CASE REPORT ON PRESENTATION OF SCRUB TYPHUS WITH ACUTE RESPIRATORY DISTRESS SYNDROME

INTRODUCTION: -

Fever is a typical symptom of any infectious systemic illness and can contribute significantly to morbidity. Depending on the duration of the fever, febrile illness can be defined as acute febrile illness (AFI). AFI is defined as any illness characterized by fever lasting two weeks or less, rapid onset, and caused by a variety of pathogens with no indication of organ or system-specific etiology.[1] Acute febrile illness epidemics have caused considerable concern in India. Dengue, malaria, typhoid fever, and scrub typhus have all been documented during such outbreaks. Scrub typhus is an acute febrile illness caused by the *Orientia tsutsugamushi.*The primary pathological change observed here is focal or disseminated vasculitis caused by endothelial cell destruction and perivascular leukocyte infiltration. Scrub typhus is diagnosed based on the patient's exposure history, clinical symptoms, and serologic test results.[2] The disease is endemic throughout India and has been documented in various states, including Haryana, Jammu & Kashmir, Himachal Pradesh, Uttaranchal, West Bengal, Assam, Maharashtra, Kerala, and Tamil Nadu.[3]

Scrub typhus has resurfaced in India in recent years, and it is now a leading cause of acute undifferentiated febrile infections (AUFI) with substantial morbidity and mortality.[4]Scrub Typhus's symptomatologyare diverse, ranging from a generic febrile illness to a severe multi-organ failure with fatal complications, with an overall mortality of 6-24%.[5] Acute Respiratory Distress syndrome (ARDS) is a serious manifestation of Scrub Typhus. This report highlights the need to investigate risk factors, tostudy the clinical course and to monitor the outcome of scrub typhus patients complicated with ARDS.

CASE REPORT: -

Presenting Symptoms:-

A 23-year-old female with nil comorbidities was referred from an outside hospital with complaints of high-grade fever, which was remittent in nature. Accompanied with symptoms such as abdominal pain which was aggravated on food intake, cough without expectoration, nausea, vomiting, headache generalized myalgia and loose stools. There was no history of any rash, bleeding manifestations, hematochezia, joint pain or swelling, abdominal distension, loss of weight and appetite. She had no recent history of travel or outside food intake or a known case ofTuberculosis (TB) or Bronchial asthma.A general examination indicated a febrile patient with a temperature of 101.1°F. On examination, the patient's vitals were stable.

During the course in hospital, Patient developed complaints of severe breathing difficulty. Her Respiratory System examination showed Bilateral Basal crepitations.In addition, her complaints of loose stools have become more frequent. An Abdominal examination revealed mild tenderness localized across all quadrants of the abdomen.

Laboratory Findings:-

The hemogram revealed anemia as her hemoglobin levels were only 9.6mg/dl .A peripheral blood smear confirmed anemia and demonstrated relative lymphocytosis. Her platelet count was normal.As far as her Liver function tests were concerned, her serum bilirubin level was normal. However her liver transaminases were exceeding the normal limits, withSerum Glutamic-oxaloacetic transaminase(SGOT) 168 IU/L and Serum Glutamate-pyruvic transaminase (SGPT) 252 IU/L. Her renal parameters were found to be normal. The blood and sputum samples were sent for culture, which revealed no growth of any bacteria. As a case of acute febrile illness, she was worked up for other tropical diseases, such as leptospirosis & dengue but reports proved otherwise.

Imaging Studies:-

A Chest X-Ray revealed a Bilateral Basal homogenous opacity (As seen as Figure 1).
Additionally, a Computed Tomography (CT) Chest and an Ultrasound Abdomen was taken to evaluate further. The Ultrasound revealed minimal B/L Pleural effusion and mild splenomegaly.

CT Chest revealed a B/L consolidation with minimal effusion in the base of the lungs (As seen as Figure 2). These radiological features are consistent with presentations of acute respiratory distress syndrome (ARDS).Owing to her complaints, a Computed Tomography (CT) Abdomen and a 2D-Echocardiogram were taken. Her CT Abdomen revealed mild splenomegaly and ascites which correlated with her elevated liver parameters. (As seen as Figure 3 and Graph 1). Her 2D Echocardiogram showed no abnormality other than trace pericardial effusion.

Diagnosis and Treatment:-

Finally, the patient was diagnosed as a case of scrub typhus on clinical and serological grounds (IGM ELISA) (As seen as Table 1). Patient was already getting treated prophylactically with Doxycycline 100 mg twice daily. The patient was continued with her course of antibiotics as doxycycline is the main drug of choice for a case of Scrub Typhus. Additional supportive treatment for her ARDSand pleural effusion were also given during her stay in the hospital.

Her primary treatment was given based on her symptomatic presentation which involved assisted Oxygen support, Intra-venous Antibiotics, analgesics, antiemetics, Proton-pump inhibitors (PPIs), nebulization, probiotics, bronchodilators, cholagogues, vitamins and other supportive measures. Subsequently, she responded well to the treatment with subsidence of both the fever and other symptoms.

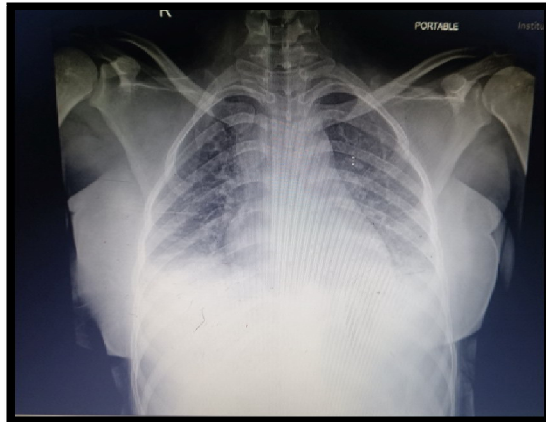


Figure 1: Chest X-Ray – B/LBasal homogenous opacities

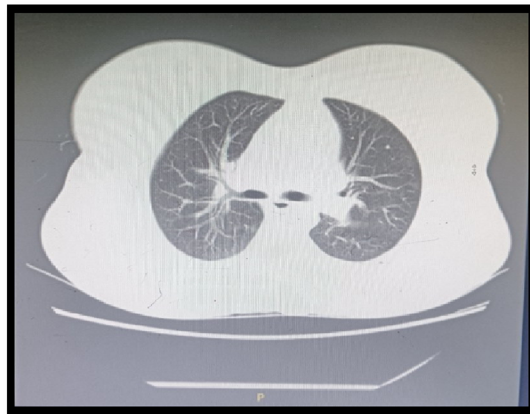


Figure 2: CT Chest – B/L Consilidation with minimal effusion in base of lower lobe

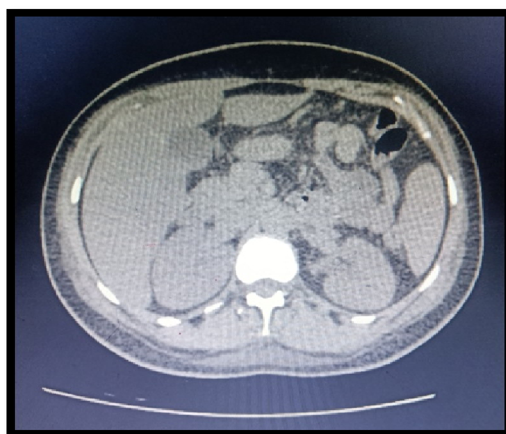
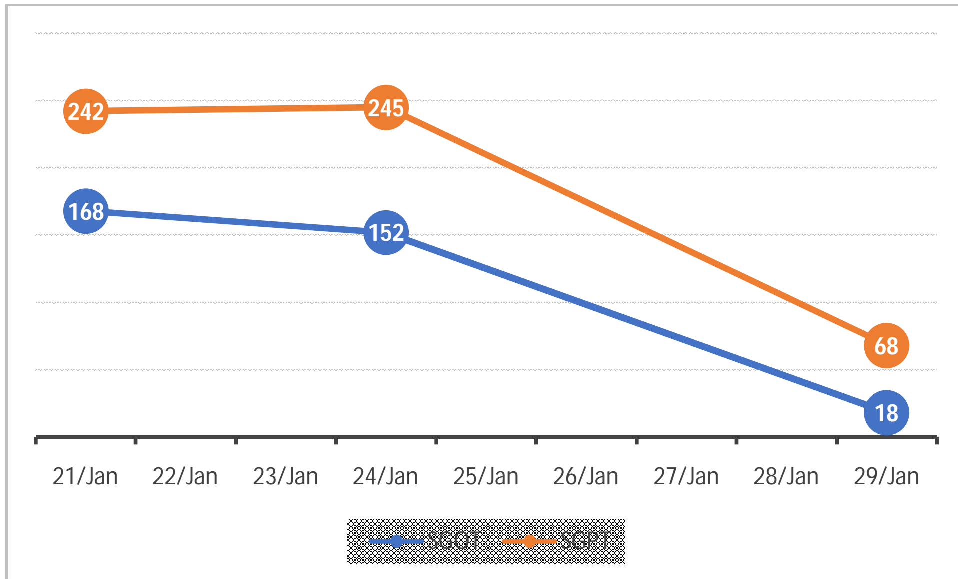


Figure 3: CT Abdomen – Mild splenomegaly and ascites



Graph 1:Liver function tests – Elevated SGOT & SGPT levels

(Normal ranges: SGOT <45 & SGPT < 42)

TEST	**METHOD**	**RESULT**
SCRUB TYPHUS IgM	ELISA	POSITIVE

Table 1: IgM ELISA– Positive for Scrub Typhus

DISCUSSION: -

Scrub typhus is a mite-borne infection that is endemic throughout Southeast Asia. Clinical symptoms include fever, chills, skin rash, eschar at the bite site, and other indicators of acute febrile illness. [6] Scrub typhus, caused by the arthropod-borne gram-negative obligately intracellular bacillus *Orientia tsutsugamushi* and transmitted by *Leptotrombidium* mites, is a potentially fatal tropical infection, with approximately a million cases recorded each year.

The clinical picture is characterized by sudden onset of fever with chills, headache, shortness of breath, cough, nausea, backache, and myalgia, profuse perspiration, vomiting, and enlarged lymph nodes. [7] Common laboratory findings are elevated liver transaminases, thrombocytopenia, and leukocytosis. [8] If not recognized and treated promptly, the infection can progress from a self-limiting disease to a fatal illness in about 35-50% of cases, resulting in multiorgan failure. Life-threatening complications such as acute respiratory distress syndrome (ARDS), hepatitis, renal failure, meningoencephalitis, and myocarditis with shock can occur in various proportions of patients. [7] Because of the vast range of clinical symptoms, scrub typhus is frequently overlooked or misdiagnosed. [9]

An eschar at the locationof chigger feeding site is a trademark clinical sign of scrub typhus. It starts as a papule near the chigger's feeding location, then ulcerates and creates a black crust. When it appears, it emerges before fever and other symptoms manifest. Eschar is seen in 1% to 97% of scrub typhus patients, depending on geographic area and study. [10] However, our patient did not present with the classical features of scrub typhus. She had no previous history of rashes or unknown insect bites. But clinically looking into the other clinical features and investigations, her symptoms and presentations were suggestive of scrub typhus.

The laboratory-based diagnosis of scrub typhus is based on serological tests such as the Weil-Felix test, indirect immunofluorescence assays, PCR, enzyme-linked immunosorbent assay (ELISA), and immunochromatographic testing (ICT), among others.The IgM ELISA-based

approach for diagnosing scrub typhus is the most reliable of all serological assays. Our patient was diagnosed by this test, it has approximately a 91% sensitivity and 99% specificity rate. [11,12]

Our case was associated with mainly associated with ARDS .The bacteria causes widespread vasculitic and perivascular inflammatory lesions, which lead to severe vascular leakage and end-organ damage.[3]Acute respiratory distress syndrome (ARDS) is an uncommon but fatal consequence of scrub typhus. It is critical to understand how ARDS can arise in scrub typhus and the potential risk factors, because the illness is curable if detected and identified early.[13]

CONCLUSION:-

This case of scrub typhus was chosen due to the wide range of clinical manifestations seen. It is important to determine the predictors that identify markers of severe disease by means of thorough history-taking and clinical examination in order to arrive at an early diagnosis. Thereby, reducing the mortality, preventing fatal complications such as ARDS and to avoid any delay in the treatment.

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