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An Observational Study of Clinical Features of Scrub Typhus

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Abstract
Objectives: *Scrub typhus is a mite borne disease caused by Rickettsia tsutsugamushi. Because of the unpredictability and difficulty in diagnosis, it can sometimes be serious in pediatric age groups and fatality rate is as high as 30-35%. The aim of this study is to know the various clinical manifestations of scrub typhus in different pediatric age groups.*
Methods: *This prospective observational study was carried out in the children admitted in pediatric ward/pediatric ICU of our hospital with a total of 50 cases diagnosed positive for scrub typhus by ELISA.*
Result: *The study includes a total of 50 cases. Of these, 84% (42 cases) were from rural areas while 16% (8 cases) were urban. 56% (28 cases) were males and 44% (22 cases) were females. 54% (27 cases) were from school going age group (6-12 yrs). Among these cases, fever was seen in all children (100%) followed by hepatosplenomegaly (82%), eschar (76%), lymphadenopathy (60%), rash(26%), abdominal distension(6%), edema (4%) and seizures(2%).*
Keywords: *Rickettsia tsutsugamushi, scrub typhus.*

Introduction

Scrub typhus is a mite borne disease caused by Rickettsia tsutsugamushi. This is endemic in areas of Japan, Korea, India, China and Northern Australia. They are the most re-emerging infections in recent times. If untreated, fatality rate is as high as 30-35%.

Immunoflorescence assay (IFA) is the gold standard test for serodiagnosis of rickettsial disease which detects IgG and IgM antibodies[(2)]. Initial diagnosis and treatment should be based on a high index of suspicion and appropriate clinical features. Doxycycline is the drug of choice for all age groups[(4)].

The aim of this study is to know the various clinical manifestations of scrub typhus in different pediatric age groups so that it can be diagnosed early with high index of suspicion and specific treatment is initiated to prevent mortality. The study can be used to create awareness of manifestations of scrub typhus in endemic areas and high risk groups.

Materials and Method

Data was collected from patients who were admitted in pediatric ward/ pediatric intensive care unit at our hospital. Totally 50 patients were included.

Children of pediatric age group who were diagnosed to have scrub typhus either by positive ELISA test or on strong clinical grounds were included into the study. Informed consent was obtained from the parents/guardians of the study population.

Children of both sexes were included. Children more than 12 years of age and with co-morbid illness like dengue, leptospirosis, typhoid were not included in the study.

We obtained a detailed history and a thorough clinical examination was done. The symptoms and signs were analysed and compared among the study population.

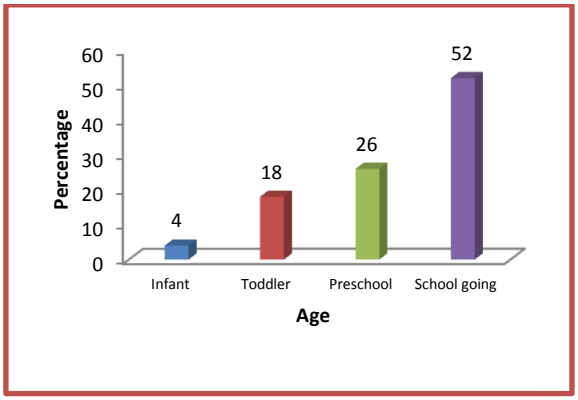
Results

In our study, more than half of the children 52% (26 cases) were in school going age group and males (28 cases) outnumbered females (22).

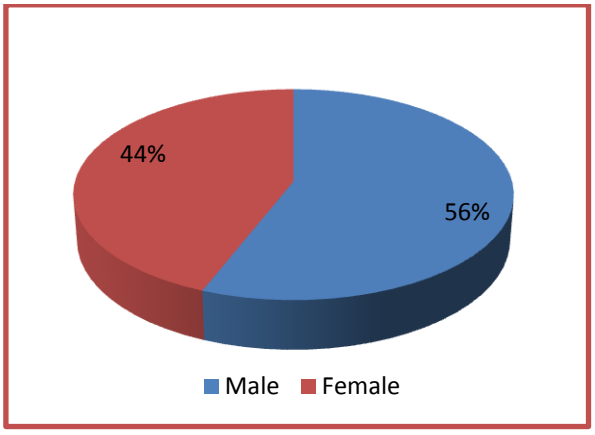
Based on demographic distribution, rural children accounted for 84% while urban 16%. In our study, 88% had a history of insect bite.

Based on clinical features, fever was seen in all children (100%). Besides fever, children at admission had hepatosplenomegaly (82%), eschar (76%), lymphadenopathy (60%), rash following fever (26%), abdominal distension (6%), edema (4%) and seizures (2%).

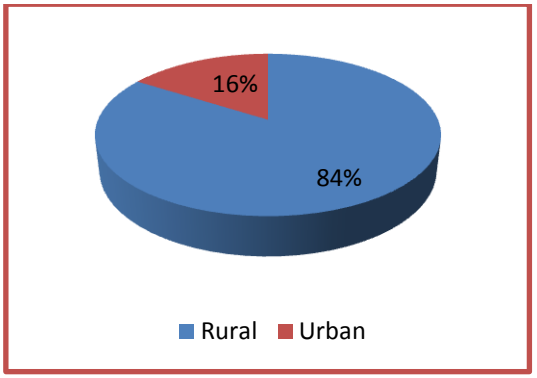
Age wise distribution of cases



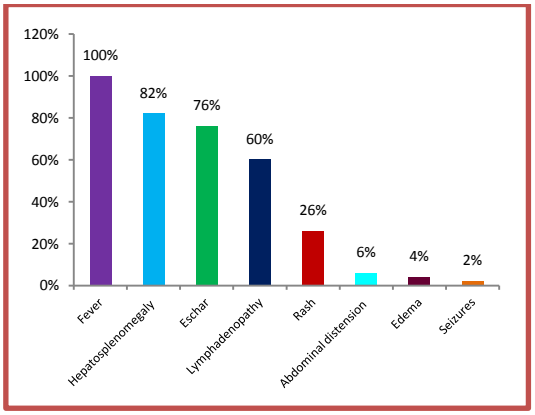
Sex wise distribution



Demographic distribution



Clinical manifestation



Discussion

Rickettsial infections have been one of the great scourges of mankind, occurring in devastating epidemics during times of war and famine[(1)].

Because of non specific signs and symptoms and non availability of sensitive and specific diagnostic tests, these are difficult to diagnose [(1)].

Age and demography of the study population:

Our study was done on children who had an acute febrile illness with serological positivity for scrub typhus by ELISA method and negative for other co morbid illness.

Children were examined for rash, eschar, lymph-adenopathy, hepatosplenomegaly and edema.

Mite exposure was said to occur when mites were seen on clothes of child or inside the house or history of playing in bushy areas where mites were seen.

Rickettsial diseases were reported from various districts of Tamil Nadu and in and around Chidambaram, where our study was conducted.

In our study, 84% were from rural areas/ living in farms and 16% from urban areas. Inamdar S et al

also reported 35.5% from agriculture exposure (rural area) [6].

54% were in school going group (between 6-12yrs), 28% in preschool group (3-6 yrs), 14% in toddler group (1-3yrs). The lowest age reported was 8 months.

Contrary to our study, Palanivel S et al showed majority of the children (68.5%) in 1-6 yrs. The lowest age reported was 60 days[5].

Mite exposure

In our study, mite exposure was seen in 88% of cases. Rathi et al showed a similar data (81%) [7] and also reported that since mite bite is painless, mite bite history was present in less than 50% cases [1].

This study also stated that animal sheds near houses, pets, stray dogs, cattle, and long uncut grasses in rural areas were the factors favouring vectors [8].

Clinical features

In our study, fever was present in all children (100%). Fever was high grade and lasted for 3-5 days. All other causes of fever were ruled out.

Palanivel et al[5], Inamdar et al[6], Udayan U et al[3], Dass R et al[9] also found fever in all children.

Study	Hepatomegaly	Lymphadenopathy	Eschar
Palanivel S et al[5]	80%	59.7%	46%
Inamdar et al[6]	52.5%	52.5%	-
Dass R et al[9]	33.3%	12.5%	41.7%
Our study	82%	60%	76%

Eschar was consistent with a study done at korea (90%)[11], vivekanandan et al (55%) [12], and was contrary to a study done by Mahajan et al, in which it was noted in 9.5% [10].

Maculo papular rash was seen in a total of 26 % in our study and was similar to the studies done by Rathi N et al[1,7], Walker DH et al, Palanivel et al(35%)[5] and Murali N et al [14]. A study by Kulkarni A observed that skin rash is usually not present till 2 to 4 days of illness[13].

Abdominal distension was seen in 6 % (3 cases) which was similar to the Inamdar S et al study [6].

Seizures was reported in a child in our study. Dass R et al reported seizures in 12.5 % of cases and altered sensorium in 16.6 % of cases. In their study, meningoencephalitis was seen in 29.2% of untreated cases of which 2 patients with low GCS were ventilated for 4 days each [9], Palanivel et al [5] reported altered sensorium in 58% of cases. Inamdar et al stated meningoencephalitis as the most common complication in their study[6]. Seizures was reported in 6.5% by George M Varghese et al and in 25% in a study done in Chennai [15].

Edema accounted for 4% of cases in our study, which was also reported in studies done by Kulkarni A et al[13]and Palanivel S et al.[5]

Conclusion

This observational study done on children who had an acute febrile illness with serological positivity for scrub typhs revealed fever as the commonest presenting symptom (100%) followed by hepatosplenomegaly (82%), eschar (76%), lymphadenopathy (60%), rash (26%), abdominal distension (6%), edema (4%) and seizure (2%).

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