Scrub Typhus in Adults – A Case Series from a Tertiary Care Hospital

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ABSTRACT

Introduction: Scrub typhus is a zoonosis caused by the rickettsial bacteria Orientia tsutsugamushi. The disease in endemic in many parts of India and continues to be a public health problem. **Materials and Methods:** This study describes the clinical profile of eight consecutive scrub typhus positive cases admitted in a tertiary care hospital. After complete physical examination, complete blood count, liver function tests, renal function tests, urine analysis, blood & urine cultures were done in all cases. In all the cases, scrub typhus was diagnosed using a rapid single step immunochromatographic assay. **Results:** Of eight cases five were females and three were males. Fever was the chief present symptom in all the cases. Other signs and symptoms were headache, myalgia, cough, hepatosplenomegaly, abdominal pain and lymphadenopathy. Eschar was present in all the cases. Liver enzymes were elevated in all the patients. Hypotension, thrombocytopenia, hepatic dysfunction, hypoalbuminemia, hematuria and proteinuria were the complications observed. All cases were successfully treated with doxycycline and there was no mortality. **Conclusion:** Our report emphasizes the fact that a diagnosis of scrub typhus should be suspected when a patient presents with fever and laboratory evidence of liver dysfunction, as early detection of the disease could reduce morbidity and mortality.

Key words: Zoonosis, Eschar, Hypoalbuminemia, liver dysfunction

INTRODUCTION

Scrub typhus is an acute febrile illness caused by infection with a rickettsial bacteria namely Orientia tsutsugamushi. The disease is widespread, extending from Japan to Australia and from India to the Pacific. It is prevalent in many parts of India and has been reported in the east, south and the Himalayas.[1] Scrub typhus continues to be a public health problem in Asia. It is estimated that about 1 billion people may be at risk for this disease with the annual incidence of one million new cases.[2] The ricketssia is transmitted from rodents to humans by the bite of a larval stage (chigger) trombiculid mite.[3] After the initial infection the rickettsial spreads systemically and the infected person develops various symptoms like fever, malaise, myalgia, rash, cough, lymphadenopathy and gastrointestinal disturbances. Various serological tests are available for diagnosis of scrub typhus of which Weil Felix test is the most commonly used. The disease' response to antibiotics is excellent. The aim of the present study is to present clinical manifestation, laboratory findings and treatment outcomes of adult scrub typhus in a tertiary care setting.

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SUBJECTS AND METHODS

This study describes the epidemiologic and clinical profile of eight consecutive scrub typhus positive adult patients who were admitted in a tertiary care hospital, Chennai city, South India. After complete physical examination, routine laboratory investigations like complete blood count, liver function tests, and renal function tests were done in all patients. Urine analysis, peripheral smear for malarial parasite, blood culture and urine culture were done in all the patients. In all cases diagnosis was based on detection of antibody against Orientia tsutsugamushi using a single step rapid immunochromatographic assay.

RESULTS

Among the eight patients three were males and five were females. Six of eight patients were from rural areas and the remaining two from sub-urban areas. Their mean age was 45 ± 16.7. The duration of illness before hospitalization ranged from 6-12 days with an average of 7.5 days. All the

Eschar on the nape of neck

patients had history of treatment by a by a primary before admission. Average length of stay in the hospital was 5.75 days with the range of 3-9 days. Fever was the chief presenting symptom in all the cases. Five patients had co-existing cough and four patients had headache. Myalgia was present in four cases and abdominal pain in three. One patient had breathelessness while admission. Eschar, the pathognomic feature of scrub typhus was present in all the cases. Abdomen, nape of neck, groin and axila were the observed sites of eschar. Hepatosplenomegaly and lymphadenopathy were present in three patients respectively. Chest examination revealed crackles/ronchi in two cases. None of the cases in the series required intensive care unit (ICU) care.

Laboratory investigations revealed anemia in seven of the eight cases. Total white cell counts were within normal range in all the cases though two had lymphocytosis. Alanine transaminase and aspartate transaminase were elevated (>40 U/L) in all the cases. Alkaline phosphatase was also elevated (>140 U/L) in all the cases. Blood cultures and urine cultures were negative in all cases. Thrombocytopenia (<150,000/mm^3) was present in three cases and hypoalbuminemia (serum albumin <3.5 g/dl) in seven cases. Creatinine and bilirubin were not elevated any of the cases. Two patients had hematuria and five had proteinuria. Hypotension was present in three cases. Laboratory evidence of hepatic dysfunction was present in all cases. No other complications were observed in our series. In all cases diagnosis of scrub typhus was made by a rapid single step immunochromatographic assay.

DISCUSSION

Scrub typhus is widely endemic in Asia. In India scrub typhus has been reported in various areas especially the hilly regions of the Himalayas, Shimla, Assam, Jammu & Kashmir, West Bengal and Tamil Nadu .The causative organism is an intracellular gram-negative bacteria, Orientia tsutsugamushi. Humans are accidental hosts and the disease is transmitted through the skin by the bite of larval stage of infected trombiculid mites or chiggers.[4] Disease occurrence is more in rainy season and occurs in persons who engage in occupational or recreational behavior that brings them into contact with mite-infested habitats such as brush and grass. Clinical picture of scrub typhus include sudden onset of a high grade fever and associated headaches, myalgia, and regional lymphadenopathy.[3] Necrotic eschar at the inoculating site of the mite is the single most pathognomic feature of scrub typhus.[5] The disease usually runs a benign course but complications are not uncommon and include myocarditis, pneumonia, meningoencephalitis, gastrointestinal bleeding, acute renal failure and respiratory distress.

Serological tests still remains the main stay for the diagnosis of scrub typhus though elevated liver enzymes might give a clue. Serological test which has been widely used in India for diagnosis of scrub typhus is the Weil Felix test for it is easily available and highly specific; however it lacks sensitivity. Another test the indirect immunofluorescence assay (IFA) is highly sensitive and considered 'gold standard' but its use is limited by the cost and availability. Microimmunofloescence, immunoperoxidase assay, latex agglutination, indirect hemagglutination, enzyme linked immunosorbent assay, dot blot immunoassay (including dipstick test) are various other serological tests available.[6] Polymerase chain reaction can detect acute infection with Orientia tsutsugamushi.[7] A rapid immunochromatographic assay which uses recombinant major outer membrane protein Antigen (r56) of Orientia tsutsugamushi to detect IgM, IgG and IgA antibodies has been shown to be reliable and suitable for use in developing countries[8] but is expensive. In the present series diagnosis in all cases was made by one step rapid immunochromatographic assay. We believe ours is the first case series in Indian literature where in diagnosis of scrub typhus was confirmed by a single step rapid immunochromatographic assay.

Doxycycline remains the antibiotic of choice for treatment of scrub typhus. Chloramphenicol, azithromycin and rifampicin are other antibiotics useful for the treatment of this infection.[9] In our series all the patients were treated with doxycycline for which they responded well and there was no mortality in our series.

CONCLUSION

In conclusion scrub typhus is endemic in many parts of India and all clinicians should be well aware of the disease. When a patient presents with fever and elevated

liver enzymes with or without the presence of eschar, a diagnosis of scrub typhus should be considered and an empirical therapy with doxycycline should be started if there is high index of suspicion. An early diagnosis & timely antibiotic therapy may prevent further complications.

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