

Scrub Typhus: A Case Series from A Tertiary Hospital In Tamil Nadu

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Abstract

One of the main causes of acute febrile illness in India is scrub typhus. It is accompanied by rash and frequently an eschar, both of which significantly improve with medications. In rare instances, it causes a serious sickness that eventually ends in the involvement of several organs and death. The numerous clinical manifestations of scrub typhus are mostly brought on by systemic vasculitis, which is brought on by both a heightened immune response and direct impacts on the body. In the absence of therapy, the disease's convoluted path frequently results in death. In this case series, we report three instances that illustrate the typical symptoms

that a patient with scrub typhus may exhibit, underscoring the critical need of having a high index of clinical suspicion for this fatal condition.

Keywords: Scrub Typhus, Orientia Tsutsugamushi, Atrial Fibrillation.

Introduction

Orientia tsutsugamushi (formerly Rickettsia), an obligate intracellular Gram-negative bacteria, was identified in 1930 and is responsible for the deadly zoonosis known as scrub typhus. It is spread to people via the biting of a Leptotrombidium mite larva (chigger). Endothelial cells, monocytes, and other cell types are the disease's target cells, and vasculitis and endothelial dysfunction are

connected with it. From mild and self-limiting to lethal, illnesses range. The symptoms of onset include fever, rash, headache, myalgia, coughing, and lymphadenopathy after an incubation period of 6–21 days. Less than half of patients experience eschar, and only 40% experience a rash. The tsutsugamushi triangle, which consists of Japan, Taiwan, China, and South Korea, is where scrub typhus is endemic but also occurs in Papua New Guinea, Pakistan, Nepal, and several Australian states. Here, we provide a case series from a tertiary care teaching hospital in Tamil Nadu, India, illustrating the uncommon unusual clinical symptoms of scrub typhus. These signs, if present in a patient, will assist doctors in applying a suspect and treat strategy and initiating proper treatment to prevent major morbidity and mortality in this potentially treatable and curable condition.

Case Series

Case 1: A 53-year-old man who had been experiencing fever, headache, vomiting, and altered awareness for the previous two days came to our institute's emergency room. His son was a fairly reliable informant. Initially low grade, the fever later rose in grade and was accompanied by rigors and chills. He started feeling confused and disoriented two days before being admitted to the hospital. There was no prior history of rashes, cough, dysuria, convulsions, or dyspnea. He was on regular treatment for his known hypertension. He didn't drink alcohol and didn't smoke. The patient was found to be feverish, confused about time, place, and people, and to have blood pressure (BP) readings of 150/100mmHg. He showed no symptoms of icterus, rashes, or meningeal irritation. Except for bilateral papilledema, cranial nerve testing indicated no deficits. Other systemic examinations revealed no abnormalities. Investigations found that the urine routine examination was normal. TLC was

15,580/cmm polymorph 82% on CBC, with normal Hb and platelets. Transaminitis and cholestasis were discovered in the liver function tests (ALT 122U/L, AST 148U/L, Gamma glutamyl transferase (GGT) 245 U/L, and alkaline phosphatase 333 U/L). An abdominal USG indicated moderate hepatosplenomegaly. The X-ray of the chest was normal. The Microscopic agglutination test (MAT) for *Leptospira* was negative. A noncontrast computed tomography scan of the head indicated early signs of cerebral edema. Cerebrospinal fluid (CSF) analysis revealed glucose 45 mg/dL, protein 78 mg/dL, cells 202/cmm with lymphocytic predominance, acid-fast bacilli negative, and adenosine deaminase 5 U/L, with GeneXpert negative. Herpes simplex virus and Japanese encephalitis CSF viral antibodies were negative. On day 2 of hospitalization, IgM for scrub was 1.25 (normal range 0.14). He received parenteral doxycycline (5 mg/kg twice daily for seven days), mannitol (100 g/24 hours), and levetiracetam (500 mg twice daily for two weeks). He gradually improved, and a follow-up examination after one week indicated a normal CSF study, a normal MRI brain, and an IgM scrub titer of 1.68. He recovered slowly but completely and was discharged after a total of two weeks in the hospital.

Case 2: A 42-year-old male who had previously been well presented to our institute's Emergency Department with complaints of fever, shortness of breath, and cough with limited expectoration for the preceding 5 days. The fever was of a high intensity and was occasionally accompanied by chills and rigors. He was referred by a nearby private nursing home where he had been admitted for the previous three days. He developed aphasia and shortness of breath during his stay. There had been no previous history of seizures, rashes, weakness, or hematuria. The patient was a chronic smoker for the past 8 years. On examination, he was conscious, alert, and

oriented. He was febrile and had a heart rate of 132 beats/min, respiratory rate 42 breaths/min, and BP 90/60 mmHg. The pulse was irregularly irregular. On systemic examination, auscultation revealed bilateral coarse crepitations in the lung bases. Other tests were within normal ranges. With an incidental detection of atrial fibrillation (AF), a tentative diagnosis of acute febrile sickness was made. A cardiology opinion was sought in this regard. Direct current (DC) cardioversion was performed with the patient's agreement, and a 200-joule shock was administered. Although the rate was brought under control, the AF could not be reversed. Amiodarone 150 mg injection was given immediately and then reduced at regular intervals. Blood samples were sent in for standard testing. TLC was 13,400/cmm polymorph 86% on the CBC, with normal platelets and Hb levels. The results of the liver function tests were normal. Malaria antigen and dengue serology both came out negative. Blood and urine cultures were sterile. The Weil-Felix test was positive, and an ELISA revealed that the IgM antibody for scrub typhus was significantly positive. A comprehensive reexamination of the patient revealed an eschar on the back of the neck, confirming the diagnosis. He began taking 100 mg of doxycycline twice daily for 7 days. After taking doxycycline, he responded, and within 48 hours, his symptoms dramatically subsided and her vital signs gradually got better. The patient's condition progressively got better, and two weeks later, he was discharged.

Case 3: A 48-year-old female patient from a small town close to Chennai visited the Causality with complaints of nausea, loss of appetite, and fever with chills for one week. Patient was on regular medication and had been diagnosed with diabetes and hypertension for the past 6 years. Upon physical examination, the patient showed no pedal edema, pallor, or fever. Thorough examination

showed Eschar behind the left ear and mild retro auricular lymphadenopathy. Investigations revealed that Hb was 9.4g/dl, CBG was 157mg/dl, Platelets were 2.17 lakhs, and Hct was 27.3% (36-46%), Se electrolytes SGOT was 62 IU/L (slightly high), 84 IU/L (Slightly increased) SGPT. Dengue IgM and IgG ELISA tests for dengue were negative. Mild proteinuria was found in the urine. IgM ELISA results for scrub typhus were highly positive. The patient had treatment for one week with Inj Ceftriaxone 1gm IV and C. Doxy 100mg. The patient's symptoms had improved. Laboratory results were back to normal. The patient was discharged.

Case 4: An 18-year-old female who had been experiencing a fever and chills for five days, decreased urine output for three days, progressive abdominal swelling accompanied by loose stools for two days, and a nonproductive cough for two days was admitted to the hospital. On physical examination, the patient was febrile with pallor, periorbital puffiness, pedal edema, hepatomegaly, signs of free fluid in the abdomen, and bilateral pleural effusion was discovered on physical examination. Ceftriaxone 1g IV BD was experimentally administered for 3 days along with supportive care, but the patient's condition did not improve. A negative result from the antistreptolysin O test was obtained in an effort to rule out poststreptococcal glomerulonephritis. Below the left axilla, a brownish-black-crust lesion with surrounding erythema-eschar was discovered.

Discussion

In regions of the world that were previously unaffected, rickettsial diseases are now becoming pathogens. The rickettsial illnesses were assumed to have vanished from India, but cases are reappearing in various sections of the country. Scrub typhus is presently the most commonly reported rickettsial infection from India. Scrub typhus is diagnosed using Faine's criteria, which include a

thorough history, epidemiological data, occupational history, clinical examination, seasonal variance, and laboratory support. In India, scrub typhus cases have been regularly reported from Vellore and Tamil Nadu.

A single patient has been documented to have multiple eschars. In our situation, a rigorous search for skin rashes aided in the discovery of an eschar and, later, in the diagnosis. The majority of investigations on rickettsial illnesses from around the world have been conducted on adult populations. There has been little research into the frequency and clinical characteristics of scrub typhus. Scrub typhus complications include pneumonia, acute respiratory distress syndrome, acute hepatitis, AKI, meningitis, pancreatitis, acalculous cholecystitis, axonal polyneuropathy, long-segment myelitis, DIC, septic shock, and multiple organ dysfunction syndrome. Patients in our circumstances reported with problems that had a brief incubation period. When problems arise, there is a higher case fatality rate of 14% in the Indian situation. In this situation, it is important to check for the indicators of mortality including blood pressure, liver enzymes, platelet count, respiratory effort, and serum urea and creatinine. Scrub typhus has a 9–18 h doubling period, hence it takes 4 weeks for the culture to turn positive. Within the first three days of fever onset, nested Polymerase chain reaction (PCR) from eschar samples or buffy coat can aid in the early detection of the illness even before antibodies emerge. Rickettsial infections, particularly in children, have been neglected as a cause of AKI. In a recent retrospective research from Central India, no cases of AKI in children with Rickettsial infections were reported. Several studies have found lower AKI occurrences ranging from 2% to 10%. Scrub typhus with symptoms of acute renal failure, according to Yen et al., is a rare but dangerous illness. AKI in scrub typhus is thought to be caused by decreased renal

perfusion due to volume depletion or increased vascular permeability. In patients with severe illness, renal involvement is thought to be part of multiorgan failure. Acute myocarditis is more commonly related with scrub typhus than previously documented. Patients with high bilirubin and paroxysmal AF are more likely to develop acute myocarditis from scrub typhus and should be investigated for cardiac consequences when diagnosed with scrub typhus. Supportive therapy, intravenous fluid replacement therapy, mechanical ventilation, and intravenous antibiotics are used, as well as a tablet of doxycycline 100 mg twice day for 7 days.

Conclusion

Due to the ambiguous clinical presentation, low awareness and suspicion levels among doctors, lack of diagnostic resources, and underdiagnosis of scrub typhus in India. Scrub typhus in children presents clinically in a non-specific manner and is frequently misdiagnosed. Most accounts of tropical community-acquired AKI or acute myocarditis omit scrub typhus. Patients presenting with fever, AKI, and rhythm abnormalities should be checked for scrub typhus due to the resurgence of the disease in India. Patient morbidity and mortality will be decreased by early scrub typhus identification and the start of doxycycline empirical therapy.

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