

Case Report

Remember Leptospirosis: two cases report

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Abstract: Leptospirosis has a wide variety of clinical manifestations, from asymptomatic to vital organ involvement. Its significant morbidity highlights the importance of recognizing and identifying how leptospirosis can be acquired and transmitted. With adequate management, the disease can be treated with no complications. The authors describe two patients, a couple from a rural area in Portugal, presenting with different manifestations of the same disease a month apart between hospitalizations. Both experienced kidney and liver dysfunction, and although having different therapeutic approaches, both had a favorable evolution. Recognition of leptospirosis based on clinical symptoms and specific laboratory clues may allow early initiation of therapy. Occupational exposure is a significant risk factor. Vaccination and awareness programs are essential for reducing the risk.

Keywords: Leptospirosis; Infectious disease; Zoonosis; Occupational exposure; Fever.

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1. Introduction

Leptospirosis is one of the most common but potentially fatal zoonoses, caused by *Leptospira* species. As the clinical manifestations can be very diverse, the occurrence of this disease is underestimated [1, 2], and is often misinterpreted as other causes of the febrile syndrome. Ninety percent of patients are asymptomatic or have mild symptoms, with sudden-onset fever being the most reported symptom [2]. Anicteric leptospirosis can also present with other manifestations, such as headache, myalgias, chills, abdominal pain, vomiting, diarrhea, conjunctival suffusion, and skin rash [3]. Symptoms last about a week, and resolution coincides with the appearance of antibodies.

The most severe, icteric leptospirosis is also called Weil's disease (5-15 %) [1]. Patients are usually diagnosed at a more advanced stage of the disease, contributing to increased mortality. Occupational exposure is a significant risk factor for farmers and animal breeders. Rodents are the main reservoir. However, some domestic and livestock animals become chronic carriers after an infection [3]. The elimination of bacteria through urine contaminates the environment, and new infection occurs through contact with the contaminated environment [1].

The authors describe the cases of two patients, a couple from an agricultural area in Portugal, with different manifestations of the same disease.

2. Case Report

2.1 Case 1

A 62-year-old male farmer with livestock animals and well water consumption, from a rural area in Portugal, had a two-week complain of asthenia, easy tiredness, and intense headache. He also reported a non-pruritic rash on both lower limbs, with one day of evolution; no history of fever. Physical examination only revealed scattered purpuric lesions

on pretibial areas (Figure 1). Laboratory studies showed acute kidney injury (maximum plasma creatinine of 2.06 mg/dL), hypokalaemia (K^+ 2.8 mmol/L), and urinary sediment showed erythrocyturia. Acute hepatitis, with maximum values approximately three times the upper limit of normal for transaminases and average bilirubin value. Clotting tests were normal and inflammatory parameters were elevated. Abdominal ultrasound and CT were routine.

The patient was admitted to the medical ward with the diagnosis of non-oliguric acute kidney injury and acute hepatitis with a pattern of cytolysis without known etiology and purpuric lesions for study. Treatment was based on fluids and potassium replacement, and no antibiotic was prescribed due to clinical stability and no specific suspected infectious etiology. After one week, the patient was discharged, asymptomatic, with kidney and liver enzymes normalized. Only leptospirosis serologies were positive from all the workups, with all the infectious panels being negative. The serology was repeated four weeks later, showing a 5-fold elevation of the titers.

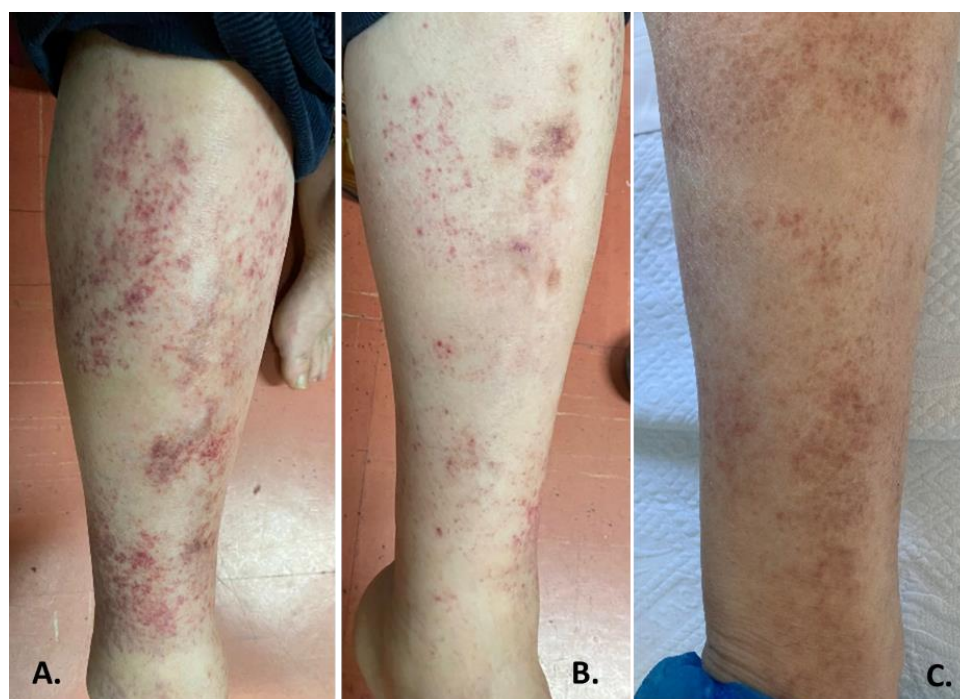


Figure 1. Skin manifestations with non-itchy, petechial rash at hospital admission (A, B) and five days after the appearance (C)

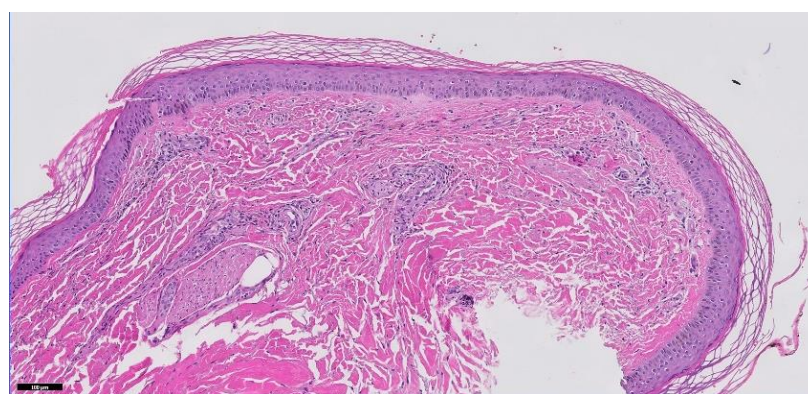


Figure 2. Skin biopsy, with perivascular lymphoplasmacytic, infiltrate histiocytes and capillary lesions.

2.2 Case 2

The patient's wife, aged 64, also a farmer, presented with flu-like symptoms, myalgias, asthenia, dry cough, vomiting, and fever (maximum temperature 38°C) for three days. At admission, the patient had a fever, subicteric scleras, and dehydrated mucous membranes at admission. The analytical study showed mild anaemia, thrombocytopenia, acute kidney injury (maximum plasma creatinine of 1.4mg/dL), hypokalaemia (K⁺ 3.0 mmol/L), and acute hepatitis with a mixed pattern.

Urinary sediment showed erythrocyturia and mild proteinuria. Clotting tests were normal and inflammatory parameters were elevated. Chest CT showed signs of bronchopneumonia. The patient was admitted to the medical ward and diagnosed with sepsis with a starting point in pneumonia with multiorgan dysfunction, non-oliguric acute kidney injury, liver dysfunction, and hematologic dysfunction. For seven days, empirical therapy was instituted for community-acquired pneumonia with azithromycin, and amoxicillin/clavulanic acid. In addition, fluid therapy and potassium replacement were administered.

All the workup was negative, and the patient was discharged with complete resolution of the symptoms, with normalization of renal function and liver enzymes. After her husband's diagnosis, leptospirosis serology confirmed that she also had leptospirosis, with a low IgM titer and a high titer of IgG antibodies. Both patients remained asymptomatic on the three-month follow-up evaluation.

3. Discussions

Leptospirosis has nonspecific manifestations and polymorphisms, causing subclinical to severe illness, which can lead to underdiagnosis [2]. Another cause of multiorgan dysfunction can be assumed, and a different treatment can be used. These two case reports showed different presentations and approaches for the same clinical entity, in a agricultural region on the north of Portugal. In Portugal, leptospirosis is a re-emerging zoonosis, with a low rate of notifications, with an exception for the Azores, which is considered an endemic region [4].

Leptospirosis has a biphasic course, with an early phase (leptospirosis or septic), an average duration of one week, and a late phase (leptospires or immune), where there is the production of antibodies and excretion of leptospirosis in the urine [5]. In both cases, organ dysfunction was observed. Liver dysfunction is common, mainly a consequence of systemic inflammation from sepsis, with normal liver parameters observed after the treatment [5]. In icteric leptospirosis, liver dysfunction occurs with the marginal elevation of transaminases and a predominance of elevated bilirubin, with jaundice due to reduced bile elimination [6]. Kidney damage is another associated dysfunction, with non-oliguric potassium wasting nephropathy (41-45 %) [7]. Only a small percentage progresses to the more severe form, Weil's disease, requiring a renal function replacement technique [3].

The more common hematologic dysfunction is thrombocytopenia, which occurs in more than 50 % of cases as a transient event and is not associated with disseminated vascular coagulation [6]. Respiratory symptoms can range from cough, dyspnea, or hemoptysis to acute respiratory distress syndrome. Although uncommon, the distinctive skin rash is self-limiting and appears on the pretibial areas (10-20 %) [3,8], presenting as non-itchy, transient, macular, or petechial rash [3]. Oddly, in this case, the violet rash, non-pruritic, persisted for about a month, gradually becoming lighter.

Although current guidelines recommend antibiotics regardless of the stage of the disease [3,8], some authors defend that treatment can be adjusted depending on the severity of the disease and the duration of symptoms [9,10]. In mild anicteric conditions, supportive therapy alone can be an option as the institution of antibiotic therapy only reduces the time of illness by about two days [9, 11]. In addition, after one week of symptoms, clinical manifestations are caused by immune mechanisms rather than the direct effect of bacteria [12].

In acute kidney injury with pre-renal azotemia, hydration and monitoring of renal function can be performed. However, in acute kidney injury of renal cause, due to proximal tubule dysfunction with nephritis, dialysis is required until the recovery of renal function [6]. Patient 1 had a mild symptomatic form with rapid recovering renal dysfunction and was treated only with fluid therapy. Patient 2 had mild icteric leptospirosis, but no dialysis was required, and treatment with antibiotics, and fluids resulted in total recovery.

As in agricultural areas, leptospirosis can be easily transmitted from animals to humans, preventive measures are mandatory. Although not providing full immunity, a robust animal vaccination program can minimise exposure, which is critical to break the cycle of infection [13]. Awareness programs for farmers and farm employees are essential for reducing the risk.

4. Conclusions

The visibility of leptospirosis as an important public health problem is emerging, as it can increase morbidity. Without an accurate diagnosis, the disease will advance, allowing the appearance of complications. The absence of pathognomonic signs makes a definitive diagnosis dependent on serologic tests. An additional suspicion should occur in individuals who reside in rural areas or have contact with farm animals. Vaccination and awareness are essential for reducing the risk.

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Conflicts of Interest: The authors declare no conflict of interest.

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