

A STUDY OF CLINICAL AND EPIDEMIOLOGICAL CHARACTERISTICS OF SCRUB TYPHUS IN TERTIARY CARE HOSPITAL IN ANDHRA PRADESHI. V. Ramachandra Rao¹, Kumbha Thulasiram², H. V. S. S. Laxman³**HOW TO CITE THIS ARTICLE:**

I. V. Ramachandra Rao, Kumbha Thulasiram, H. V. S. S. Laxman. "A Study of Clinical and Epidemiological Characteristics of Scrub Typhus in Tertiary Care Hospital in Andhra Pradesh". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 34, April 27; Page: 5817-5822, DOI: 10.14260/jemds/2015/852

ABSTRACT: Scrub typhus is a mite borne infectious disease caused by orientia tsutsugamushi. Scrub typhus is geographically confined to Asia pacific region. In India cases of scrub typhus are reported during world war-II from Assam and west Bengal, later the presence of this disease was found throughout India, from South India isolated case reports are seen from Kerala, Tamilnadu and Karnataka. Recently there are isolated case reports from Andhra Pradesh but no documented case studies to our knowledge. It is possible that it exists in other states as well but goes unnoticed as physicians fail to recognize it, many physicians may be treating their patients with scrubtyphus without considering in their differential diagnosis as it responds to commonly used antibiotics. Recently we have been seeing a series of cases of scrub typhus in our hospital, so a prospective study has been done to study the clinical and epidemiological characters of this disease. Here we report a total of 56 cases of scrub typhus which were tested positive for IgM scrubtyphus by ELISA method. Through this study we hope to make physicians aware of this disease which is probably more widespread than considered and easily manageable if it is diagnosed early and prompt treatment is initiated.

KEYWORDS: Scrub Typhus - Eschar.

INTRODUCTION: Scrub typhus is widely endemic in a geographically confined area of the Asia-Pacific region, tsutsugamushi-triangle and in tropical and subtropical regions of the Asian continent including India. Scrub typhus is a well-known disease in India and has been documented in several states like Haryana, Himachal Pradesh, Uttaranchal, Assam. Maharashtra, Kerala and Tamilnadu. Recently there are isolated case reports from Andhra pradesh but no documented case studies to our knowledge. It is possible that it exists in other states as well but goes unnoticed as physicians fail to recognize it, many physicians may be treating their patients with scrub typhus without considering in their differential diagnosis as it responds to commonly used antibiotics doxycycline, azithromycin, chloramphenicol. The pathognomonic clinical sign of scrub typhus is eschar which may be inconspicuous as it is often present in areas like groin, gluteal folds, breast folds and external genitalia.

OBJECTIVES: To document the clinical and epidemiologic characteristics of patients with scrub typhus admitted in medical wards of S.V.R.R.G.G.H, Tirupati.

To study the epidemiological characteristics in relation to complications and treatment outcome.

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STUDY POPULATION & METHODS:

Study Population: Patients admitted in medical wards of S.V.R.R.G.G.H.

Study Place: Department of General Medicine, S. V. Medical College, Tirupati

Study Period: January 2013 to December 2013.

Study Method: Prospective analysis.

METHODS: From January 1, 2013 to December 31, 2013, patients admitted at S.V.R.R.G.G.H who had obscure fever for >5 days were tested for Ig M antibody against *Orientia tsutsugamushi*, the causative organism of scrub typhus.

Scrub typhus was diagnosed on the basis of ELISA for Ig M antibody against *Orientia*.

Institutional review board/ethics committee decided approval was not required for this study.

RESULTS: Presence of IgM antibodies against *Orientia tsutsugamushi* was demonstrated in 56 cases which indicate recent infection of scrub typhus. Majority of the cases belonged to Chittoor district of Andhrapradesh. Majority of the cases were from the rural belts 36 patients (64%) were involved in some sort of farm work at the time of infection. Peak incidence is seen in the age group of 30-40years with male to female ratio nearly 2:1. Most were diagnosed during the rainy months of June to November. Majority of cases presented to the hospital during the second week of fever. Common physical signs included eschar (85%), rash (57%), splenomegaly (25%), lymphadenopathy (25%), jaundice (14%) and hepatomegaly (11%). Six patients had meningoencephalitis and four patients had ARDS. Majority patients responded well to Doxycycline or Azithromycin. There was 7% mortality in our study

Scrub Typhus in Pregnant Women: We reported scrubtyphus in a pregnant female G2P1L1 26 weeks of gestation presented with fever and eschar over thigh. IgM scrubtyphus positive. She responded well to azithromycin.

DISCUSSION: Scrub Typhus, or *tsutsugamushi* disease is a febrile illness caused by bacteria of the family Rickettsiaceae and named *Orientia tsutsugamushi*. Scrub typhus is endemic to a geographically distinct region the so called *tsutsugamushi* triangle, which includes Japan, Taiwan, China, and South Korea. It also occurs in Nepal, Northern Pakistan, Papua New Guinea. In India, the disease had occurred among troops during World War II in Assam and West Bengal, and in the 1965 Indo-Pak war. There was a resurgence of the disease in 1990 in a unit of an army deployed at the Pakistan border of India.

It is known to occur all over India, including Southern India and Northern India. More cases of scrub typhus were diagnosed during the rainy months of June to November. This correlated with the months with a higher number of field rats infected with *O. tsutsugamushi* reported by Trishnananda et al.

Majority (64%) of our patients are from Chittoor district of Andhra Pradesh. The average time between the onset of symptoms and hospitalization was 9 days. This reflected the nonspecific nature of the symptoms and the fact that our study was conducted at a tertiary care center. 64.2% of our cases were engaged in farm work at the time of infection, suggesting the influence of these activities

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on transmission of infection from mite. Farm work and related activities were noted in 64% of the cases by Ogawa et al. 70% of the affected population are in the age group of 25-50yrs. 65% of the patients are males. Ogawa et al did not note any sex influence on the distribution of cases. Epidemiological studies are required for further elaboration of this point.

The fever is the common symptoms and is present in almost all the patients of scrub typhus as evident from reviewing the literature. The presence of an eschar is though, highly suggestive of scrub typhus but is reported to occur in a variable proportion of patients in various studies. Thus, its presence confirms and is pathognomic of the disease but its absence does not exclude the possibility of scrub typhus. In our study, eschar was seen in 85% of the cases. Indian studies by Mathai et al, Vivekanandan et al Mahajan et al reported an incidence of eschar as 4%; 46% and in 10% of cases respectively.

Like the presenting symptoms, the clinical signs, namely fever, lymphadenopathy, hepatomegaly, splenomegaly, hyperemia of the conjunctivae and rash, are similarly nonspecific. Eschar, present in 85% of our patients, is a very useful sign in making the diagnosis. They were found in moist intertriginous areas, such as the genitalia, thigh, chest and the perineum. Lymphadenopathy was found in 25% of the cases in our cases and this is consistent with observations in other studies.

In a study from china, lymphadenopathy was detected in 52% of the patients. Acute respiratory distress disorder is seen in 8% almost equal as compared with other data; 8% as reported by Vivekanandan et al. Neurological dysfunction was present in 20% of the cases, with feature of meningoencephalitis in three cases and cerebellitis in two cases.

An interesting finding opsoclonus is seen in one case. This is a rare feature of scrub typhus and third case to be reported from south India.

One patient presented with hypotension, oliguria and bilateral pneumonia on examination eschar was found diagnosed as MODS. Patient died with in 24hrs.

Majority of our cases, responded well to doxycycline. This is similar to other reports, although cases of scrub typhus poorly responsive to doxycycline and chloramphenicol have been recently reported from other parts of country. One recent randomized clinical trial had shown that rifampicin might be useful in treating this poorly responsive case. One patient did not respond to doxycycline but responded to azithromycin.

We reported scrub typhus in a pregnant female who responded to azithromycin.

CONCLUSION: Reemergence of scrub typhus in this region confirms Andhra Pradesh as scrub typhus prone region and demands, a high degree of clinical suspicion and familiarity with the various clinical manifestations, and use of rapid immunological test in suspected case to allow early diagnosis and timely initiation of appropriate therapy and thereby reducing patient morbidity and mortality.

This study highlights the need for further research on epidemiology of scrubtyphus and active preventive measures to be taken before it transforms into an endemic disease.

We also recommend physicians to consider scrubtyphus in their differential diagnosis of fever with altered sensorium as it can present in a wide variable picture.

REFERENCES:

1. Tamura A, Ohashi N, Urakami H, Miyamura S. Classification of Rickettsia tsutsugamushi in a new genus Orientia gen Nov, as Orientia tsutsugamushi comb. Int J Syst Bacteriol 1995; 45: 589-91.
2. Lai CH, Huang CK, Chen YH, et al. Epidemiology of acute q Fever, scrub typhus, and murine typhus, and identification of their clinical characteristics compared to patients with acute febrile illness in southern taiwan. J Formos Med Assoc 2009; 108(5): 367-76.
3. Suputtamongkol Y, Suttinont C, Niwatayakul K, et al. Epidemiology and clinical aspects of rickettsioses in Thailand. Ann N Y Acad Sci 2009; 1166: 172-79.
4. Ogawa M, Hagiwara T, Kishimoto T, et al. Scrub Typhus In Japan: Epidemiology And Clinical Features of Cases Reported In 1998. Am J Trop Med Hyg 2002; 67(2): 162-65.
5. Mathai E, Rolain JM, Verghese GM, et al. Outbreak of scrub typhus in southern India during the cooler months. Ann N Y Acad Sci 2003; 990: 359-64.
6. Pavithran S, Mathai E, Moses PD. Scrub typhus. Indian Pediatr 2004; 41(12): 1254-47.
7. Vivekanandan M, Mani A, Priya YS, Singh AP, Jayakumar S, Purty S. Outbreak of scrub typhus in Pondicherry. J Assoc Physicians India 2010; 58(1): 24-28
8. Chaudhry D, Garg A, Singh I, Tandon C, Saini R. Rickettsial diseases in Haryana: not an uncommon entity. J Asso Physicians India 2009; 57: 334-37.
9. Mahajan SK, Kashyap R, Kanga A et al. Relevance of Weil-Felix Test in Diagnosis of ScrubTyphus in India. J Assoc Physicians India 2006; 54(8): 619-21.
10. Mahajan SK, Bakshi D. Acute Reversible Hearing Loss in Scrub Typhus. J Assoc Physicians India 2007; 55(7): 512-14.
11. Mahajan SK, Rolain JM, Sankhyan N, Kaushal RK, RaoulD. Pediatric scrub typhus in Indian Himalayas. Indian JPediatr 2008 Sep 22. [Epub ahead of print]

Sl. no	Clinical symptom	No. of admissions	Percentage %
1	Fever	56	100%
2	Myalgias	52	92.85%
3	Headache	48	85.71%
4	Chills and rigors	52	92.85%
5	Jointpains	32	57.14%
6	Eschar	48	85.71%
7	Bleeding manifestations	34	60.71%
8	Conjunctival congestion	24	42.85%
9	Cough	16	28.57%
10	Altered sensorium	6	10.71%

Table 1: Different clinical features

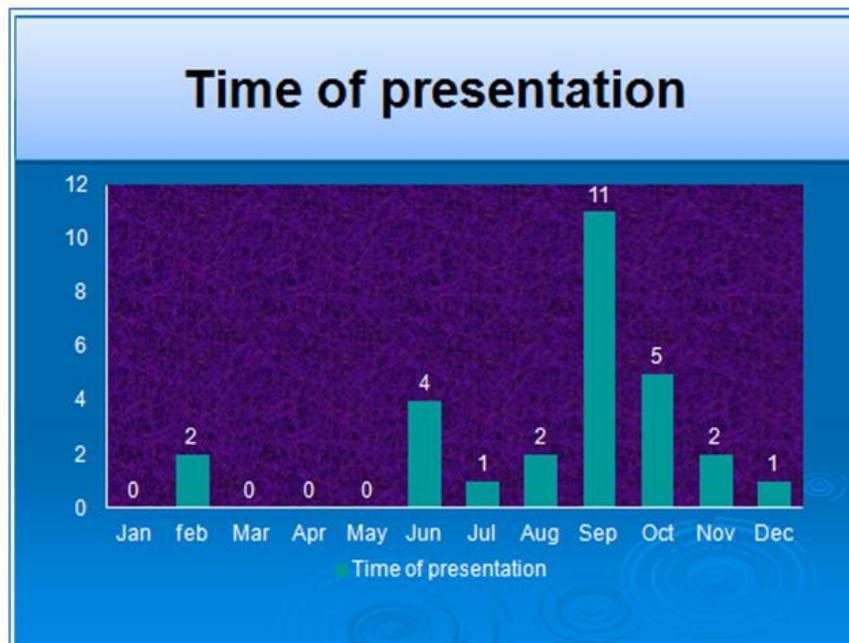
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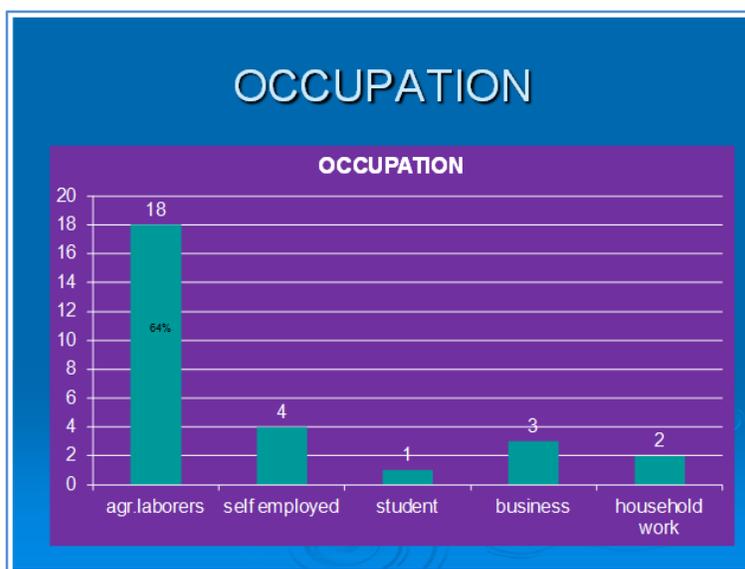
Clinical sign	No. of patients	Percentage
Eschar	48	85.71%
Rash	32	57.14%
Splenomegaly	14	25%
Hepatomegaly	6	10.71%
Jaundice	8	14.28%
Lymphadenopathy	14	25%
hypotension	4	7.14%

Table 2: Different clinical signs

Complications	No. of cases	Percentage
Thrombocytopenia	34	60.71%
Hepatic dysfunction	10	17.85%
Meningoencephalitis	5	8.93%
ARDS	4	7.14%
Cerebellitis	2	3.57%
Hypotension	4	7.14%
Pneumonia	3	5.35%
Other neurological manifestins	1	1.78%

Table 3: complications



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