

# CLINICAL AND LABORATORY MANIFESTATION OF PAEDIATRIC SCRUB TYPHUS IN CHIDAMBARAM REGION, TAMILNADU

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**Abstract:** Scrub typhus is a re-emerging acute febrile illness of variable severity caused by bacteria of the family Rickettsiaceae called *Orientia tsutsugamushi*. The aim of the present study is to report and describe the clinical and laboratory manifestations of paediatric scrub typhus diagnosed in RMMCH Annamalai nagar, Chidambaram. The study was conducted between the periods of May 2015 to September 2015. The case sheets of acute febrile illness were retrieved and reviewed retrospectively. A total of 27 patients diagnosed as scrub typhus on the basis of eschar or specific test were included in the study. They presented with sub acute fever (median, 9 d) with eschar 88% hepatomegaly 44%, cough 44%, vomiting 40 % splenomegaly 37% , chills and rigor 29% abdominal pain 22% , tachypnea 18% headache /bodyache 14% lymphadenopathy 7% and history of mite bite were rare. Blood leucocyte counts were usually normal but 26% of patients were thrombocytopenic. Elevated sgot /sgpt /bilirubin were seen in majority of patients (96%). The patients were treated with Doxycycline and Azithromycin and the fever subsided with a mean of 6 days. More number of echar, vomiting, hepatomegaly and splenomegaly were reported in Chidambaram area, when comparing with other geographical areas such as Thailand & North east India.

**Keywords:** scrub typhus, Rickettsiaceae, *Orientia tsutsugamushi*, Escher, hepatomegaly and splenomegaly.

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## I. INTRODUCTION

Scrub typhus is a re-emerging acute febrile illness of variable severity caused by bacteria of the family Rickettsiaceae called *Orientia tsutsugamushi*. In pre-antibiotic era, the disease was frightful and produced considerable morbidity and mortality in different part of the world known as tsutsugamushi triangle which extends from northern Japan and far eastern Russia in the north, to northern Australia in the south and to Pakistan in the west. In later decades there has been a considerable decrease in occurrence of scrub typhus. In India, several cases of scrub typhus were reported and recently the numbers of cases are increasing in southern region.<sup>[1]</sup>

*Orientia tsutsugamushi* is an obligate intracellular gram negative bacterium that has a large number of serotypes. The disease is transmitted to humans and rodents by some species of thrombiculid mites. Human acquire the disease from the bite of infected chiggers. Scrub typhus is generally seen in people whose occupational or recreational activities bring them in contact with ecotype favourable with vector chiggers.<sup>[2]</sup>

It is now known that there is an enormous antigenic variation in *Orientia tsutsugamushi* strains, and immunity to one strain doesn't confer immunity to another. Common clinical manifestations in scrub typhus are fever more than one week,

splenomegaly, eschar, cough, hepatomegaly, headache, body ache, abdominal pain, vomiting, altered sensorium, seizure, lymphadenopathy, loose stool and thrombocytopenia and so on. However scrub typhus is sometimes under diagnosed in India due to its non specific clinical presentation limited awareness among clinicians and lack of diagnostic facilities. The severity of the illness varies with multiple organ system involvement, which can be serious enough unless it diagnosed early and treated.

## II. MATERIALS AND METHODS

The case sheets of all the children who were admitted with acute febrile illness to RMMCH, a 1260 bedded tertiary care teaching hospital between May 2015 and September 2015 were retrieved and reviewed retrospectively. A total of 27 paediatric Patients diagnosed as scrub typhus on the basis of eschar and / or specific tests were included in the study. Detailed clinical examination including eschar and basic laboratory tests including complete blood count, peripheral smear, urine analysis, urea, creatinine, glucose were done in all patients. Additional investigations including blood culture, chest x ray, widal, serology for dengue and ELISA were also done in majority of patients. But in the same time some patients were not affordable to do the specific tests due to their financial status. The eschar with other signs and symptoms helped physicians to confirm their diagnosis in such conditions.

## III. RESULT AND DISCUSSION

In the study Twenty seven patients were diagnosed as scrub typhus during the study period of 5 months. The ages of patients ranged from 1 to 12 years. There were 9 males and 18 females. Most of the patients were from the rural areas surrounded by Chidambaram region of Tamil Nadu.

TABLE 1: SOCIAL DEMOGRAPHIC CHARACTERIZES (N=27)

Age wise distribution	No: of patients	Percentage (%)
0-2	4	14.8
2-4	7	25.9
4-6	6	22.3
6-8	1	3.6
8-10	2	7.5
10-12	7	25.9
<b>Gender</b>		
Male	9	33.4
Female	18	66.6

TABLE 2: NATURE OF FEVER PRESENTED WITH SCRUB TYPHUS

Fever	No: of patients	Percentage (%)
<5day	4	14.8
5 to 10 days	10	37.1
10 to 15 days	12	44.4
More than 15 days	1	3.7

The table 2 shows that the sub acute fever with the paediatric scrub typhus was subsided with a median of 9 days. 12(44.4%) patients were presented with the fever for 10 to15 days. In our study the temperature we found for 8 cases were < 101°F and 19 cases were >101°F.

TABLE 3: NO OF CASES PER MONTH

Month	No: of patients	Percentage (%)
May	5	18.5
June	2	7.4
July	9	33.4
August	10	37.1
September	1	3.6

In our study maximum numbers of cases were seen during the early month of monsoon, which is August (10 cases). The data are represented in the Table No. 3.

**TABLE 4: CRITERIA FOR DIAGNOSIS**

Criteria	No of patients/ (%)
Eschar alone	6(22%)
Eschar + ELISA test.	18(66%)
ELISA test alone	3(12%)
Total	27(100%)

Table 4 shows the diagnostic criteria used in our study. The diagnosis of paediatric scrub typhus was based on the presence of the characteristic Escher and / or positive ELISA test. Escher was present in a total of 24 patients – out of these 24 patients, 18 patients had positive ELISA test, whereas the other 6 patients diagnosed with the help of Eschar and other symptoms. 3 cases are diagnosed with positive ELISA test alone and other symptoms of scrub typhus. Other specific methods for diagnosis of scrub typhus like indirect immunofluorescence antibody (IFA) and Weil-Felix test are currently unavailable in Chidambaram area.

**TABLE 5: SIGNS & SYMPTOMS PRESENTED WITH PEADATRIC SCRUB TYPHUS.**

Sl no :	Conditions	Cases	Percentage (%)
1	Eschar	24	88%
2	hepatomegaly	12	44%
3	Cough	12	44%
4	Splenomegaly	10	37%
5	Chills and rigor	8	29%
6	Abdominal pain	6	22%
7	Tachypnea	5	18%
8	Body ache/ Head ache	7	14%
9	Lymphadenopathy	6	22%
10	Skin rashes	6	22%
11	Vomiting	11	40%
12	Facial puffiness	5	18%

Table 5 shows that signs & symptoms in these 27 cases. Fever, chills & rigours, cough, body ache, vomiting, rashes were the common symptoms. Common signs seen were hepatomegaly & Splenomagaly. Escher was seen in 24 patients. Common site of eschar were chest, abdomen and groin.

**TABLE 6: SIGNIFICANT LABORATORY INVESTIGATIONS IN PEADATRIC SCRUB TYPHUS**

Sl. no	Investigation	Numbers/out of	Percentage (%)
1	↑creatinine	3/25	12%
2	↑bilirubin	26/27	96%
3	ELISA positive	21/27	77%
4	↑SGOT/SGPT	25/26	96%
5	↑Alkaline phosphate	13/15	86%
6	↓sodium	18/27	66.7%
7	↓albumin	14/27	52.2%
8	↓platelet	7/27	25.9%

Table 6, shows lab parameters in these patients, thrombocytopenia was seen in 7 patients (25.9%). SGOT/SGPT were elevated in 25 patients out of 26 investigation performed .hypoalbuminemia was observed in 14/27 patients (52%).Increase in bilirubin and creatinine level was found in 26(96%) and 3(12%) patient respectively.

**TABLE 7: COMPARISON OF CLINICAL AND LABORATORY MANIFESTATIONS OF PEADIATRIC SCRUB TYPHUS WITH OTHER GEOGRAPHICAL AREAS**

Sl no:	Conditions	North East India	Thailand	Chidambaram
1	Fever	100%	100%	100%
2	Vomiting	20.8%	35%	40%

3	Hepatomegaly	33.3%	54%	44%
4	Splenomegaly	45.8%	18%	37%
5	Tachypnea	NA	26%	18%
6	Skin Rash	NA	7%	22%
7	Escher	41.7%	7%	88%
8	Cough	37%	NA	44%
9	Body/Head Ache	25%	NA	14%
10	Abdominal Pain	25%	NA	22%
11	Chills & Rigors	NA	NA	29%
12	Lymphadenopathy	12.5%	NA	22%
13	Facial Puffiness	NA	NA	18%

NA\*=not applicable.

Fever is a common symptom in all regions in this study. In addition to fever, eschar (88%); vomiting (40%), hepatomegaly (44%) and splenomegaly (37%) were highly reported in Chidambaram area when comparing with other geographical areas such as Thailand & North east India. The data are represented in the Table No. 7

#### IV. CONCLUSION

Scrub typhus is a re-emerging acute febrile illness in many parts of India. Nowadays, due to non specific clinical presentation, limited awareness and lack of diagnostic facilities, the scrub typhus cases are under diagnosed. In our study revealed that majority of patients in the Chidambaram area were presented with fever more than a week, eschar, cough, vomiting. When comparing Chidambaram region with other geographical areas such as Thailand & North east India, increased number of cases were reported with eschar, vomiting, hepatomegaly and splenomegaly. The antibiotics used for the treatment of scrub typhus were either Doxycycline or Azithromycin. The illnesses associated with the paediatric scrub typhus were subsided with a mean of 6 days after hospital admission.

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