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Study of Clinical Characteristics and Treatment Pattern of Scrub Typhus in Tertiary Care Hospital.

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Abstract

Scrub typhus is an endemic disease in many parts of India and is mainly caused by the rickettsial bacteria Orientia tsutsugamushi. *It is associated with several complications and has emerged as one of the leading public health problems in recent times. This study describes the clinical profile of 200 scrub typhus positive cases admitted in a tertiary care hospital. The complete clinical profiles of the patients were collected in a suitable designed profile form. Out of 200 cases 80 were females and 120 were males. Fever was the chief complaints during the admission followed by headache, hepatosplenomegaly, abdominal pain and lymphadenopathy. Eschar was present in 75.5% of the admitted cases and was more in males (59%). Liver enzymes were elevated in almost all the patients (95%). Acute Respiratory Distress Syndrome (ARDS), sepsis, meningoenchephilitis, diabetes, Pneumonia, urinary tract infection, candidiasis were the most common complications observed in the study population. All cases were successfully treated with doxycycline. 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 for the early detection of the disease which could help in reduce mortality.*

Key words*: rickettsial, Eschar, ARDS, liver enzymes.*

INTRODUCTION

Scrub typhus is a zoonotic disease that is caused by *Orientiatsutsugamushi* (formerly called *Rickettsia tsutsugamushi*)[1] and is accidentally transmitted to humans by the bite of larval stage trombiculid mites. It prevails in eastern and southern Asia, northern Australia, and on the islands of the western Pacific region, including Taiwan.[2] Clinical manifestations include fever, headache, skin rash, lymphadenopathy, and gastrointestinal symptoms. Eschar is a characteristic skin lesion usually observed in most of the scrub typhus patients and the bite of this mite shows a characteristic black eschar that is useful to the doctor for making the diagnosis. Severe complications include prominent encephalitis, interstitial pneumonia and ARDS etc.[3,4]. Liver involvement is also one of the prominent features among these patients, but is uncommon.[5] Fever is a most common symptom, typically begins 6 to 21 days after the bite. If it is not properly diagnosed at the early stages it leads to several other complications. The treatment of choice available for the management are drugs like doxycycline and chloramphenicol [5, 6, 11, 12]

Scrub typhus is widespread, extending from Japan to Australia and from India to the Pacific. The disease has been reported from seashores, mountainous regions, rainforests, semi-arid deserts, riverbanks and terrain undergoing secondary vegetation growth. Most cases reported due to agricultural exposure.[7]

Scrub typhus is prevalent in many parts of India but no specific data is not available. There were reports of scrub typhus outbreaks in Himanchal Pradesh, Sikkim and Darjeeling (West Bengal) during 2003-2004 and 2007. Outbreaks of scrub typhus are reported in southern India during the Winter season.

NEED FOR THE STUDY

Scrub typhus may cause mild symptoms, serious complications, or even death. Mortality may be as high as 35−60% if diagnosis or appropriate therapy is delayed. Severe complications include prominent encephalitis, interstitial pneumonia, acute renal failure, and ARDS.[13, 14] The disease is sometimes considered in the differential diagnosis of fever of unknown origin, and the diagnosis may be missed if it is not considered. Assessment of Scrub typhus in clinical practice and research is the ultimate goal of the healthcare interventions the complications of scrub typhus affect many organ systems and are responsible for the majority of morbidity and mortality associated with the disease.

Such comparative studies important providing the newer information to support clinical decision making in developing countries like India.

OBJECTIVE

To study the clinical characteristics, complications, epidemiological pattern and the management of scrub typhus in tertiary care hospital.

METHODOLOGY

Study site

This study was conducted retrospectively in the General Medicine unit patients of Kasturba Hospital, Manipal.

Study design

Retrospective study

Study Duration

Total duration of the study was 12 months from June 2011 to June 2012

Study Criteria

The study group consisted of all the scrub typhus patients admitted in various medicine units during June 2011 to June 2012 and who met the following criteria.

Inclusion Criteria

Patients admitted in the medicine units who were diagnosed to have scrub typhus with or without complications.

Data analysis

Data analysis and data entry were done using statistical package for social sciences (SPSS) software 16 version. The results were reported in percentages for descriptive data.

RESULTS

Demographic data and clinical features

Total 200 patients were diagnosed with scrub typhus between periods of June 2011 to June 2012. All cases were confirmed by serology, eschar and culture. There were 120 males (60%) and 80 females (40%). (Figure I)

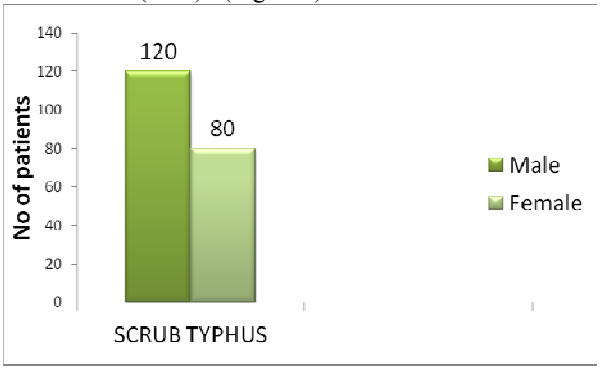

Figure I Gender-wise distribution of scrub typhus

The majority of patients belong to age group, 31-40 years, which consist of about 27% of the study population. (Fig II)

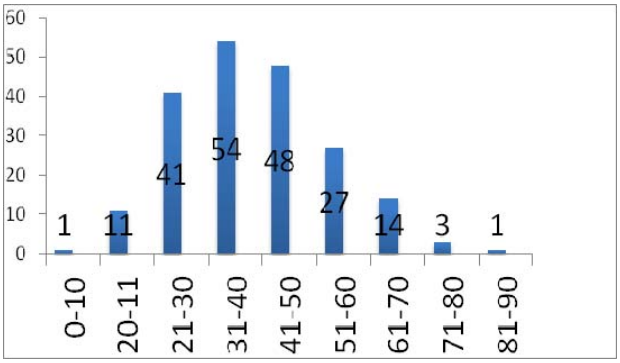

Figure II Age group wise distribution of scrub typhus

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Abnormal liver enzymes recorded in most of the cases in which ALP is elevated 74%, AST in 96%, and ALT in 94% of patients. The mean AST, ALT, ALP was found to be 138 IU/L, 127 IU/L, and 233 IU/L respectively.

An eschar (Fig. III) was observed in 75.5% of the patients. Weil Felix positive was observed in 36.6% in the patient.

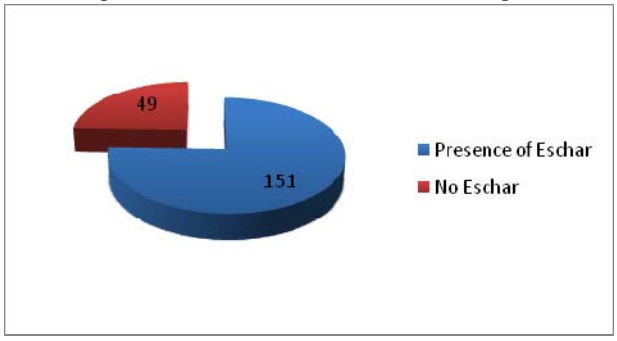

Figure III Presence of Eschar in present study

About 49% of patients were admitted with one or more complications as shown in the Table I. Most cases of were ARDS 11.5% meningoenchephilitis 8.5%, pneumonia 5.5% and sepsis 5%. Patients diagnosed as scrub typhus without complication was found to be 51%.

Table I Complications of scrub typhus

Complication	Number of patients	Percentage (%)
ARDS	23	11.5
CANDEDIASIS	1	0.5
MENINGOENCEPHALITIS	17	8.5
PNEUMONIA	11	5.5
SEPSIS	10	5.0
URTICARIA	1	0.5
UTI	3	1.5

COMPLICATIONS OBSERVED WITH TYPHUS FEVER

All patients presented with major symptoms like headache 97%, fever 79.5%, hepatomegaly 74% abdominal pain 56%, anorexia 54.5%, Lymphadenopathy 52.5%, and rash 45%, respectively. (Table I)

SEROLOGY STATUS

72 patients (36%) were found to be serology positive. (Figure IV)

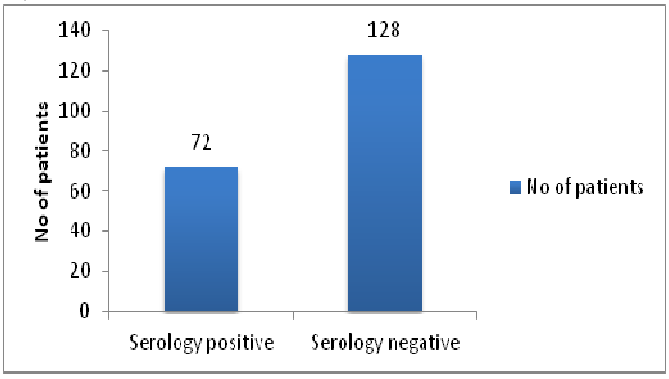

Figure IV Serology status in patients

OCCUPATION OF SCRUB TYPHUS PATIENTS

Occupation wise distribution of patients reveled that majority were agriculturist 35.5%, followed by house wife 29.5 %, cooly 13.5%, and students 10.5%. People with low socio economic group were more affected. (Table II)

Table II Prevalence pattern of scrub typhus

Occupation	Number of patients	Percentage	Cumulative Percentage
Agriculturist	71	35.5	35.5
Cooly	27	13.5	49.0
House wife	59	29.5	78.5
Service	17	8.5	89.5
Student	21	10.5	100.0
Other	5	2.5	81.0
Total	200	100.0	

GEOGRAPHICAL DISTRIBUTION

90 patients (45%) were identified from Davangere district alone. The incidence of disease in other districts includes Haveri 10.5 %, Shimoga 10.5%, Chitradurga 8% and Udupi 6%. (Table III)

Table III Geographical distribution of scrub typhus

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Districts	No. Of patients
Davangere	90
Haveri	21
Chitradurga	17
chikmagalur	13
Udupi	25
Gulbarga	1
Karwar	2
Bellary	10
Bangalore	1
Shimoga	21

OUTCOME

Hospitals stay of scrub typhus patients with complications were found to be 7 ± 2.8 days when compared to those without complication were 5 ± 2 days.

DISCUSSION

In Karnataka, scrub typhus has been reported in various districts especially the Davangere, Chitradurga, Udupi, Karwar, Shimoga Havery, Uttarkannada & Bellary.

The causative organism is an intracellular gram-negative bacterium, *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.

Clinical picture of scrub typhus include sudden onset of a high-grade fever and associated headaches, and regional lymphadenopathy. Necrotic eschar at the inoculating site of the mite is the single most feature of scrub typhus. 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; occurs in persons who engage in occupational or recreational behavior that brings them into contact with mite-infested habitats such as brush and grass.

Fever is the most common symptom observed in the study followed by hepatosplenomegaly, abdominal pain and lymphadenopathy which is similar to studies were done in Trivandrum medical college, Kerala. Eschar presence 75.5% in our study which was similar to studies done in Mackay memorable hospital, Taiwan. Complications found in our study similar to studies were done in Mackay memorable hospital, Taiwan.[15]

Majority of the patients treated with Doxycycline 100mg two times in a day whereas pregnant women are treated with azithromycin 500mg once or twice in a day because doxycycline is contraindicated in pregnancy.

Length of stay in hospital is influenced by complications. Higher the complications, longer are the hospital stay.

CONCLUSION

In conclusion scrub typhus is endemic in many parts of Karnataka 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, scrub typhus considered as differential diagnosis 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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