CASE REPORT

Scrub typhus masquerading as acute pancreatitis

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SUMMARY

The clinical spectrum of scrub typhus ranges from mild to fatal depending on the virulence of bacterial strain, susceptibility of the host and promptness with which treatment is started. We report a case of a 14-year-old child with scrub typhus who developed acute pancreatitis. On serological confirmation, doxycycline therapy was started. The patient responded well and had no complications on follow-up. This case report highlights the importance of recognising an uncommon presentation of this common tropical disease, and its prompt diagnosis and early treatment for prevention of serious complications of the condition.

BACKGROUND

Scrub typhus is a zoonosis transmitted by trombiculid mites (chiggers) of the genus *Leptotrombidium*, which introduce *Orientia tsutsugamushi* bacteria through their bite. It is distributed throughout the Asia Pacific rim. Scrub typhus is endemic in Korea, China, Taiwan, Japan, Pakistan, India, Thailand, Malaysia and in the tropical (northern) regions of Australia. Approximately one million cases are reported annually.¹ It is a common endemic disease in India but the true incidence and prevalence is not known. Despite increased awareness about the disease, it still remains one of the most underdiagnosed zoonoses.

O. tsutsugamushi is an obligate, intracellular Gram-negative coccobacilli. Scrub typhus has six distinct serological strains (Gilliam, Karp, Kato, Shimokoshi, Kawasaki and Kuroki), detected by immune peroxidase reaction.² Infection with one strain does not prevent infection by another strain. The reservoir and vector of scrub typhus are larval trombiculid mites of the genus *Leptotrombidium*. These larval mites (also known as chiggers) typically feed on wild rats and maintain the infection in successive generations via transovarial transmission.¹ Man gets infected accidentally during rainy season by encroaching on zones of infected mites. The incubation period of scrub typhus ranges from 6 to 21 days.

Common clinical manifestations of scrub typhus include fever, headache, myalgia, cough, breathlessness, eschar formation, abdominal pain, anorexia and vomiting. Eschar (round to oval plaques with an erythematous halo and central haemorrhagic crust) is present in the axilla, neck, groin, waist, inguinal area and inframammary fold.³ The primary areas of eschar formation in men are 30 cm below and above the umbilicus, front of the chest and lower limbs.⁴

Our patient presented with acute pancreatitis, which is a rare complication of scrub typhus

infection. With timely and appropriate institution of treatment, mortality is almost nil.

CASE PRESENTATION

A 14-year-old girl presented with a 12-day history of high-grade, intermittent fever associated with right upper quadrant (RUQ) abdominal pain for 7 days. The abdominal pain was moderate in intensity, and radiated to the back; there was no known aggravating nor relieving factor. She was treated in a local hospital where she was given antipyretics and antibiotics. There was no history of palpitations, chest pain or cough with sputum production. One day prior to admission, she had experienced a decrease in urine output. No history of burning micturition, urinary urgency, frequency or hesitancy was present. She was referred to our hospital on day 12 of her illness.

On examination, she was conscious, oriented, restless and febrile (103°F). Her pulse was 130/min, respiratory rate 22/min, blood pressure 90/60 mm Hg and SpO₂ was 94% on room air. There was an eschar mark on her left cheek (figure 1) and no lymphadenopathy. On chest examination, there were vesicular breath sounds with S1 and S2 heard; no murmur was present. On abdominal examination, there was tenderness in the RUQ of the abdomen, with hepatomegaly 4 cm below the subcostal margin in the midclavicular line, liver span 12 cm and no splenomegaly. Bowel sounds were sluggish. Nervous system examination revealed no abnormalities. On the second day of admission, she started having severe epigastric pain radiating to her back. A provisional clinical diagnosis of acute pancreatitis was made.

INVESTIGATIONS

Haematological and biochemical investigations revealed elevated leucocytes, and increased serum amylase and lipase levels (tables 1 and 2). Blood and urine culture sensitivity was sterile, dengue serology was negative, malaria antigen test was negative and leptospira serology was negative. Antibody

Figure 1 Clinical picture showing the pathognomonic eschar on the left cheek.

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Table 1 Haematological parameters

Date	13/10/15	18/10/15	19/10/15	02/11/15
Hb (g/dL)	12.8	11.2	11.9	12
PCV (%)			36.7	35
TLC (cu/mm)	37 100	13 800	12 800	11 000
DLC	N92, L6, M1, E1	N90, L8, M1, E1	N66, L31, M2, E1	N70, L28, M1, E1
Platelet count (lac/dL)	2.2	2.5	5.52	4
ESR			22	25
Reticulocyte count (%)			1.2	1.5
MCV			82	85
MCH			27	28
MCHC			33	32
Dengue antigen	Negative			
Malaria serology	Negative			
Leptospira serology	Negative			
Scrub typhus antibody	Positive			

DLC, differential leukocyte count; ESR, erythrocyte sedimentation rate; Hb, haemoglobin; MCH, mean cell hemoglobin; MCHC, mean cell hemoglobin; MCV, mean cell volume; PCV, packed cell volume, TLC, total leukocyte count.

(IgA, IgM and IgG) for *O. tsutsugamushi* was positive. Ultrasonography showed minimal ascites with a bulky heterogeneous pancreas and thickened gall bladder wall. CT of the abdomen showed a bulky heterogeneous pancreas (figure 2).

DIFFERENTIAL DIAGNOSIS

The differential diagnoses considered in this case included scrub typhus, dengue fever, malaria, enteric fever and leptospirosis. Dengue fever was excluded as our patient had neither thrombocytopenia nor bleeding manifestations.

TREATMENT

The patient was diagnosed as having a case of scrub typhus complicated by acute pancreatitis on the basis of symptoms of typical abdominal pain, and elevation of serum amylase and lipase three times above the upper normal limit. She was managed with intravenous fluids along with electrolyte replacement and kept nil per oral for 2 days until her bowel sounds were present. Intravenous antibiotic (ceftriaxone) was started

empirically in view of the high leucocytes counts. Oral antibiotic (doxycycline 100 mg twice a day) was given for 10 days. Analgesics (tramadol) were given for pain relief.

OUTCOME AND FOLLOW-UP

During her stay in the hospital, the patient had intermittent high-grade fever for 4 days, associated with abdominal pain. She progressed well during her course of treatment; there was no associated complication during her stay in the hospital. At the time of discharge, there was no abdominal pain, no fever, no breathlessness and no swelling of limbs. She was followed after 2 weeks in the outpatient unit and was doing well.

DISCUSSION

The clinical presentation of scrub typhus is highly variable, making it difficult at times to pinpoint any specific manifestation as an indicator for the disease. In endemic areas, a high index of suspicion is warranted for early diagnosis and treatment of this zoonotic disease, and to prevent fatal complications. An eschar at the site is pathognomic for the bite of a trombiculid mite, but at times it is not present; its incidence varies from 46% to 85% in previous studies.⁴

O. tsutsugamushi is injected into the human host through a chigger bite. Following this, it adheres to and invades the host's phagocytes and endothelial cells, possibly by means of 56-kDa type specific antigen protein, the transmembrane protein unique to this organism. Once inside the cells, it results in vasculopathy that can affect a broad range of organ systems, leading to potential life-threatening complications.⁵

In a retrospective study of 623 patients with scrub typhus, the most common presenting manifestations were fever, headache, nausea and vomiting, shortness of breath and eschar formation.⁵ Myocarditis, pericarditis, meningoencephalitis, glomerulonephritis, acute kidney injury, acute respiratory distress syndrome and acute acalculous cholecystitis, are some uncommon complications of scrub typhus reported in the literature.⁵ The common infectious agents responsible for acute pancreatitis include viruses such as mumps, coxsackie virus, hepatitis B virus, cytomegalovirus, varicella, herpes simplex virus and HIV. Bacterial agents responsible include *Mycoplasma*, *Leptospira*, *Legionella* and *Salmonella*.⁶ Scrub typhus has been rarely identified as one of the common infectious aetiologies for acute pancreatitis.

Table 2 Biochemical parameters

Date	13/10/15	15/10/15	19/10/15	02/11/15
Sodium (mEq/L)	135	139	131	134
Potassium (mEq/L)	4.4	3.1	3.7	4
Urea (mg/dL)	100	74	52	24
Creatinine (mg/dL)	2.8	2	1.5	1
Total bilirubin (mg/dL)	0.7		0.3	1
ALP (IU/L)	200		108	80
SGOT (IU/L)	40		39	36
SGPT (IU/L)	28		19	20
TP (g/dL)	7.4		7.6	7.8
ALB (g/dL)	3.2		3.1	3.2
GGT (IU/L)	44		40	40
Serum amylase (IU/L)	1200		582	
Serum lipase (IU/L)	3240		1328	
CPK-MB (IU/L)	40 IU/L			

ALP, alkaline phosphatase; ALB, albumin; CPK-MB, creatine phosphokinase-MB; GGT, gamma-glutamyl transpeptidase; SGOT, serum glutamic oxaloacetic transaminase; SGPT, serum glutamic pyruvic transaminase; TP, total protein.

Figure 2 CT of the abdomen showing a bulky heterogeneous pancreas.

It is important to consider the diagnosis of common tropical diseases in patients who present with multisystem involvement. A study from north India reported seven patients with acute pancreatitis due to scrub typhus.⁷ There has been a case report in which the patient had concomitant leptospirosis and scrub typhus infection manifesting as acalculous cholecystitis with acute pancreatitis.⁸

Learning points

- ▶ Zoonoses are rapidly emerging as a major public health challenge due to deforestation, urbanisation and population movement, in developing countries of the tropics.
- ▶ Scrub typhus is a re-emerging zoonotic disease in the tropics, with varied clinical manifestation and potentially fatal outcomes.
- ▶ Early and appropriate institution of antibiotic (doxycycline 100 mg twice a day) with supportive measures can significantly reduce mortality.
- ▶ Developing increased awareness of this infection among clinician in endemic settings can also significantly reduce mortality from this deadly yet preventable disease.
- ▶ Other common tropical diseases such as enteric fever, malaria, dengue fever and leptospirosis should be considered in the differential diagnosis; early institution of antibiotics and antimalarials can be life saving and can significantly reduce healthcare expenditure in resource-limited countries.

Scrub typhus should be recognised as a disease with varied clinical manifestations and serious complications that can be very well avoided with proper and timely institution of appropriate antibiotics and supportive measures. A high index of suspicion and systematic examination of patients can reduce mortality and morbidity by this common disease.

Contributors AC and SB were involved in the final diagnosis, management, writing the manuscript and review of the literature. MG, internal medicine consultant, undertook the final review of the manuscript and literature in detail. DH initially diagnosed the patient and collected the data for preparing the manuscript.

Competing interests None declared.

Patient consent Obtained.

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