Leptospira and Scrub typhus co-infection: An unusual presentation with delirium

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Abstract—*Leptospirosis and scrub typhus are zoonotic diseases with worldwide distribution. The spectra of clinical severity are wide for both diseases, ranging from mild to fatal. A diagnosis of co-infection with leptospirosis and scrub typhus can be difficult to make if the exposure history is overlooked but patients can die if not treated early. Here this case is with unusual presentation with co-infection of Leptospira and Scrub typhus, which was successfully treated.*

Keywords*: **Leptospirosis, Scrub Typhus, Zoonosis.***

I. INTRODUCTION

Leptospira and Scrub typhus both are zoonotic diseases. Scrub typhus is a rickettsiosis caused by Orientiatsutsugamushi. It is transmitted by a chigger bite.[1] Leptospirosis is also a zoonosis with global distribution. It is caused by infection with pathogenic spirochetes of the genus Leptospira. Human infection follows from exposure to infected animals, either directly or indirectly through contaminated soil and water,[2] hile leptospira has a worldwide occurrence; Scrub typhus is limited to Asia-pacific region. Both the diseases are associated with farming and rainfall. Both these infectious diseases have a wide spectrum of clinical presentation from asymptomatic to potentially fatal disease. The co-infection with Leptospira and Scrub typhus can easily be overlooked and failure to diagnose the co-infection may lead to adverse outcome.

As this is a rare case of co-infection of Leptospira and Scrub typhus, so the case was thoroughly evaluated and a case report was prepared to publish.

II. METHODOLOGY

A rare case of co-infection of Leptospira and Scrub typhus, attended at Medicine department of Bhagat Phool Singh Government Medical College for Women (Haryana) India. As it is a rare case so evaluated thoroughly to prepare a detailed case report to publish?

III. CASE REPORT

A 48 years old female patient from a north Indian village presents with complaint of fever from 15 days and altered sensorium from 2 days. Fever was insidious in onset, moderate to high grade, intermittent, associated with chills and rigors and relieved on taking antipyretics. It was also associated with headache myalgias, nausea and loss of appetite. It was not associated with cough, sore throat, shortness of breath or chest pain There was no history of burning micturation decreased urine output, pain abdomen, altered bowel or bladder habit, yellowish discoloration of skin and eyes bluish discoloration

of skin, toes or nails, photophobia, skin rashes, joint pains or bleeding from any site or recent travel to endemic areas. Patient developed altered sensorium 2 days back, 1 3 days after onset of fever. It was sudden onset, rapidly progressive and was characterized by irrelevant talk, excessive irritable behavior, and inability to recognize relatives and was associated with multiple episodes of vomiting, headache, blurring of vision. There was no history of seizures, urinary or bowel incontinence, decreased movements of any half of the body. Physical examination revealed that patient was conscious but confused and disoriented to time, place and person. Patient was febrile with temperature of 101 F. Her pulse rate was 110/min and respiratory rate was 24 per minute. There was bilateral conjunctival congestion. On CNS examination, patient was confused and irritable. Planters were bilaterally extensor and convergent squint was present. Deep tendon reflexes were brisk. Kernig's sign and neck rigidity were present. Mild non tender hepatomegaly and mild splenomegaly were present.

On the basis of clinical findings, differential diagnosis of complicated malaria, enteric fever with meningism, meningitis, leptospirosis and scrub typhus were considered and patient investigated accordingly. Investigations revealed increased leucocytes, low platelet count, low hemoglobin and increased liver enzymes. Peripheral blood film for malaria parasite and malaria antigen card test was negative. Widal test was negative and blood culture was sterile. CSF examination showed proteins 125 mg% and 22cells/cm all of which are lymphocytes. Chest skiagram had increased interstitial infiltrates and arterial blood gas analysis showed low po2 with po2 /fio2 ratio of 270 suggestive of acute lung injury. LeptospiraIgM antibody titre was 62.00 U/ml (>20 is positive).

On the basis of clinical features and investigations, a diagnosis of severe leptospirosis with MODS was made. Modified Faine's criteria score in this patient was 48.Patient was treated with intravenous artesunate, cefotaxim, mannitol, and fluids but patient continued to remain febrile and there was no improvement.

On further investigation IgM antibody for scrub typhus was positive. Psychiatry consultation was taken for his confused state, intravenous haloperidol 1.25 mg stat followed by tablet haloperidol 0.5 mg twice a day for 3 days given along with considering it to be a possible co-infection, Doxycycline was added to treatment. This was followed by rapid clinical improvement with patient becoming conscious, oriented and afebrile. Convergent squint and meningeal signs disappeared. There was clearance of interstitial infiltrates in chest skiagram and improvement in hypoxia.

IV. DISCUSSION

Scrub typhus and leptospirosis are common, serious infections that can be fatal if not treated early. Intravenous penicillin and cefotaxim are the recommended drugs for treatment of severe leptospirosis[3], while doxycycline is recommended for scrub typhus[4]. The new generation of fluoroquinolones is a reasonable alternative for treatment of scrub typhus. Glucocorticoids have a range of anti-inflammatory actions. Treatment with antibiotics and adjunctive glucocorticoids for severe leptospirosis has been attempted. Leptospires enter the human body through cuts and abrasions after direct or indirect contact with the urine or tissue of infected animals[1]. Scrub typhus, a rickettsiosis caused by *Orientiatsutsugamushi*, is transmitted by a chigger bite. The eschar at the site of the mite bite provides access for leptospires invading the human body, allowing them to cause serious infection. A prospective study conducted in Thailand showed that 9 of 22 Thai farm workers hospitalized with leptospirosis were coinfected with scrub typhus[5]. This findings is not surprising, however, as both diseases are prevalent in

the rice fields in which these individuals work. Further study is needed to clarify whether this apparently rare co-infection is actually more common but under -diagnosed due to lack of clinical suspicion.

The clinical manifestations of leptospirosis and scrub typhus can be nonspecific and both diseases can cause fever, headache, skin rash, myalgia and conjunctival suffusion. In severe cases as shown in index case, both diseases evolve, eventually leading to multiple organ dysfunctions, including pneumonitis, encephalitis, myocarditis, acute renal failure, hepatitis, and disseminated intravascular coagulation[6-10]. Occupational or recreational activities can expose individuals to both illnesses. Both illnesses are potentially fatal if not treated early. Physicians in endemic areas should, therefore, be vigilant for the possibility of dual infection and start treatment early if exposure history is highly suggestive of either leptospirosis or scrub typhus. It is also necessary to consult the psychiatrist when there is possibility of delirious state to prevent cognitive dysfunction as a sequel of this fatal co-infection.

V. CONCLUSION

This was concluded from this study that whenever presents with complaint of fever with altered sensorium, Leptospiriasis and Scrub typhus should also be included in differential diagnosis. Such patients should also investigate in line of Leptospiriasis and Scrub typhus. There may be co infection of both. When there is altered sensorium psychiatrist reference is must to prevent cognitive dysfunction as a sequel of this fatal co-infection. So cases with fever and altered sensorium may be treated accordingly, otherwise they may remain undiagnosed and may be fatal.

CONFLICT OF INTEREST

None declared till now.

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