

CLINICAL PROFILE, EPIDEMIOLOGY AND PROGNOSTIC FACTORS IN SCRUB TYPHUSPriyadarshini B¹, Jayesh Kumar P², Anitha P. M³¹Senior Resident, Department of General Medicine, Government Medical College, Calicut, Kerala.²Professor, Department of General Medicine, Government Medical College, Calicut, Kerala.³Additional Professor, Department of Microbiology, Government Medical College, Calicut, Kerala.**ABSTRACT****BACKGROUND**

Scrub typhus is an underdiagnosed disease, but potentially treatable, if diagnosis is made with high index of suspicion. Deaths are attributable to late presentation, delayed diagnosis and drug resistance.

MATERIALS AND METHODS

The study was an observational study of prospective design conducted in the Department of General Medicine, Government Medical College, Kozhikode, over a period of one year. History, physical examination and relevant lab investigations were done in 70 patients in the study.

RESULTS

Majority of patients were in working class. Most common physical finding was lymphadenopathy. Eschar was present in 46% of patients. Majority responded to doxycycline. Case fatality was 14.3%.

CONCLUSION

1. Most cases occurred during cooler months of the year (Oct-Feb).
2. Fever and headache were the most common symptoms.
3. Lymphadenopathy was the most common sign followed by splenomegaly.
4. Eschar was present in 46% cases.
5. Leucocytosis was associated with poor prognosis and increased complication like meningoencephalitis.
6. Hypoalbuminaemia was associated with increased incidence of complications like myocarditis and encephalitis.
7. More than 2 times, elevation of transaminases was a poor prognostic marker.
8. Most common and important complication was Acute Kidney Injury (AKI).
9. Microangiopathic haemolysis could possibly be a contributory factor for high incidence of AKI associated with scrub typhus.
10. Rampant NSAID use is another contributory factor for high incidence of AKI associated with scrub typhus.
11. Resistance to doxycycline is emerging in our community and we should consider this possibility in cases with strong suspicion with no response to doxycycline.

KEYWORDS

Scrub Typhus, Febrile Thrombocytopenia, Eschar.

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BACKGROUND

Scrub typhus is a zoonosis, which causes vasculitis that involves multiple organs including lungs, hearts, kidney, spleen and nervous system. The disease is caused by infection with *Orientia tsutsugamushi*, which results from the introduction of the organism through the skin by the bite of larval stage (chiggers) of trombiculid mite. The clinical manifestations of this disease range from subclinical

disease to fatal multiorgan disease. Scrub typhus is an underdiagnosed disease, but potentially treatable, if diagnosis is made with high index of suspicion. Deaths are attributable to late presentation, delayed diagnosis and drug resistance.

AIMS AND OBJECTIVES

1. To study clinical profile and epidemiology of scrub typhus.
2. To study prognostic factors and complications of scrub typhus.
3. To determination of association between specific signs, symptoms and investigation abnormalities with the outcome of the disease.

MATERIALS AND METHODS

The study was an observational study of prospective design conducted in the Department of General Medicine,

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Government Medical College, Kozhikode, over a period of one year from June 2012 to June 2013. A total of 70 patients were included in the study after informed consent. A thorough history was obtained from all patients regarding their symptoms, occupational behaviour and modes of exposure to mite borne areas. A detailed clinical examination was done in all patients. Routine investigation including complete blood count with ESR, urine routine and microscopy, renal function tests, liver function tests and coagulation parameters were done in all patients. Enteric fever, leptospirosis and malaria was excluded in all cases with clinical evaluation, Widal test, peripheral smear for malarial parasite, IgM dengue and IgM leptospirosis.

RESULTS

Out of the 70 patients included in the study after satisfying the inclusion criteria during the study period, 56% (39) were males and 44% (31) were females. Majority of the patients (66%) belonged to the age group 26-49 years, which corresponds to working population in our community. Fever was the most prominent symptom and was seen in 100% of the patients with rigors and chills in 33 patients (47%). The next common symptom was headache, which was present in 69 (99%) patients. Most patients had (63%) duration of fever between 8 days and 2 weeks at presentation. 56% (39) cases occurred during the period from October to February, which corresponds to cooler months of the year. The most common physical finding was lymphadenopathy, which was present in 44 patients (63%). Eschar was present in 46% cases (32). The most common site of eschar was groin in 31% and the next common site was shoulder 25%.

Leucocytosis was observed in 40% (28) and leucopenia was seen in 27% (19). 33% of patients with total leucocyte count $>20,000/\text{mm}^3$ and 28.5% with TLC $>11,000/\text{mm}^3$ succumbed to their illness, whereas 100% with TC $<4,000/\text{mm}^3$ survived with a statistically significant p value of 0.036. Mortality was higher in the patients with ESR >100 (46%) (6 of 13) and mortality was only 7% when ESR was <100 with a statistically significant p value of 0.002. An association between low serum albumin (<2 g%) and increased mortality was noticed with 67% (6 of 9) mortality when albumin was <2 g% and mortality was 6.5% only when albumin was >2 g% with significant p value of 0.000. An association between low serum albumin (<2 g%) and myocarditis was also observed. The most common complication was AKI, which was seen in 31 patients (44%). 10 of the patients with AKI had evidence of haemolysis with fragmented RBCs and schistocytes in peripheral smear, falling haemoglobin and thrombocytopenia with normal coagulation parameters. This suggests the possibility of microangiopathy as an important contributory factor for AKI in scrub typhus.

88.6% (62) responded to doxycycline, whereas 11.4% showed no response. These patients were treated with either azithromycin or chloramphenicol. Chloramphenicol was used in 3 patients and azithromycin in 6 patients. The case fatality rate was 14.3%.

DISCUSSION

Scrub typhus is a mite-borne infectious disease caused by *Orientia tsutsugamushi* (previously called *Rickettsia tsutsugamushi*).¹ Scrub typhus is characteristically a geographically focal disease transmission of *O. tsutsugamushi* may occur in sharply delineated "mite islands" that consist of focal locations of scrub vegetation as small as a few square meters.² Mites live on the vegetation and moisture and temperature conditions are ideal for propagation of chiggers and their small rodent hosts.³ The risk of disease transmission from chigger bites maybe extremely high when humans enter these mite islands.⁴ Infection commonly presents as an acute febrile illness 7 to 10 days after the bite of an infected larval trombiculid mite (chigger).⁵

Scrub typhus may begin insidiously with headache, anorexia and malaise or start abruptly with chills and fever.⁶ As the illness evolves, most patients develop high fever, intense generalised headache and diffuse myalgias.⁷ Approximately, one-half of all patients develop a characteristically nonpruritic, macular or maculopapular rash.⁸ The rash typically begins on the abdomen and spreads to the extremities.⁹ The face is also often involved. Rarely, petechiae may develop. Some patients develop a localised necrotic skin lesion (eschar) at the site of their infecting chigger bite. Other signs and symptoms may also be seen in scrub typhus are nausea, vomiting and/or diarrhoea. Respiratory complaints are often present. Rarely, acute respiratory distress syndrome may occur. Relative bradycardia occurs commonly in patients with scrub typhus. Involvement of blood vessels in the central nervous system may produce meningitis with a predominant mononuclear cell response.

CONCLUSION

1. Scrub typhus is more common in males of working population.
2. Most cases occurred during cooler months of the year (Oct-Feb).
3. Fever and headache were the most common symptoms.
4. Lymphadenopathy was the most common sign followed by splenomegaly.
5. Eschar was present in 46% cases.
6. Leucocytosis was associated with poor prognosis and increased complication like meningoencephalitis.
7. Hypoalbuminaemia was associated with increased incidence of complications like myocarditis and encephalitis.
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10. Microangiopathic haemolysis could possibly be a contributory factor for high incidence of AKI associated with scrub typhus.
11. Rampant NSAID use is another contributory factor for high incidence of AKI associated with scrub typhus.

12. Resistance to doxycycline is emerging in our community and we should consider this possibility in cases with strong suspicion with no response to doxycycline.

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