



PARAPARESIS : RARE NEUROLOGICAL MANIFESTATION OF SCRUB TYPHUS

Accountancy

Dr. Hriday Rathod*	Postgraduate Resident, Department Of General Medicine, Ananta Institute Of Medical Sciences And Research Centre, Rajsamand, Rajasthan. *Corresponding Author
Dr. Anisha Gupta	Senior Resident, Department Of General Medicine, Ananta Institute Of Medical Sciences And Research Centre, Rajsamand, Rajasthan.
Dr. Ravishankar S. N	Professor, Department Of General Medicine, Ananta Institute Of Medical Sciences And Research Centre, Rajsamand, Rajasthan.
Dr. Sunil Dutt Upadhya	Consultant, Department Of General Medicine, Ananta Institute Of Medical Sciences And Research Centre, Rajsamand, Rajasthan.

ABSTRACT

Scrub typhus is a vector-borne disease caused by gram-negative bacilli, *Orientia tsutsugamushi*, which is transmitted to humans through infected chigger mites. It transmitted to human through bite, proliferate at bite site and characteristic lesion is known as Eschar. Manifestation of Scrub typhus is varying from simple fever to life threatening complication. Neurological manifestation is also in wide variety. Here we report a case 46 years old male presented with complains of fever, vertigo, vomiting, shortness of breath and bilateral lower limb numbness with weakness while climbing the stairs from last 10 days and diagnosed as Scrub typhus IgM positive with Paraparesis. In this patient trial of short course of steroid has shown beneficial effect in our patient.

KEYWORDS

Tropical fever, Scrub typhus, *Orientia tsutsugamushi*, Neurological manifestation, Paraparesis, Steroid.

INTRODUCTION

Scrub typhus, also called bush typhus, is one of the common causes of tropical fever. It is caused by *Orientia tsutsugamushi*, a highly virulent gram – negative coccobacillus, and transmitted to humans by the bite of the larval trombiculid mite. The disease is transmitted by the bite of the larva, and the larva (chigger) is the only stage that can transmit the disease. Clinical features of disease usually begins within 10 days of being bitten by an infected chigger. The sign and symptoms are fever with chills, headache, body aches, muscle pain, rash, enlarged lymph nodes, eschar, altered mental status, liver dysfunction, acute kidney injury, etc. Eschar is a painless, punched – out ulcer up to 1 cm width with a black necrotic center surrounded by an erythematous margin. It can be diagnosed by serological tests, Polymerase chain reaction (PCR) and eschar biopsy.⁽¹⁾ In India, studies have shown the endemic nature of scrub typhus in many states and union territories. The first reported cases were from Himachal Pradesh. Scrub typhus is an important cause of acute febrile illness in India. Case fatality rate may be as high as 30% if left untreated. Scrub typhus is grossly underdiagnosed in India due to its nonspecific clinical presentation, limited awareness, and low index of suspicion among clinicians and lack of diagnostic facilities. Infection manifests clinically as a nonspecific febrile illness often accompanied by headache, myalgia, nausea, vomiting, diarrhea, and breathlessness and ranges to severe multi organ dysfunction.⁽²⁾ Neurological features accompany 20% of scrub typhus infections, and may affect the central or peripheral nervous system. Multiple mechanisms underlie neurological involvement, including direct invasion (meningitis, encephalitis), vasculitis (myositis) or immune-mediated mechanisms (opsoclonus, myoclonus, optic neuritis, Guillain–Barre syndrome).⁽³⁾ Neurological manifestations of scrub typhus are common may also occur due to combination of above mention mechanism which is triggered by infection. Neurological manifestations of scrub typhus are meningitis, meningoencephalitis, encephalitis, cranial nerve involvement, stroke, cerebral vein thrombosis, cerebellitis, isolated 6th and 7th cranial palsy, delirium, trigeminal neuralgia, opsoclonus, myoclonus, polyneuropathy, Guillain Barre syndrome, Parkinsonism (transient), acute disseminated encephalomyelitis (ADEM), and brachial plexopathy.⁽⁴⁾ Meningoencephalitis is the most common presentation of the central nervous system.⁽⁵⁾ In our patient who diagnosed as scrub typhus with paraparesis as short steroid trial was given and patient improved totally in sensory and motor deficit.

Case Study

A 42 years old male patient presented with chief complains of fever with chills, shortness of breath, weakness, vertigo and bilateral lower limb tingling and numbness sensation from last 10 – 12 days along

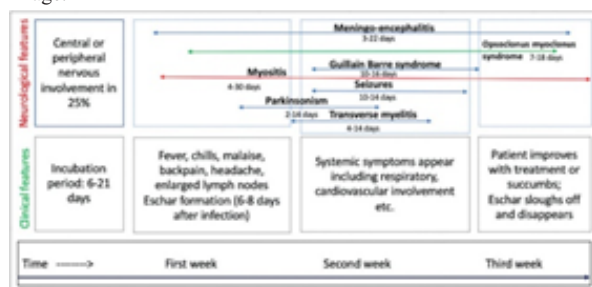
with decrease in urine output associated with gradually progressive bilateral lower limb swelling from 4 – 5 days. Patient treated with injectable antibiotics, IV fluids and symptomatic management from other hospital and referred to higher center for further management. Patient received in our hospital emergency with O₂ and inotrope support. On examination bilateral basal crepitation present with impaired sensation in bilateral lower limb, power 4/5 and DTR present. No notable past history and no any chronic illness. Outside report Hb – 12.9; WBC – 23,290; platelets – 30,000; creatinine – 2.26. So, primary impression for patient is AFI with sepsis; septic shock and AKI with Paraparesis. All routine investigations were sent including tropical fever profile and CSF complete examination. Patient was admitted in ICU and managed appropriately with antibiotics (Doxycycline & renal safe dose of Piperacillin tazobactam), Injection Dexamethasone and supportive management. Patient was diagnosed with Scrub typhus IgM positive. CSF cytology WBC 10 (Neutrophils 70%, Lymphocyte 30 %), RBC – 8 ; protein – 46; sugar – 87; C/S – no growth. Patient evaluated and treated with above mention antibiotics and steroid trial was also given. Patient spontaneously improved in sensory and motor component totally. (image 2)





DISCUSSION :-

Scrub typhus is a severe zoonotic ailment affecting nearly one billion people in endemic areas, resulting in one million new cases diagnosed yearly.⁽⁴⁾ Scrub typhus infection is caused by *Orientia tsutsugamushi* and is transmitted by trombiculid mites. It remains an important differential diagnosis of acute undifferentiated febrile illness in the tropical and subtropical regions. The classical manifestations of rickettsial infections are nonspecific febrile illness accompanied by headache, myalgia, eschar, lymphadenopathy, multisystem involvement, and a rapid response to doxycycline.⁽⁵⁾ The CSF studies of patients with scrub typhus had revealed mild to moderate pleocytosis (mainly mononuclear), normal glucose level and mild increase in protein. Presence of erythrocyte in CSF due to generalized vasculitis. The CSF examination in patients with scrub typhus with neurological involvement can mimic subacute meningitis like tubercular meningitis and viral meningitis.⁽⁶⁾ Timelines of evolution of neurological manifestations in scrub typhus is described in below image.⁽³⁾



Nervous system involvement is a common complication of scrub typhus infection. *Orientia tsutsugamushi* enters the CNS by invasion of endothelial cells in blood vessels. Cytokines released by acutely inflamed vascular endothelial cells secondary to invasion in blood vessels damage endothelial integrity causing fluid leakage. There is localized platelet aggregation, polymorphs, and monocyte proliferation, leading to angiitis. CNS involvement is a known complication of scrub typhus which ranges from aseptic meningitis to frank meningoencephalitis. Many studies in India and in other countries found that meningoencephalitis is a most common neurological complication of scrub typhus.⁽²⁾ A study done by Rana et al. found that the most common neurological manifestation was meningoencephalitis (40%).⁽⁷⁾

CONCLUSIONS

Scrub typhus has multi system involvement including Central Nervous System involvement. Scrub typhus may present with wide variety of Neurological complications. Knowledge of this type of rare manifestations will enable clinician for differential diagnosis of Scrub typhus for acute febrile illness with neurological involvement. Paraparesis is rare neurological manifestation of Scrub typhus. Documenting spontaneous recovery with timely diagnosis and proper treatment with trial of short course of steroid. The message we want to convey is that the treating physician should be aware of these type of rare complication, so timely diagnosed and proper treatment is more beneficial to patient before it lands up in deteriorating complication.

REFERENCES:

- (1.) Marin H. Kollef, Warren Isakow, A. Cole Burks, Vladimir Despotovic, Dalim Kumar Baidya, Hemanshu Prabhakar. The Washington Manual of Critical Care South Asian Edition.
- (2.) Vijay Sardana, Prashant Shringi. Neurological Manifestations of Scrub Typhus: A Case Series from Tertiary Care Hospital in Southern East Rajasthan. *Annals of Indian Academy of Neurology*, Volume 23, Issue 6, November-December 2020 page 808 – 811.
- (3.) Divyani Garg, Abi Manesh. Neurological Facets of Scrub Typhus: A Comprehensive Narrative Review. *Annals of Indian Academy of Neurology*, Volume 24, Issue 6, November-December 2021. Page 849 – 864.
- (4.) Sai Sri Venkata Yeshwanth Damalapati, Raghavendra Deshpande, Narayana S. Moola, Rakesh H. Jadhav, Sunil Havannavar. Rickettsial Cerebellitis: A Rare Neurological Manifestation. 2023 Damalapati et al. *Cureus* 15(8): e42901. DOI 10.7759/cureus.42901.
- (5.) Atul Phillips, Gautam Rai Aggarwal, Vishal Mittal, Gurpreet Singh. Central and Peripheral Nervous System Involvement in a Patient with Scrub Infection. *Annals of Indian Academy of Neurology*, Volume 21, Issue 4, October-December 2018, page 318 – 321.
- (6.) Sanjay K Mahajan, Sanyam K Mahajan. Neuropsychiatric manifestations of Scrub typhus. *Journal of Neurosciences in Rural Practice*. 2017 Jul – Sep; 8 (3) : 421 – 426.
- (7.) Rana A, Mahajan SK, Sharma A, Sharma S, Verma BS, Sharma A. Neurological manifestations of scrub typhus in adults. *Trop Doctor* 1-4. doi: 10.1177/0049475516636543.