A case of scrub typhus with acute myelitis
MANOJ KUMAR
Department of General Medicine,
KILPAUK MEDICAL COLLEGE AND HOSPITAL

Abstract:
We describe a rare case of acute myelitis with scrub typhus. This acute febrile illness caused by orientia tsutsugamushi constitutes focal or disseminated vasculitis caused by the destruction of endothelial cells and the perivascular infiltration of leucocytes. The diagnosis of scrub typhus is based on the patient’s history of exposure, clinical features, and results of serologic testing. Our case indicates that Orientia tsutsugamushi can invade spinal cord. A high degree of clinical suspicion of scrub typhus allow early diagnosis and timely initiation of appropriate therapy, and thereby may help reduce patient morbidity and mortality.

Keyword: scrub typhus, eschar, acute renal failure, acute myelitis, paraplegia, interstitial pneumonia.

INTRODUCTION:
Scrub typhus caused by orientia tsutsugamushi is an endemic disease occurring throughout the far east, northern Australia, and the Indian subcontinent. Eschar and rash are key clues for early diagnosis, severe complications such as pneumonia, meningitis/encephalitis, myelitis, septic shock, myocarditis, and acute renal failure can lead to death. The case fatality rate for untreated cases varies from 3% to 60%. Orientia tsutsugamushi has more than 20 antigenitically distinct regionally distributed serotypes. Laboratory markers such as increased transaminases, hypoalbuminemia, leukocytosis, and elevated serum creatinine have been reported to be associated with the disease activity.

CASE REPORT:
A 21 yr old young man from Thiruverkadu was admitted with complaints of fever; abdominal pain; vomiting for 5 days. Reduced urine output with pain in the abdomen while passing urine for 3 days. No relevant past medical history.

On admission Patient was conscious; oriented & febrile. Pallor and icterus were present; there was left axillary lymph node enlargement; there was no cyanosis;clubbing or pitting pedal oedema An ESCHAR was present on extensor aspect of left forearm. His temperature was 101 f ; PR : 104 bpm ; BP : 110/70 mm of Hg ; RR : 14/min. Cardiovascular system: normal S1S2 heard, no murmurs. Respiratory system: normal vesicular breath sounds; no added sounds.

Abdominal system: soft , diffuse tenderness present, hepatosplenomegaly present.
Central nervous system: no abnormality detected.

INVESTIGATIONS:
CBC: TC -3400 cells/cu.mm;DC - PMN-53%, L-45%, E-2%, Hb -13gm/dl; Platelets 66000cells/cumm
RFT: Sugar -62mg%, Urea -88mg%, Creatinine-3.3mg%, Serum.Na+: 138 meq/L, Serum.k+: 5meq/L
LFT : Serum bilirubin; 6.45mg% ( direct:4.03,indirect:2.42)
SGOT:227 U/L; SGPT:170 U/L; GGT:42 U/L; ALP:81 U/L
Serum proiens: 5.1 gm/dl ( albumin:2.3 , globulin: 2.8 )
Malarial Parasites, MSAT for leptospirosis, HBsAg, Anti HCV, HIV 1&2,Dengue IgM Ab: Negative
Blood culture : no growth

IgM Ab for scrub typhus: POSITIVE

ESCHAR – Left forearm ( Fig no.1 )
Fig no.1 showing an eschar.
With these investigations and an eschar over the left forearm with left axillary lymphadenopathy , we came at a provisional diagnosis of SCRUB TYPHUS.

COURSE OF ILLNESS:
During the course of illness his renal parameters were raising and also his liver enzymes. He was started on Cap.doxycline 100mg BD, but since he had no improvement, T.Azithromycin 500mg OD was started with other supportive measures. On day 4 of admission he developed respiratory distress. He also developed paraplegia the next day. He was investigated further.
CT CHEST showed consolidations with b/l pleural effusion. MRI SPINE showed cord expansion at cervical and thoracic levels with effacement of subarachnoid space. He was started on intravenous methylprednisolone under antibiotic coverage. He made a gradual recovery in few days with good improvement of power in lower limbs and dyspnoea. His renal and liver parameters also reverted to normal with conservative management.

Acute transverse myelitis has also been reported recently (16). It has been suggested that Orientia tsutsugamushi induces a type 1 immune response, associated with elevation of interferon alpha, IL-18 and IL-15 levels (6). Plasmodium falciparum malaria, dengue fever and some spotted fever rickettsiosis are associated with cytokine-induced systemic endothelial activation (7-9). During the initial inflammatory response to infections, early response cytokines (tumour necrosis factor-alpha, interleukin (IL)-1beta and IL-6) up-regulate cellular adhesion molecules (CAMs) on the surface of host leucocytes and endothelial cells (EC), which co-ordinate leucocyte transmigration across the endothelium (10). The selectins mediate initial leucocyte contact with EC, capturing cells from the blood stream, followed by characteristic rolling and firm tethering to the endothelium. This requires higher-affinity leucocyte integrins binding to members of the immunoglobulin (Ig) superfamily, intercellular adhesion molecule-1 (ICAM-1) and vascular adhesion molecule-1 (VCAM-1), which are expressed on activated EC, enabling subsequent leucocyte diapedesis (11). If a combination of elevated transaminases, thrombocytopenia & leucocytosis is used, the specificity & positive predictive value for diagnosis of scrub typhus are about 80%(15).

CONCLUSION:
Scrub typhus is an important cause of acute undifferentiated febrile illnesses in the Indian subcontinent. Delay in diagnosis and in the initiation of appropriate treatment can result in severe complications such as ARDS,meningoencephalitis, acute myelitis, septic shock and multisystem organ failure culminating to death. But early diagnosis and effective management by easily available antibiotic like Doxycycline can result in favourable outcome.

BIBLIOGRAPHY:

DISCUSSION:
Scrub typhus, also known as tsutsugamushi disease,is a zoonosis that is endemic in the asia-pacific region and carries a significant morbidity and mortality. Orientia tsutsugamushi differs from rickettsia species both genetically and in terms of cell wall composition ( ie.,it lacks liposaccharide ). It is maintained by transovarian transmission in trombiculid mites. Infected larval mites ( chiggers) are found particularity in areas of heavy scrub vegetations during the wet season, when mites lay eggs(1). Recent reports from several parts of India, including South India, indicate that there is a resurgence of scrub typhus. (12-14). The illness varies from mild and self-limiting to fatal. After an incubation period of 6-21 days, onset is characterized by fever, headache, myalgia, cough, and gastrointestinal symptoms. The classic case description includes an eschar where the chigger has fed, regional lymphadenopathy, and a maculopapular rash. Eschar develops in about 50% and fewer than 40% develop maculopapular rash. The case fatality rate for untreated classic cases is 7%(1).

Recent studies suggest that rickettsioses account for 20-35% of undifferentiated fevers in south-east Asian adults, with scrub typhus being the most important (2,3). The clinical manifestation of scrub typhus is nonspecific unless an eschar and regional lymphadenopathy are present. The diagnosis is usually based on the history, clinical course of illness and serological test (3,4). The severecomplications include interstitial pneumonia, acute respiratory distress syndrome, acute renal failure, acute gastro intestinal haemorrhage, meningoencephalitis, disseminated intravascular coagulation(5).

CT CHEST – B/L Intersitial pneumonia( Fig no.2)
Fig no.2 showing consolidations with B/L pleural effusion

MRI SPINE- Myelitis ( Fig no.3 )
Fig no.3 showing expanded cord at C5-C6 & D2 to conus with effacement of subarachnoid space

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University Journal of Medicine and Medical Specialties
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