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To Study the Clinical Spectrum and Prognostic Factors of Scrub Typhus Fever In a Tertiary Care Centre in Kumoun Region of Uttrakhand.

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ABSTRACT

Background: Scrub typhus is caused by *Orentia (formerly Rickettsia) tsutsugamushi*. It is an infectious disease of variable severity .Scrub typhus has a wide geographical distribution. Scrub typhus is grossly under diagnosed in India due to its nonspecific clinical presentation, limited awareness and low index of suspicion. **Methods:** This study was a cross sectional observational study conducted in Department of Medicine Government Medical College, Haldwani .The duration of this study was two years i.e. from November 2013 to October 2015 and 103 patients included in study. **Results:** 36 patients were found to be scrub typhus positive. It was commonly seen in males in the age group of 20-30 years. Besides fever, cough, myalgia and headache were the common presenting symptoms. Scrub typhus was seen most commonly in farm worker in our study. Most common complication was hepatitis followed by multiorgan dysfunction. In our study, out of 36 positive patients, 5 (13.8%) patients died and 31 patients ultimately recovered completely without any complication whatsoever. **Conclusion:** Scrub typhus is not a uncommon disease in India more so in hilly areas. So high index of suspicion should be there while dealing a patient of fever in these regions.

Keywords: Scrub typhus, hepatitis , multiorgan dysfunction.

INTRODUCTION

Scrub Typhus is caused by *Orentia (formerly Rickettsia) tsutsugamushi*. It is an infectious disease of variable severity that is transmitted by an arthropod vector of Trombiculid family. Scrub typhus is transmitted to humans and rodents by some species of trombiculid mites ("chiggers", Leptotrombidium deliense and others). The mite is very small (0.2 – 0.4 mm) and can only be seen through a microscope or magnifying glass. Humans acquire the disease from the bite of an infected chigger.[1,2]

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Scrub typhus has a wide geographical distribution. Nearly a billion people are at risk and million cases are reported every year.[3] Scrub typhus was first described from Japan in 1899. It was a dreaded disease in pre – antibiotic era and it was an important disease which affected thousands of soldiers in far East during the Second World War.[4] Severe epidemics of disease occurred in Second World War amongst troops in Myanmar and Sri Lanka.[5] In India, epidemic breakout was seen during the Second World War in Assam and West Bengal. Later on presence of this disease was found through India.[3] Scrub typhus is grossly under diagnosed in India due to its nonspecific clinical presentation, limited awareness and low index of suspicion.[6]

It's more common during the rainy season, but in Southern India, outbreaks have been reported in the cooler seasons.[7] Scrub typhus is prevalent in many parts of India but specific data are not available.[8] Some studies made an observation in Kumoun hills and stated that scrub typhus occurs in Kumaon hills or region, up to height of 7500 feet and in Kashmir where the climate is relatively temperate.[9,11]

MATERIALS AND METHODS

This study is a cross sectional observational study conducted in Department of Medicine Government Medical College Haldwani and associated Dr Sushila Tiwari Memorial hospital, Haldwani, Nanital, Uttarakhand. The duration of this study was two years i.e. from November 2013 to October 2015. All acute un-differentiated fever cases of at least five days duration attending in Department of Medicine at Government Medical College &associated Dr Sushila Tiwari Memorial Hospital Haldwani.

A pre-designed questionnaire was used to obtain data which was incorporated personal information such as name, age, sex, address, clinical profile, profession and socio-demographic profile including living environment and history of exposure to vector. This was done after explaining the purpose of study and obtaining written informed consent. All patients fulfilling the inclusion criteria were subjected to complete routine haematological, biochemical investigations and other special investigations relevant to our study like x-ray chest,

ultrasound abdomen, CT scan head and analysis of cerebrospinal fluid was done wherever it was needed. All the confirmed cases of malaria, dengue, leptospirosis, enteric fever, HIV, hepatitis b and other cases for which alternative diagnosis other than scrub typhus could be made were excluded from the study.

RESULTS

A total of 103 cases were studied 36 patients were found to be scrub typhus positive. It was commonly seen in males (M:F 3:2) .Most common age of presentation was of 20-30 years [Table 1].

Table 1: showing age wise distribution of patients.

Age Group	Number of Patient, n=103(%)
<20	9 (8.74)
20-30	33 (32.04)
31-40	25 (24.27)
41-50	19 (18.45)
51-60	6 (5.83)
>60	11 (10.68)

Besides fever, cough, myalgia and headache were the common presenting symptoms. Thrombo-cytopenia was most commonly seen in positive patients. [Table 2 &3]

Table 2: showing presenting symptoms and signs

Symptoms	Number of patients
Hepatomegaly	7 (19.41)
Splenomegaly	6 (6.66)
Abdominal pain	3 (8.33)
Altered sensorium	3 (8.33)
Myalgias	24 (66.67)
Myocarditis	1(2.77)
Icterus	9 (25)
Hypotension	3 (8.33)
Cough	30 (83.33)

Table 3: showing laboratory parameters of patients

Laboratory parameter	Number of patients, n= 36 positive (%)
Leukocytosis > 120000/µl	15 (41.67)
Thrombocytopenia $<0.10\times10^6$/µl	6 (16.67)
Thrombocytopenia $<0.15\times10^6$/µl	4 (11.11)
Raised bilirubin (>2 mg%)	9 (25.00)
Raised SGOT/SGPT (>40 IU/l)	16 (44.44)
Raised alkaline PO_4 (>130 IU/l)	12 (33.33)
Raised serum creatinine (>1.4 mg%)	7 (19.11)
Low serum albumin (<3-0 mg%)	13 (36.11)

Most patients presented with fever of duration of 5-10 days. [Figure 1] Scrub typhus was seen most commonly in farm worker in our study. [Table 4].

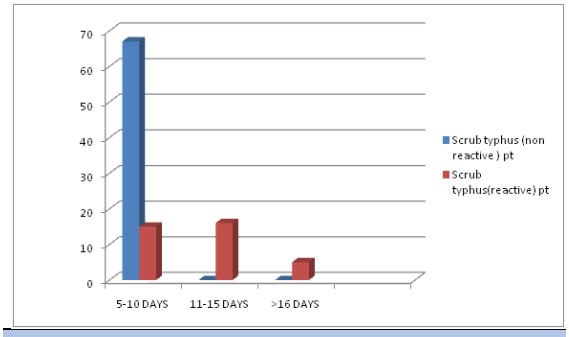

Figure 1: showing number of patients and duration of fever

Table 4: showing professional profile of the patients

Professional profile	Scrub typhus (non reactive) N = 67	Scrub typhus (reactive) N = 36
Farm	34(50.7%)	14 (38.9%)
Forest	10 (14.9%)	14 (38.9%)
C.S worker	15 (22.4%)	6 (16.7%)
Others	8 (11.9 %)	2 (5.6%)

ARDS was a serious complication and early initiation of doxycycline therapy helped in preventing complications of the disease and reducing its mortality for scrub typhus. In our study, out of 36 positive patients, 5 (13.8%) patients died and 31 patients ultimately recovered completely without any complication whatsoever. [Figure 2].

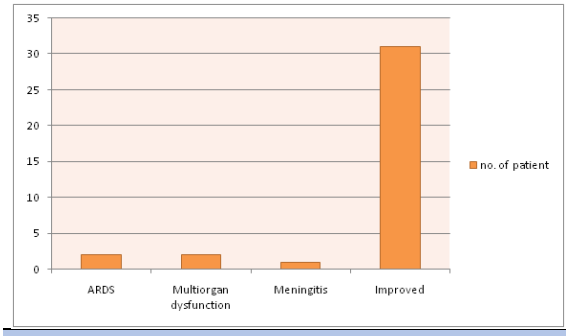

Figure 2: showing outcome of patients

DISCUSSION

Scrub typhus is an acute febrile illness with the characteristic of high grade fever, headache, myalgia and with or without rashes. It is caused by intracellular Gram negative bacteria Orientia tsutsugamushi.[10] The disease is transmitted to human beings by a mite larva called "chiggers". Although the disease is endemic in our country it is grossly under diagnosed owing to the non specific clinical presentation of the disease and also the lack of its awareness clinical manifestation and endemicity. There was a definite male preponderance wherein 62 patients were male and

41 patients were females. Similar results were also seen in the study done by Gurung and Parhan J et al in Sikkim. The ratio of males and females was 66.66% and 33.33% respectively in their study.[11] It was observed that besides fever, cough was seen in (83.33%),myalgia in (66.67%) nausea(50%) vomiting(41.67%) abdominal pain (8.33%) rash (41.67%) and jaundice was seen in 38.85% of patients . A similar type of clinical features was seen by Kedareshwar et al in a study done at Goa. These observations were consistent with the findings of our study.[12]

In our study we observed the clinical signs in patients of scrub typhus were hepatomegaly (33%), splenomegaly (16.67%), pedal oedema (16.67%), lymphadenopathy (11.11%). Features of capillary leak were seen in 22.22% of patients. In a study done by Gurang et al at Sikkim India also showed similar results.[11] In another study done at Pondicherry done by M Vivekanar and Annamani et al similar observations were documented.[6]

In our study, we also observed various complications in scrub typhus patients. Acute renal failure were seen in 11.11%, hepatitis in 36.11% ARDS in 6.11%, shock in 8.3%, meningitis in 5.56%, multiorgan dysfunction in 19.44% and myocarditis in 2.78%. In a study done by Tsay R Wet et al in Taiwan showed similar results.[13] In our study mortality rate was 13.8% which was very similar to above study. In a study done by Varghese et al the mortality rate was 14%. In a similar study done by Kedareshwar et al a mortality rate of 33.3% was seen which was significantly higher than what was seen in our study.[12,14] In our study eschar was seen in 13.85% of patients which was similar to the previous study. In a study done on Indian population by Viswanathan S Muthu V et al 20% patients were having eschar.[15]

CONCLUSION

Scrub typhus is not a rare disease in Kumaon region of Uttrakhand but due to non specific clinical manifestations, low index of suspicion and lack of proper diagnostic facility it is under diagnosed. Early suspicion of the disease, establishment of an early diagnosis and early prompt initiation of doxycycline therapy leads to better outcome and prevents complication. This leads to substantial reduction in the mortality.

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