CASE REPORT

The importance of "His" story

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SUMMARY

A 73-year-old previously healthy man presented with a 3-day history of rigours, abdominal pain, diarrhoea, haemoptysis and myalgia. He had not been abroad recently, but reported being a farmer and having had a recent rat infestation. Laboratory investigations revealed acute kidney failure, deranged liver function tests, raised C reactive protein and a chest CT revealed bilateral ground-glass opacities. This presentation was consistent with icteric leptospirosis which was confirmed by serological testing. Following haemofiltration and the administration of antibiotics the patient made an excellent recovery from his leptospirosis.

BACKGROUND

This case highlights the difficulties encountered in diagnosing leptospirosis and emphasises good history taking and recognising the limitations of tests available to diagnose it.

CASE PRESENTATION

A 73-year-old, previously healthy British man was hospitalised in the UK, in October 2012 with diarrhoea and haemoptysis. He had a 3-day history of rigours, abdominal pain and subsequently developed bilateral leg weakness and myalgia. He had not been abroad and was not on antibiotics, and there were no close contacts with similar symptoms. He had a medical history of psoriatic arthritis which was well controlled with 20 mg of methotrexate once weekly.

His blood pressure was 110/70 mm Hg, pulse 85/min, respiration 16/min, oxygen saturation 97% on air and fever at 38.8°C. On physical examination he had icteric sclerae, tender thighs and epigastric pain on deep palpation.

INVESTIGATIONS

Laboratory investigations were as follows: haemoglobin 11.3 g/dL, white cell count $13.2 \times 10^9/L$, platelets $59 \times 10^9/L$ with normal coagulation tests (prothrombin time 11.7 s; activated partial thromboplastin time (APTT) 30 s), C reactive protein 281 mg/L, serum creatinine 5.38 mg/dL, blood urea 33.2, alanine aminotransferase 95 U/L, alkaline phosphatase 87 U/L, albumin 28 g/L, total bilirubin 32 mg/dL, amylase 85 U/L and creatinine phosphokinase 5849. Arterial blood gas sampling showed a compensated metabolic acidosis with respiratory alkalosis: pH 7.4, pCO_2 3.44 kPa, pO_2 39.8 mm Hg and HCO_3^- 15.7 mmol/L and lactate 3.98.

Urinalysis showed microscopic haematuria with no red cell casts. Sinus tachycardia was present on ECG. In abdominal ultrasonography, no

splenomegaly, liver or kidney enlargement or ascites was detected. An initial chest radiograph revealed a prominent hilum but was otherwise clear.

Later in the day, he became oliguric and he received aggressive fluid therapy. He remained oliguric with worsening renal function and developed pulmonary infiltrates on a chest radiograph, which was treated as pulmonary oedema with diuretics, without significant improvement. The patient was consequently admitted to the intensive care unit where haemofiltration was instituted.

A chest CT showed bilateral ground-glass opacities and few foci of consolidation in the right lung (figure 1). The haematocrit level was reduced, all of which were consistent with a progression to diffuse alveolar haemorrhage.

The patient responded well to haemofiltration and started producing good amounts of urine. On further questioning, it was learnt that he was a farmer and he reported that there had been a recent rat infestation on the farm, and that 2 days prior to his admission he had come into close contact with a dead rabbit.

A series of serological tests were sent off to test for vasculitic disorders in view of the multiorgan failure, all of which were negative. Screening tests for multiple infections were additionally sent, including enzyme immuno assay (EAI) and microscopic agglutination test (MAT) against *Leptospira* on the second day of the admission, which initially was negative. In view of the history and clinical presentation being strongly suggestive of a diagnosis of leptospirosis a repeat test 10 days later was sent off revealing a positive titre of 1:640 of IgM EIA and 1:320 of MAT.

Figure 1 CT of the chest showing bilateral ground-glass opacities and few foci of consolidation in the right lung.

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DIFFERENTIAL DIAGNOSIS

Vasculitic disorders

TREATMENT

- ▶ Supportive therapy
- ▶ Antibiotics
- ▶ Haemofiltration

OUTCOME AND FOLLOW-UP

The patient made an excellent recovery from his leptospirosis. The diarrhoea settled and his motor function progressively returned to normal. After continued improvement, he was discharged. The creatinine level was to baseline at 131.

DISCUSSION

Leptospirosis is an infection caused by the spirochaetes *Leptospira* affecting animals and humans. The main animal reservoirs include wild and domestic animals, rodents in particular. It has a worldwide distribution but is most common in tropical and subtropical areas with high rainfall. Risks include occupations such as veterinarians and farmers and recreational activities such as canoeing and freshwater swimming. The clinical spectrum of the disease ranges from a subclinical anicteric infection to a severe hepatorenal syndrome known as Weil's disease, comprising jaundice, renal failure and haemorrhage.

Leptospirosis is difficult to diagnose without serological tests. MAT is an important test for serodiagnosis. A single MAT titre of 1 : 400 or at least fourfold increase in paired serum samples is necessary for the diagnosis of a patient presenting with at least fever, myalgias and headache. Our patient had a negative leptospiral serology test taken on the second day of the admission. However, though seroconversion may occur as early as 5–7 days after the onset of disease, it may be delayed up to 10 days or longer.¹ It is therefore important to bear in mind that a negative leptospiral serology test does not negate the diagnosis of leptospirosis and that the titres should be repeated. Furthermore, the immunosuppressants such as methotrexate may have contributed to a delayed seroconversion.

Pulmonary symptoms can occur in the nonicteric and icteric forms of leptospirosis, including chest pain, cough, haemoptysis

and commonly have associated radiographic findings.² It has been reported that leptospirosis severity is increasing with severe pulmonary involvement.³ Review literature emphasised vasculitic disorders as the main differential diagnosis in a patient presenting with diffuse alveolar haemorrhage. However leptospirosis should be considered in cases presenting with diffuse alveolar haemorrhage and hepatorenal failure.³

Learning points

- ▶ This case report highlights the importance of good history taking, including a thorough occupational history where appropriate.
- ▶ It reminds us that leptospirosis should be considered as a differential diagnosis in patients presenting with diffuse alveolar haemorrhage.
- ▶ Furthermore, it raises the question whether the immunosuppressive properties of methotrexate may lead to delayed seroconversion in patients being tested for leptospirosis.

Contributors LS performed the literature search, wrote the article and is the guarantor. She identified and managed the case and is responsible for the overall content as guarantor. DM identified and managed the case and reviewed the article. DA identified and managed the case and reviewed the article.

Competing interests None.

Patient consent Obtained.

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