

SCRUB TYPHUS IN CHILDREN: A CASE SERIES FROM A TERTIARY CARE HOSPITAL IN THE NORTH EAST OF INDIA

Received : 08/12/2023
Received in revised form : 11/02/2024
Accepted : 28/02/2024

Keywords:
Scrub typhus, Rickettsial diseases, North East, Doxycycline, Eschar.

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DOI: 10.47009/jamp.2024.6.1.411

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2024; 6 (1); 2076-2079



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Abstract

Scrub typhus is widespread across India and there is a resurgence of cases among tribal populations in the Northeast. This disease leads to notable illness and death. Recognizing scrub typhus early during febrile illnesses and promptly starting treatment helps prevent complications. Here, we discuss the clinical characteristics, clinical course and treatment of four scrub typhus cases admitted to our tertiary care hospital.

INTRODUCTION

Rickettsial infection or rickettsiosis is a zoonotic acute febrile illness caused by obligate intracellular, gram-negative bacteria from the genera Rickettsia, Orientia, Ehrlichia, Neorickettsia and Anaplasma.^[1] Scrub typhus is a life-threatening zoonosis caused by Orientia tsutsugamushi which was isolated in 1930. It is transmitted to human beings by the bite of a larval Leptotrombidium mite.^[2] The target cells are the endothelial cells, monocytes and other cell types, and the disease is associated with vasculitis and endothelial dysfunction. Illness varies from mild, self-limiting to fatal. After an incubation period of 6–21 days, onset is characterized by fever, rash, headache, myalgia, cough and lymphadenopathy. Less than 50% of patients develop an eschar and less than 40% develop a rash. It is endemic to a geographically distinct region, the so-called tsutsugamushi triangle, which includes Japan, Taiwan, China, and South Korea. In India, initial reports appeared in the 1930s and a large number of cases were identified among troops during World War II in Assam and West Bengal.^[3] Here we are going to report a case series of Scrub typhus admitted with fever, rashes and eschar in the Department of Pediatrics, Assam Medical College, Assam, India.

CASE 1

A Four year male child was presented to the OPD with complaints of fever for fifteen days, generalized swelling of the body for ten days. On examination child was alert, irritable and febrile. Eschar was present on right side of chest, bipedal edema and

genital swelling were noted, abdomen was distended with shifting dullness with no organomegaly, normal vesicular breath sounds were heard, cardiac and central nervous system examinations were normal. Hb 9.3g/dl, TLC 7800/cmm, Platelet count 1.5lakhs/cmm, PCV 30.4%, albumin 2.50g/dl, Alanine aminotransferase [ALT] 56U/L, Aspartate aminotransferase[AST] 84U/L, ALP 109U/L, urea 13.75mg/dl, creatinine-0.18mg/dl, Scrub typhus IGM ELISA was reactive. Chest X ray was suggestive of pneumonitis. The child was treated with inj ceftriaxone and inj Doxycycline. Patient became afebrile by third day of hospitalization, edema started decreasing, clinically improved and discharged.



Figure 1: Eschar over the right anterior part of the chest

CASE 02

A One year ten months old female child was admitted with history of fever and cough for five days, difficulty in breathing for one day. On examination child was febrile, irritable and found to have

tachypnea with subcostal retractions, SpO₂ in the room air was 90%. There were multiple petechiae over bilateral lower limbs. No eschar was seen. Breath sound was reduced on right side of the chest on auscultation, abdomen was distended with shifting dullness with palpable liver. The child was managed in PICU with inj Amoxyclav, NIMV mode of ventilation and other supportive measures. Platelet count on the day of admission was 11000 /cumm and platelets were transfused.

Hb 9.9g/dl, TLC--15200/cumm, Platelet count 11000/cmm, RFT, LFT and serum electrolytes were normal, CRP>9mg/dl, serum Scrub typhus IGM ELISA Reactive, chest x-ray suggestive of right sided pleural effusion, pleural fluid analysis showed total cell count more than 10000 cells/cumm, 90% polymorphs, pleural fluid protein 2.8gm/dl, Dengue Ig G and IgM antibody non-reactive, malaria test negative, gastric lavage for CBNAAT and AFB were negative, HIV, leptospira tests were negative.

The child was treated with Inj ceftriaxone initially. Inj Doxycycline was added with the suspicion of Scrub typhus. Vancomycin was added as per the report of pus culture and sensitivity. Patient was improved clinically after placing intercostal drain. Platelets counts increased gradually, child became symptom free and discharged on 28th day of hospitalization.

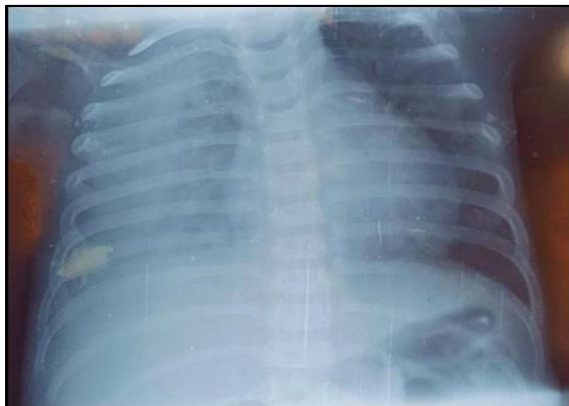


Figure 2: Right sided pleural effusion

CASE 3

A Two year old male child admitted with complaints of fever, excessive cry and irritability for seven days, generalized body swelling for seven days, difficulty in breathing for three days. On examination pallor, generalised body swelling, eschar over the posterior axillary region were noted. The child was found to have fever, tachypnea and subcostal retraction. The child was admitted in PICU and treated with inj Doxycycline, NIMV support and other supportive care.

Hb 7.1g/dl, TLC 3700/cumm, platelet count 60000/cumm, Albumin 1.93 g/dl, ALT -197U/L, AST – 454U/L, ALP-381U/L, CRP 5 mg/dl, scrub typhus IGM ELISA reactive, chest xray suggestive of military TB pattern, gastric lavage for CBNAAT was

positive for AFB, ELISA test for Dengue NS1 and IGM negative, malaria test negative. The child was started on ATT, improved gradually and discharged on ATT drugs.



Figure 3: Chest x ray showing bilateral miliary tuberculosis



Figure 4: Eschar over the posterior axillary region

CASE 4



Figure 5: Eschar over the right flank region

A Six year old male child admitted with complaints of fever and cough for seven days, abdominal pain and refusal to feed for five days. On examination the child was alert, conscious, febrile, vitals were normal, eschar was present over right flank region.

Hb 12.1 g/dl, TLC 6000/cumm, platelets counts 2 lakh /cumm, LFT, RFT were normal, USG of the

abdomen was normal, CRP 10 mg/dl, scrub typhus IGM ELISA reactive, chest xray normal, ELISA test for Dengue NS1 and IGM negative, malaria test negative. The patient was treated with inj Doxycycline and other supportive measures. The child became afebrile on 2nd day of hospitalization and discharged on 7th day of hospitalization.

Table 1: Summary of all the four Scrub typhus cases

Case number	Age in years	Clinical signs and symptoms	Complications	Treatment	Outcome
1	4	Fever, swelling of the body, eschar, edema, abdominal distension	Pneumonitis	Inj Doxycycline	Discharged
2	1.8	Fever, cough, difficulty in breathing, right sided pleural effusion, hepatomegaly	Right sided empyema thoracic, thrombocytopenia, prolonged PT, APTT, INR	Inj ceftriaxone Inj Doxycycline Inj Vancomycin	Discharged
3	2	Fever, excessive cry, irritability, body swelling, difficulty in breathing, pallor, tachypnea, eschar	Anemia, elevated transaminases, thrombocytopenia, prolonged PT APTT, INR	Inj Doxycycline ATT	Discharged
4	6	Fever, cough, abdominal pain, refusal to feed, eschar	Nil	Inj Doxycycline	Discharged

[ATT- Antitubercular therapy, PT-Prothrombin time, APTT- Activated partial thromboplastin time, INR- International normalized ratio]

Table 2: Lab parameters of all the four scrub typhus cases at the time of admission

Case number	Age In years	Serum transaminases [AST,ALT]	Platelet counts	WBC count	Serum Sodium	Serum Albumin	Coagulation profile
1	4	Mildly elevated	Normal	Normal	Normal	Reduced	Normal
2	1.8	Normal	Reduced	Increased	Reduced	Reduced	Prolonged
3	2	Elevated	Reduced	Reduced	Reduced	Reduced	Prolonged
4	6	Normal	Normal	Normal	Normal	Normal	Normal

[WBC- White blood cells]

DISCUSSION

Rickettsial disease is a zoonotic infection with acute febrile illness. It belongs to genus Rickettsia within family Rickettsiaceae which is an obligate intracellular pleomorphic gram-negative coccobacillus. The disease has been the most reemerging diseases and have been reported in many states and union territory in India. It is seen in both rural and urban populations. It is easily treatable when diagnosed early, but can cause significant morbidity and mortality when left untreated. India being in the part of famous Tsutsugamushi Triangle, entire India is endemic for scrub typhus. Scrub typhus is the most prevalent rickettsial infection in India which is followed by Indian tick typhus followed by murine typhus.^[4] In recent years, there has been a resurgence of scrub typhus cases in the predominantly rural tribal population of Northeast India, a mountainous region. Its prevalence is influenced by a range of ecological factors such as rodent populations, habitat characteristics and climatic conditions.^[5] In our case series, all the cases are from hilly, forested regions of neighbouring state Arunachal Pradesh. Seroprevalence of scrub typhus in seven districts of Arunachal Pradesh was found to be 40% (120/300). The age-specific scrub typhus seroprevalence rose steadily from 5.6% in children

<10 years of age to 61.8% in persons aged \geq 40 years (p = 0.0001).^[6]

Incubation period of Scrub typhus is 1–2 weeks, it is seasonal in many parts of India. Eschar is the pathognomonic sign of scrub typhus (seen in 7–97% cases). Raised liver enzymes (transaminases), thrombocytopenia, leukopenia or normal white blood cell (WBC), neutropenia, hyponatremia, hypoalbuminemia can be seen. Scrub typhus serology tests are positive after 1 week of illness. Immunoglobulin M (IgM) enzyme-linked immunosorbent assay (ELISA) has high sensitivity and high specificity. Immunofluorescence antibody (IFA) is the gold standard.^[4]

In our scrub typhus cases, eschar was seen in 3 cases, transaminases were elevated in 2 cases, thrombocytopenia was seen 2 cases, sodium level was reduced in 2 cases, albumin was reduced in 3 cases and prolonged PT, APTT and INR was seen in 2 cases.

The complications of scrub typhus are acute respiratory distress syndrome, pneumonitis, pulmonary edema, myocarditis, toxic shock-like illness, congestive heart failure, pericarditis, meningoencephalitis, sensorineural hearing loss, hepatitis and liver failure, oral ulcer and GI bleeding, renal failure, hemolytic uremic-like syndrome, purpura fulminans, gangrene, disseminated intravascular coagulation, hemophagocytic

lymphohistiocytosis. In our cases, all the patients were screened for the sensorineural hearing loss before discharge.^[4]

Treatment should be started without waiting for laboratory confirmation. Doxycycline is the drug of choice (Oral or intravenous), Dose is 2.2 mg/kg twice daily [<40kg] and 100 mg twice daily [>40kg] can be given for total of 7 days or 3 days after fever subsides or 10 days in complicated or severe cases.^[4]

CONCLUSION

India being in the part of famous Tsutsugamushi Triangle, entire India is endemic for scrub typhus. The presenting features are non-specific. Hence diagnosis is based on a high index of clinical suspicion. The children presenting with fever of no focus, rashes eschar should be suspected for scrub typhus. Scrub typhus is easily treatable when diagnosed early and helps in reducing patient morbidity and mortality.

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