A RARE PRESENTATION OF SCRUB TYPHUS AS ADEM

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ABSTRACT

BACKGROUND

A young male presented with fever, chills, neck rigidity, unsteadiness and abdominal pain. Patient had signs of chorea (hung-up reflex, exaggerated abdominal reflex), signs of meningoencephalitis (Kernig's positive, opsoelonus) generalised lymphadenopathy (involving cervical, inguinal & axillary regions)-tender & matted, eschar in right inguinal region, left UMN type of facial nerve palsy, signs of pyramidal tract (exaggerated deep tendon reflexes, right plantar extensor), signs of extrapyramidal tract (cog-wheel rigidity) and signs of cerebellar signs (hypotonia & stance and gait ataxia) were present bilaterally giving a picture of Acute Disseminated Encephalomyelitis (ADEM). ELISA for scrub typhus IgM was positive after ruling out malaria, dengue, leptospirosis, bacterial, viral and TB meningitis. ADEM is most rare and deadly presentation of Scrub typhus.

KEYWORDS

Scrub Typhus, Trombiculid Mite, Opsoelonus, ADEM.

HOW TO CITE THIS ARTICLE: Rajesekar D, Abitha V, Ameen N. A rare presentation of scrub typhus as ADEM. J. Evolution Med. Dent. Sci. 2017;6(26): 2211-2212, DOI: 10.14260/jemds/2017/477

BACKGROUND

Scrub typhus is an acute febrile illness caused by *Orientia tsutsugamushi*, an obligate intracellular Gram-negative bacterium and spread by transovarial transmission in trombiculid mites. They usually feed on rats, their reservoir hosts. These happen to infest humans by accident, when they come in contact with mite-infested scrub vegetation during the wet season.¹ Scrub typhus is also commonly reported from various parts of southern India.¹ The symptoms commonly seen are fever, headache, myalgia, nausea and vomiting, rash, jaundice, adenopathy, etc. Identification of the eschar, at the site of the larval feed has the most important diagnostic role in the disease and is not easy to find in dark skinned people. The primary site of attack are the vascular endothelial cells² leading to pathogenesis of multiple organ damage. Complications usually develop after the first week of the disease, like acute renal failure, hepatitis, disseminated intravascular, adult respiratory distress syndrome, multiorgan dysfunction, and so on. Many neurological manifestations like meningitis,² encephalomyelitis,³ demyelination,⁴ meningoencephalitis⁵, etc, have also been reported. Here we have a rare presentation of Scrub typhus as ADEM (Acute Disseminated Encephalomyelitis).

Case Study

Patient came with complaints of high grade fever with chills, vomiting since 1 week and abdominal pain and generalised weakness and unsteadiness. Patient was crying and restless. On examination, patient was conscious, disturbed, afebrile, pulse rate-73, BP- 110/80, capillary blood glucose-80 mg/dL,

SPO₂- 97%, episcleritis seen, opsoelonus present, generalised lymphadenopathy (cervical/inguinal/axillary)-tender and matted, eschar in right inguinal region seen, central nervous system - emotional liability present, left upper motor neuron type of facial nerve palsy, exaggerated deep tendon reflexes, exaggerated abdominal reflex, right plantar extensor, cog-wheel rigidity and stance and gait ataxia were present. Bilateral cerebellar signs dysmetria and heel-shin test and dysidiadochokinesia were positive, bilateral hypotonia present in upper and lower limbs, sensory system was intact, bowel and bladder- not involved. Investigations showed haemoglobin-15.8, PCV-49, Leucocytosis (20,100), neutropenia (18.3), lymphocytosis (70%), monocytosis (11%), platelets-1.94 cells/cu.mm, renal parameters and electrolytes were normal; liver enzymes elevated (AST-89, ALT- 74, LDH - 598). Chest X-ray showed increased bronchovascular markings. Urine culture & blood culture - no growth, HIV - nonreactive, HbsAg - negative, HCV-Nonreactive, serum procalcitonin - positive (>0.54 ng/mL), dengue IgM & IgG & NS1 antigen-negative, Lepto IgM - negative. Smear MP & MF - negative. Scrub typhus (ELISA) IgM -Reactive. CSF study: proteins- 146.3 mg/dL, glucose- 45 mg/dL, chloride- 114 mEq/L, TC- 50 cells. Patient was started with doxycycline 100 mg twice daily and all manifestations disappeared gradually.

DISCUSSION

Scrub typhus is most common in wet season (October to February)⁵ in India and the eschar will usually be seen in moist regions like groin, axilla, loin, etc. Meningoencephalitis with altered liver enzymes should raise suspicion for Scrub typhus especially after ruling out TB Meningitis. Presence of eschar may give a clue to diagnosis, common sites of eschar in female are chest (inframammary region) and abdomen and common sites in male are axilla, groin and genitalia; other unusual sites are cheek, ear lobe and dorsum of feet.⁶ But it is present in only 20-30 [percent] and usually goes unnoticed in dark skinned people. It can mimic TB meningitis and starting anti-tubercular treatment can worsen liver functions. Laboratory tests and other investigations that help diagnosis are Scrub IgM and IgG, Indirect Immunofluorescence test,

Financial or Other, Competing Interest: None.

Submission 13-02-2017, Peer Review 09-03-2017,

Acceptance 25-03-2017, Published 30-03-2017.

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DOI: 10.14260/jemds/2017/477

PCR of specific genomic type, MRI brain in some studies showed diffuse cerebral oedema along with T2 weighted and FLAIR images of hyperintensities in regions of putamen and thalamus.⁷⁻⁸ The triad of features of fever, lymphadenopathy and eschar should raise a suspicion of Scrub typhus especially during the season.⁹ We should look out for other complications like acute kidney injury,⁷ septic shock,¹⁰ respiratory failure¹¹ and Guillain-Barre Syndrome.¹¹ GBS secondary to scrub typhus is suspected to be due to a phenomenon called molecular mimicry, which is cross reactivity between the host's myelin cells or peripheral nerve axons with *O. tsutsugamushi* antibody or antigens presented on infected cells. Both the host and the pathogen trigger the receptors on T or B lymphocyte to activate this reaction. It is confirmed by GD1b and GM1 IgM anti-glucoside antibodies in serum.¹¹ This might as well apply to any neurological tissue involved.

CONCLUSION

Early diagnosis and treatment with doxycycline is necessary to prevent life threatening complications (Doxycycline 100 milligrams twice daily for 7 days). Studies also report azithromycin as an efficient alternative to doxycycline¹² in patients who are unable to tolerate or in pregnant women - where it is contraindicated, in children less than 8 years or in doxycycline-resistant Scrub typhus prevalent areas.¹²

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