

Original Research Article

Clinical profile of scrub typhus patients in a tertiary care centre in Himachal Pradesh, India

Ritin Sharma, Roshan Lal*, Sanjay Mahajan, Satish Chaudhary

Department of Medicine, Indira Gandhi Medical College, Shimla, Himachal Pradesh, India

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***Correspondence:**

Dr. Roshan Lal,

E-mail: 450mph@gmail.com

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ABSTRACT

Background: Scrub typhus a zoonotic disease caused by gram negative bacteria *O. tsutsugamushi*, is endemic in Himachal Pradesh. This illness occurs mainly in monsoon and post monsoon season. study design of this study was conducted in a tertiary care centre in Himachal Pradesh between July 2015 and June 2016. All the indoor patients with age above 18 years with a diagnosis of scrub typhus were included in this study.

Results: Out of total 180 patients, 130 were female patients. Most patients were in the age group 21-30 (23.3%). All the patients presented with history of fever, but 54 patients presented with high grade fever. Other Most common symptom was chills and rigours (81%), followed by vomiting and headache each 32%, cough 31%. On examination 21% patients had eschar, 14% patients had lymphadenopathy. Most number of patients presented in the month of September (51.6%), followed by August (33.3%).

Conclusion: Scrub typhus being an important differential of acute undifferentiated fever in this region, should not be missed by primary care physicians, as once multi organ dysfunction sets in, mortality rate starts rising. So, there is a high need of sensitization of doctors and people about this illness so that early diagnosis and early treatment can be ensured.

Keywords: Acute undifferentiated fever, Chiggers, Comorbidities, Hepatosplenomegaly, Monsoon, Squatting

INTRODUCTION

Scrub typhus a zoonotic disease endemic in Himachal Pradesh. The causative agent for this illness is bacterium *O. tsutsugamushi*, an obligate intracellular, gram negative bacteria. The chiggers of *Leptotrombidium* are responsible for disease transmission.¹ This disease has been endemic in many parts of India like Himachal Pradesh. It presents as acute undifferentiated fever in rainy and post rainy season. Himachal is a mountainous state and lower altitudes of state has an average temperature of 20-30 degrees Celsius, which is helpful in conduction of bacteria in arthropod vectors.²

Clinical profile of scrub typhus patients ranges from sub clinical infection to multi organ failure and death.³ The disease presents as differential of Acute Undifferentiated Fever as fever, myalgia, arthralgia, rash, lymphadenopathy, hepatosplenomegaly, jaundice, thrombocytopenia, acute kidney injury, capillary leak phenomenon, acute respiratory distress syndrome.⁴

Due to delayed presentation to hospital, delayed diagnosis, associated comorbidities, drug resistance, mortality rate associated with disease escalates. Scrub typhus can lead to acute kidney injury, hepatitis, myocarditis, acute respiratory distress syndrome, meningoenzephalitis in different proportions of patients.⁵

Laboratory confirmation is done to differentiate this acute undifferentiated fever from diseases like typhoid, leptospirosis, malaria and dengue.⁶

In view of resurgence in cases of this disease in recent years it is important to focus on educating people about prevention, early consultation, and focusing on early diagnosis and specific treatment to patients.

METHODS

This study was conducted in Indira Gandhi Medical College Shimla a tertiary care centre in Himachal Pradesh, from July 2015 to June 2016. Permission was taken from institutional ethics committee. Written consent was taken from every patient. During this time period all the patients admitted to medical ward with diagnosis of scrub typhus were enrolled for study. All the patients were aged >18 years were included in this study. All the relevant history was taken, and data of laboratory investigations was collected. Diagnosis was confirmed with IgM ELISA. All the patients were followed until discharge or death. The data was collected on Microsoft Excel spreadsheet.

RESULTS

Age and sex distribution of patients of scrub typhus

Out of the total 180 patients 130 (72.22%) patients were females and 50 males. Most patients were in the age group 21-30 (23.3%) followed by age group 41-50 (19.4%). Least patients were in age group >70 years (8%). The age group 21-30 years had most patients that is 23.3%.

Table 1: Distribution of study population by age and sex.

Age group (years)	All participants (%)	Men n=50 (%)	Women=13(%)
18-20	11(6.1)	5(10)	6(4.6)
21-30	42(23.3)	10(20)	32(24.6)
31-40	32(17.8)	9(18)	23(17.7)
41-50	35(19.4)	8(16)	27(20.8)
51-60	31(17.2)	7(14)	24(18.5)
61-70	23(12.8)	10(20)	13(10)
>70	6(3.3)	1(2)	5(3.8)

Table 2: Distribution of symptoms and signs.

Symptoms and signs	All participants n=180	%	men (n=50)	%	Women (n=130)	%
Fever >102-degree F	45	25	15	30	30	23.1
Duration of illness						
A <7days	54	30	13	26	41	31.5
B 7-14 days	109	60.6	33	66	76	58.5
C >14days	17	9.4	4	8	13	10
Chills/rigours	147	81.7	41	82	106	81.5
Headache	58	32.2	21	42	37	28.8
Myalgia	26	14.4	6	12	20	15.4
Cough	57	31.7	15	30	42	33.3
Vomiting	58	32.2	15	30	43	33.1
Diarrhoea	28	15.6	9	18	19	14.6
Abdominal pain	30	16.7	5	10	25	19.2
Seizure	4	2.2	1	2	3	2.3
Altered sensorium	38	21.1	11	22	27	20.8
G I bleeding	0	0	0	0	0	0
Jaundice	24	13.3	8	16	16	12.3
Rash	8	4.4	7	14	1	.8
Eschar	39	21.7	12	24	27	20.8
Lymphadenopathy	25	13.9	8	16	17	13.1
Splenomegaly	15	8.3	4	8	11	8.5
Hepatomegaly	8	4.4	3	6	5	3.8
Hepatosplenomegaly	6	3.3	3	6	3	2.3
Ascites	3	2.3	0	0	3	2.3

Distribution of clinical characteristics of patients with scrub typhus

Table 2 shows the distribution of various symptoms and signs in the study population. All the patients presented

with history of fever, but 45 patients presented with high grade fever.

Other Most common symptom was chills and rigours (81%), followed by vomiting and headache each 32%, cough 31%, myalgias 14.4%, diarrhea in 15.6%. On examination 21% patients had eschar, 14% patients had lymphadenopathy. 21% patients had altered sensorium, 13.3% had jaundice and 3% had ascites. 8.3% patients had splenomegaly, 4.4% had hepatomegaly, and 3% had hepatosplenomegaly.

District wise distribution of patients with scrub typhus

Shimla represented the greatest number of patients (37%) followed by Mandi with 14.4%. Shimla represented the greatest number of patients (37%) followed by Mandi with 14.4%, followed by Bilaspur (13.8%), Kullu 10%, Hamirpur 6.6%.

Table 3: District wise distribution of scrub typhus patients.

District	n=180	%
Shimla	68	37.7
Mandi	26	14.4
Bilaspur	25	13.8
Solan	15	8.3
Kullu	18	10
Sirmaur	11	6.1
Hamirpur	12	6.6
Chamba	1	0.5
Kinnaur	1	0.5
Kangra	1	0.5

Month wise distribution of patients with scrub typhus

Most number of patients presented in the month of September (51.6%), followed by August (33.3%), followed by October with 11.1% , July 3.3%, November 0.5% patients. Rest of the months there were no patients of scrub typhus.

Table 4: Month wise distribution.

Month	n=180	%
July	6	3.3
August	60	33.3
September	93	51.6
October	20	11.1
November	1	0.5

DISCUSSION

In our study 180 patients were enrolled and followed during hospitalisation till discharge or death. The diagnosis was confirmed by IgM ELISA. Total 12 patients died out of 180 patients. Most of the patients

were from the younger age groups as per our results. Himachal being a hilly state and younger people move out to fields, jungle and remain engaged in activities like farming, collecting leaves, grass and wood. And so, get exposed to bushes and grass. Of the 99 cases which were positive for scrub typhus, 48.5% belonged to age group 18-30 years and female populations were more commonly affected 51%.⁶

In our study, females (130) outnumbered males (50). Himachal being a hilly state and the ladies have a conventional working behaviour in farms in a squatting position, which increase chances of exposure to chiggers.⁷ As most of the activities like collecting grass and wood from jungle or fields are done mostly by females, so the more the chance of getting exposed to mites(chiggers). Most of the patients presented from district Shimla. As this hospital is in district Shimla so most of the referral to this hospital is from this district.

Most patients presented in the month of September followed by August, cases of scrub typhus started coming in the month of July and peaked up till September, coinciding with the peak rainfall in this region. In Himachal heavy rainfall occurs between July to September with humidity ranging from 65 to 85% and temperature around 15-30°C in lower altitudes. These conditions are conducive for the spread of vectors of scrub typhus.⁷ As monsoon leads to growth of scrubs, so during monsoon and post monsoon season more chances of exposure to mites is there.

All the patients had fever in our study while 25 % had high grade fever. A study conducted in 2016 in the same institute reported history of fever in 99.9%, eschar in 40%.⁸ In our study 21% patients had eschar. 41.7% from study done and 46% from Pondicherry, while most studies of the Oriental countries had eschar in 60-70% patients. Eschar must be searched thoroughly as there are high chances of missing it.

Females were more affected in comparison to males, as females of younger age indulge in outdoor activities like gathering grass, leaves, wood and doing work in farms so they are closer to bushes. This results in more exposure of the females to chiggers. Younger individuals were more to get infected, as younger patients have more exposure to grass for carrying out daily routine activities.

Most patients had history of fever for 7-14 days. This study was conducted in a tertiary care centre and gets referrals from almost every corner of Himachal Pradesh, so most patients had a history of fever lasting for more than 7 days. 14% of our patients had lymphadenopathy (LAP) while LAP in 17% of cases.⁸ Lymphadenopathy is common in scrub typhus that was seen in our study also.⁹ Hepatomegaly in 0.9%, splenomegaly in 22% and hepatosplenomegaly in 6.9% cases while in our study figures were 4.4%, 8.3% and 3.3% respectively.⁸

CONCLUSION

Scrub typhus being an important differential of acute undifferentiated fever in this region, should not be missed by primary care physicians, as once multi organ dysfunction sets in, mortality starts rising. So, there is a high need of sensitization of doctors regarding early diagnosis and early treatment. People also need to be sensitized about how to prevent exposure and get early consultation so that the mortality related to this illness can be reduced.

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