumonia, overwhelming pneumonia with acute respiratory distress syndrome, myocarditis, acute renal failure (ARF), and disseminated intravascular coagulation. No significant morbidity or mortality occurs in patients who receive appropriate treatment in time. There are limited case reports showing unusual presentation as rhabdomyolysis and ARF.^[4] We report a case of scrub typhus in a 50-year-old male patient who presented with rhabdomyolysis and ARF.

CASE REPORT

A 50-year-old male, farmer by occupation presented with a history of high grade fever for 8 days with pain in the calf and thigh muscle region for 4 days, pedal edema, and decreased urine output for 1 day. There was no history of rash, cough,

jaundice or history suggestive of urinary tract infection. Patient presented to a rural tertiary care institute with a history of treatment for 2 days at a local health center and the details of treatment were not available at the time of presentation to our institute. Later the details of treatment given at local health center revealed that, patient had received a course of antimalarial (Chloroquine), analgesics and intravenous fluids. Patient was referred to our institute in view of persisting fever and hematuria. At the time of presentation, patient had myoglobinuria [Figure 1]. On examination, pulse was 90 beats/min, blood pressure was 130/80 mm Hg and there were no signs of pallor, icterus, clubbing or lymphadenopathy. The eschar was seen in the right medial aspect of the shoulder [Figure 2] and there was bilateral pitting pedal edema. The systemic examination was within the normal limits.



Figure 1: Urine sample showing myoglobinuria



Figure 2: Eschar

The details of laboratory examination are shown in Table 1.

The renal parameters were deranged and the muscle enzyme creatine phosphokinase total was elevated. The liver function tests were normal. The complete hemogram showed a normal total leukocyte and platelet count and no malarial parasites. Electrocardiogram revealed tall-tented T waves with a rate of 88 beats/min. The chest X-ray and ultrasonography of the abdomen were normal. The blood and urine culture were sterile. The Widal test leptospira, and dengue serology were negative.

In view of rhabdomyolysis and ARF, urgent hemodialysis was planned. Meanwhile, patient was started on doxycycline 100 mg and received treatment for hyperkalemia. The repeat sample for potassium after correction revealed a value of 7 mEq/l. In view of persistent hyperkalemia patient was immediately taken to hemodialysis. However, within 2 h of hospital admission, patient sustained cardiac arrest probably due to hyperkalemia and could not be revived with cardiopulmonary resuscitation.

DISCUSSION

The term rhabdomyolysis describes the breakdown or disintegration of striated muscle. A broad range of conditions can result in rhabdomyolysis that leads to the release of myocyte constituents into the circulation, which can produce life-threatening complications including acute hyperkalemia and ARF. Rhabdomyolysis has been reported in association with few infections.

Table 1: Laboratory parameters

Parameter	Result
Serum sodium	135 mEq/l
Serum potassium	7.5 mEq/l
Blood urea	200 mg/dl
Serum creatinine	10.1 mg/dl
CPK total	2000 IU/l
HIV serology	Non-reactive
HBsAg	Negative
Malarial antigen test	Negative
Urine myoglobin	Positive
Weil-felix test	Positive

CPK=Creatine phosphokinase, HIV=Human immunodeficiency virus, HBsAg=Hepatitis B surface antigen

However, rhabdomyolysis in scrub typhus is a rarely reported complication.^[5] The presentation of rhabdomyolysis can range from an asymptomatic elevation in creatinine kinase to life-threatening electrolyte imbalance, hypovolumic shock, and ARF depending on the etiology. Muscle pain and weakness are common manifestations, often accompanied by generalized malaise, fever, and tachycardia. The appearance of discolored urine may be the first indication of muscle injury.^[6]

O. tsutsugamushi targets the endothelial cells and macrophages through, which it disseminates into the multiple organs via hematogenous and lymphogenous routes and predominantly locates in the macrophages of the liver and spleen.^[7] The bacteria then cause focal or systemic vasculitis and perivasculitis in multiple organs, with various complications. The complications of scrub typhus usually develop after the 1st week of untreated illness.^[8]

Early diagnosis is important because there is usually an excellent response to treatment and timely anti-microbial therapy may help prevent complications. In developing countries with limited diagnostic facilities, it is prudent to recommend empiric therapy in patients with undifferentiated febrile illness having evidence of multiple system involvement. A clinical algorithm has been proposed for diagnosis of scrub typhus among patients hospitalized with febrile illness and to determine predictors of bad prognosis.^[9] If a combination of elevated transaminases, thrombocytopenia, and leukocytosis is used, the specificity and positive predictive value for the diagnosis of scrub typhus are about 80%.^[1]

The clinical diagnosis of scrub typhus was dependent on detecting eschar and on the history of outdoor activity.^[1] The Weil–Felix test (WFT) is the most common and commercially available laboratory test for the diagnosis of scrub typhus in developing countries like India. The sensitivity and specificity of the WFT is low and is usually positive during the 2nd week of illness. The gold standard confirmatory tests such as indirect immunoperoxidase test, immunofluorescent assay are costly and not easily available in developing countries like India. Therefore, the diagnosis of scrub typhus is mainly by clinical suspicion and by characteristic clinical finding, eschar. Therefore,

thorough search for eschar over all areas of the body is very important in the clinical examination of all acute febrile illnesses.^[8]

The drugs used in the treatment of scrub typhus include doxycycline and chloramphenicol. The alternative drugs used in scrub typhus are rifampicin (600-900 mg/day) and azithromycin. Early treatment shows better outcomes and faster resolution than delayed treatment^[5] and delayed administration of antibiotics is independently associated with major organ dysfunction.

CONCLUSIONS

Scrub typhus can exhibit unusual presentation with various complications and can result in death if the diagnosis and treatment is delayed. Hence, early diagnosis and treatment is very crucial in preventing morbidity and mortality. As there is no diagnostic tool to detect scrub typhus in the 1st week of illness, diagnosis is mainly clinical. Thorough, search for eschar especially in the moist areas of the body such as axilla, groin, and sub-mammary area in the female is important. Scrub typhus should always be considered in the differential diagnosis of all acute febrile illness with unusual presentation especially from rural areas. The treatment of all acute febrile illness with empirical doxycycline can be considered pending diagnosis, especially in endemic areas.

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Source of Support: Nil, **Conflict of Interest:** None declared.