

Scrub Typhus- An Under Identified Problem at District Shahdol MP: A Case Series

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Abstract

Introduction: Scrub typhus is an acute zoonotic infection caused by a rickettsial pathogen namely *Orientia tsutsugamushi*. The disease is endemic in many parts of India and continues to be a public health problem.

Materials and Methods: This study describes the clinical and epidemiological profile of scrub typhus positive cases presented in a tertiary care hospital from July to October 2022. Detailed physical examination and investigations were done in all the patients, and diagnosis of scrub typhus was made with rapid diagnostic kit.

Results: Of sixteen cases, eight were males and eight were females. Fever was the chief symptom in all the cases. Other complaints were headache, body ache, cough and decreased appetite. Eschar was present in 6 cases. All cases were successfully treated with doxycycline and there were no complications.

Conclusion: Scrub typhus is prevalent even in Central India and a high degree of suspicion, thorough examination of the patients and appropriate investigations can help in reaching the accurate diagnosis and treating patients successfully, thus avoiding fatal complications.

Keywords: Zoonosis, Eschar, Rickettsia.

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Introduction

Scrub typhus is an acute zoonotic infection caused by a rickettsial pathogen namely *Orientia tsutsugamushi*[1]. It is endemic in eastern and southern Asia, northern Australia, and islands of the western Pacific and Indian Oceans[2]. Scrub typhus was first observed in world in Japan in 1899. In India, it emerged

as epidemic during World War 2 in Bengal and Assam and from there it spread to the some parts of the country[3]. In India Scrub Typhus has been reported in hilly regions of the Himalayas, Shimla, Assam, Jammu & Kashmir, West Bengal and Tamil Nadu[4]. In Madhya Pradesh very recently few cases of

Scrub typhus were reported from Jabalpur, Satna and Khargone District. Cases were underreported or unidentified from other parts of MP like Shahdol, Umaria, Anuppur districts because of unawareness of diseases. Scrub typhus is a major public health problem worldwide, it is estimated that approximately 1 million people are affected annually with the disease, while approximately 1 billion people are at risk of the disease[5].

The organism *Orientia tsutsugamushi* is transmitted by the bite or faeces of infected larva of trombiculid mites[6]. These mites remain infected throughout their entire existence, and later spread to their eggs through the process of transovarial transmission[7]. After an incubation period of 6-21 days, patients develop non specific symptoms like fever, headache, myalgia, cough and abdominal pain. Some patients may also manifest an eschar at the site of bite and regional lymphadenopathy[8]. Patients may recover spontaneously at this stage or may deteriorate and develop encephalitis or interstitial pneumonia due to vascular injury, which if left untreated may prove fatal[9]. Due to non specific sign and symptoms its became difficult to diagnose the disease and this require very high level of suspicion. History of potential exposure to forest or scrub area, rainy and early winter seasonality and important clinical clue like presence of eschar should be kept in mind during approach to acute undifferentiated fever. Various tests are now available to diagnose scrub typhus of which Weil Felix test and IgG and IgM antibody tests are commonly used. The disease can be treated with appropriate antibiotic therapy; most commonly used drug is Doxycycline for 7days. The recommended dose is 100 mg twice daily orally in adults and 2.2 mg/kg body weight twice daily in children weighing less than 40 kg and 100 mg twice daily in those weighing above 40 kg[10].

Awareness and index of suspicion about scrub typhus is very low in central India hence present study is being carried out with the aim of increasing its awareness so that morbidity, mortality and economic burden will decrease due to timely treatment.

Subjects and methods

This is a retrospective case series that describes the epidemiological features, clinical features, treatment and outcome of 16 patients suffering from Scrub Typhus who attended the outpatient clinic in the tertiary care hospital of central India from July 2022 to October 2022. Since this was retrospective case series, hence approval of ethical committee was not required/requested.

Details of all the patients were taken including their occupation, proximity of house to agricultural area or any agricultural activity or badwani at home. Then detailed physical examination was done and active search for any eschar or rash on the body was made in each patient. Investigations were done comprising of complete blood counts, liver function test, renal function test, urine and stool routine microscopy, serology for malaria, typhoid and dengue. Diagnosis of Scrub Typhus was made by using rapid diagnostic kit for IgG/IgM antibody against Scrub Typhus.

Results

Among the sixteen patients positive for Scrub Typhus, eight were males and eight were females. Maximum patients (50%) were of age group 30-50 years, with mean age approximately 39.5 years. Out of 16 patients, 6 were farmer by occupation and rest of the patients had history of either agricultural land or badi near their houses.

Fever was the chief complaint of all the patients with average duration of fever approximately 13 days. Only three patients had history of chills along with fever and six patients had history of headache. Two patients had complaint of cough, two had bodyache

and five patients had history of decreased appetite.

On general examination, eschar was found in six patients chiefly over abdomen, thigh and axilla. Ten patients were febrile at the time of examination, and tachycardia was present in 11 patients. Respiratory rate was more than

20 in seven patients, and blood pressure was normal in 14 patients and only two patients had raised blood pressure. SP02 was normal in all the patients. None of the patients require admission at the time of presentation.



Figure 1: Eschar from patient

Laboratory investigations revealed anaemia in four of the sixteen cases. Leucocytosis was found in six patients and leucopenia was seen in only one patient. Thrombocytosis was not found any patients and thrombocytopenia was seen in five patients. Renal function test was normal in all the patients, SGOT and SGPT were normal or near normal in all the patients. All the patients were negative for malaria and dengue. Widal test was positive in just one patient in whom blood culture report was negative for *S typhi* showing false positive

amnesic reaction. Urine routine microscopy showed hematuria in three patients and proteinuria in seven patients. Stool routine microscopy was not significant in any of 16 patients. And all the patients were positive for scrub typhus with rapid diagnostic kit. All the patients were treated with doxycycline 100 mg BD for 7 days and all responded very well to the therapy; most of the patients became afebrile within 72 hours of starting of therapy. None of the patients required admission on follow up.

Table 1: Laboratory Characteristics of Patients with Scrub Typhus (N=16)

Investigation	Number of patients tested	Mean	Range
Hemoglobin	16	11.8gm/dl	8.6-13.9 gm/dl
TLC	16	11950/cumm	3400-20900/cumm
Neutrophils	16	54.80%	32-81%
Lymphocyte	16	36.30%	06-57%
Platelets	16	1.84 lakh/cumm	0.45-2.91lakh/cumm

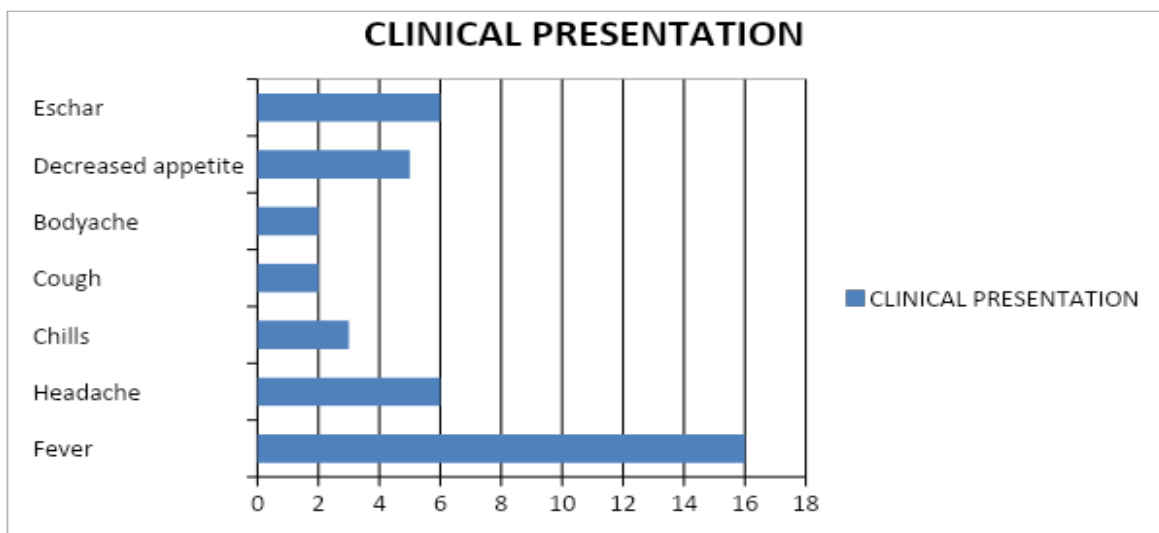


Figure 2: Clinical presentation of Patients with Scrub Typhus (N=16)

Discussion

Rickettsial diseases, especially scrub typhus are still prevalent in different parts of the country and unlike previously thought, these are also prevalent in Central India. Most of the physician are unaware of scrub typhus clinical presentation and lack suspicion in diagnosing it, hence it is not diagnosed appropriately which leads to increased morbidity and mortality due to the disease. In the above case series most of the patients remained undiagnosed early and treated nonspecifically hence remained unresponded. Since the disease is transmitted by infected mites who transmit the infection from animals to the humans, this disease gets more prevalent during rainy season[11] and in dense vegetations[12]. Most of the patients in this case series had history of exposure to vegetation area and all cases were seen during rainy season. In India, the reported incidence of *Orientia* in rodent carriers is very high[13].

The disease is found in all age group. In children, scrub typhus may be mild or severe. Case fatality rate in untreated patients may be as high as 30%, although deaths in children are infrequent[14]. Cases of above case series were taken from OPD and treated early and effectively hence no mortality was seen. Most of the clinical features of scrub typhus are non specific like fever, headache, myalgia, Gupta *et al.*

abdominal pain, cough making the diagnosis difficult but eschar though variedly present, helps in making the diagnosis correctly. In our case series all patients had non specific clinical features and few patients had eschar on different sites of body.

Various complications found in untreated cases are meningitis, encephalitis, myocarditis, pneumonia, ARDS etc which are attributable to the endothelial injury leading to fulminant vasculitis[15]. The disease can be diagnosed with easily available serological tests like Weil Felix tests and IgG and IgM Elisa test. Former being less sensitive for the diagnosing scrub typhus, Elisa tests are gaining popularity now a days. The IgM ELISA used in our study has a sensitivity of 90–95%, and has been shown to be comparable to the microimmuno-fluorescence test in a previous study[16,17].

The disease if left untreated may prove fatal; its timely treatment with appropriate antibiotic usually results in prompt response and full recovery in most of the cases.

Conclusion

Scrub typhus is prevalent even in Central India and a high degree of suspicion, thorough examination of the patients and

appropriate investigations can help in reaching the accurate diagnosis and treating patients successfully, thus avoiding fatal complications. Though eschar is relatively specific finding in the diagnosis of Scrub typhus, its variable presentation makes the serological testing necessary for the diagnosis of scrub typhus.

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