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Original Article

Scrub typhus in a tertiary care hospital in the eastern part of Odisha

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ABSTRACT

Aim: Our hospital, tertiary care hospital in the capital of the State of Odisha, had been witnessing pyrexia of unknown origin, associated with breathlessness, renal and liver impairment, which did not respond to high antibiotics like Carbapenems but to Doxycycline therefore, the present study was undertaken to identify whether scrub typhus is the aetiological agent and thereafter their characteristic features were further evaluated as an effort in supporting its diagnoses and treating patients accordingly.

Methods: 150 Adult patients (age >12 yrs) admitted with pyrexia of unknown origin between April 2011 and October 2013, were evaluated. Weil Felix test was done in all these patients. Weil Felix positive samples were tested for Scrub Typhus IgM ELISA.

Results: Of the 150 patients included in the study 50 (33.33%) were found to be positive for IgM antibodies against *Orientia Tsutsugamushi*. The cases were seen mainly in the months between September and November. The common symptoms found were fever, myalgia, breathlessness, rash and abdominal pain and clouding of memory. The diagnostic features like eschar were found in 32% patients. Nearly two thirds of patients had fever >30 days and myalgia (62.5%), breathlessness (64%). Most common complications was ARDS (62.5%) followed by liver and renal failure (50%).

Conclusion: Our results showed that Scrub typhus should be considered in the differential diagnosis of POU associated with breathlessness, myalgia, rash, gastrointestinal symptoms, hepatorenal syndrome or ARDS. Empirical treatment with Doxycycline may be given in the cases with strong suspicion of Scrub typhus.

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1. Introduction

Scrub typhus, caused by Orientia (formerly Rickettsia) tsutsugamushi, is an acute infectious disease of variable severity that is transmitted to humans by an arthropod vector of the Trombiculidae family. "Tsutsuga" means small and dangerous and "mushi" means insect or mite. It affects people of all ages including children. Humans are accidental hosts in this zoonotic disease. While scrub typhus is confined geographically to the Asia Pacific region, a billion people are at risk and nearly a million cases are reported every year.[1] Scrub typhus was first described from Japan in 1899. It was a dreaded disease in pre-antibiotic era and a militarily important disease that affected thousands of soldiers in the far east during the second World War.[2]

The rickettsia is transmitted by bite from an infected mite to human, after which it grows at the location of the bite and a characteristic skin lesion known as an eschar is formed. The rickettsia then spreads systemically via the hematogenous and lymphatogenous routes. The infected human then develops various systemic symptoms and reactions including fever, rash, lymphadenopathy, elevations of C-Reacting Protein (CRP) and liver enzymes.[3] In India, scrub typhus broke out in an epidemic form in Assam and West Bengal during the Second World War. Later, the presence of this disease was found throughout India in humans, trombiculid mites and rodents.[4] The term "scrub" is used because of the type of vegetation (terrain between woods and clearings) that harbors the vector; however, the name is not entirely correct because certain endemic areas can also be sandy, semiarid and mountain deserts. The word "typhus" is derived from the Greek word "typhus", which means "fever with stupor" or smoke.[5]

Scrub typhus is a diagnostic dilemma because it has non specific presentations, limited awareness, low index of suspicious among clinicians and lack of diagnostic facilities.[6] *O. tsutsugamushi* is an obligatory intra-cellular gram negative bacterium, and is a Zoonotic disease. Man is accidentally infected when he encroaches the mite infected areas, known as the mite islands. These areas consist of areas with secondary scrub growth, which grows after the clearance of primary forest, and hence the term scrub typhus. However the infection can occur in disease habitats like sea shore, rice-fields and even semideserts.[7] If the diagnosis is delayed or patient is not treated with appropriate antibiotics, the scrub typhus can present with serious complications such as renal failure, mycocarditis, septic shock, meningitis.

Scrub Typhus broke out in an epidemic form in Assam and West Bengal during world war II. Outbreak of scrub typhus in southern India has been reported in 2003.[8] However cases in the state of Odisha has not been reported so far.

2. Materials & methods

150 Adult patients (age more than 12 yrs) admitted with pyrexia of unknown origin to our hospital which is a 350 bedded hospital between April 2011 and October 2013, were evaluated. Detailed clinical examination including careful search for eschar was made in all patients. Basic laboratory tests were done in these cases (complete blood count, peripheral smear, urine analysis, urea, creatinine, glucose, liver function tests). Additional investigations including blood culture, chest X-ray, Widal, rapid card test for malarial antigen, serology for leptospirosis and serology for dengue were also done in the majority of patients. In addition Weil Felix test was done in all these patients. Kit Progen, Proteus Antigen suspension for Weil Felix by Tulip Diagnostics was used. All Weil Felix positive samples were tested for Scrub Typhus IgM by InBios International Inc. Other investigations were done as indicated (USG abdomen, urine culture) to establish the cause of fever. Patients diagnosed to have scrub typhus on the basis of eschar and/or positive Weil Felix test were included in the study.

3. Results

50 patients were diagnosed to have scrub typhus during the study period of 2 and ½ years. The age ranged from 16 to 65 yrs. There were 17 females and 33 males. Most of the patients were from the nearby districts of Bhubaneswar. Maximum numbers were seen between April and October.

Table 1 shows the signs and symptoms in these 50 cases, Breathlessness, being the commonest (64%), other symptoms were headache (25%), diarrhea (35.7%), skin rash (50%), abdominal pain, nausea, vomiting was complained by 37.5% patients. Myalgia was seen in 62.5% patients. 12.5% patients presented with fever <7 days and same number of patients were admitted after 15–29 days of fever, whereas fever for 7–14 days was present in 37.5% patients. Common sign seen were pleural effusion (43%) hepatomegaly (27%) and splenomegaly (13%). Eschar was seen in 18 patients. Associated enteric fever was seen in 4/50 patients. Common sites of eschar was in lower abdomen and back region. Other sites involved were cheek, vulva and thigh region.

Table 2 shows the lab parameters in these patients. Total leucocyte count was raised in majority 50% of patients. Thrombocytopenia was seen in 19 patients (37.5%). SGOT & or SGPT were elevated in 87% patients. Raised bilirubin (≥1.2 mg/d) was found in 50% of patients and renal failure (Creatinine >1.5 mg/dl) was present in 53%. 50% patients had pleural effusion on admission. Hepatomegaly and splenomegaly was seen in 27% and 13% respectively. Widal test positive in 1: 360

Table 1 – Signs and symptoms.

Fever <7 days	12.5%
Fever 7–14 days	37.5%
Fever 15–29days	12.5%
Fever >30 days	62.5%
Myalgia	62.5%
Headache	25%
Cough	28.57%
Breathlessness	(64%)
Nausea	37.5%
Vomiting	37.5%
Abd. pain	37.5%
Diarrhea	35.7%
Skin rash	50%