



21-22 November 2024

Clinical Presentation and Diagnostic Confirmation of Canine Leptospirosis in Western Romania: A Case Study

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Abstract:

This study analyzed three canine cases with suspected leptospirosis, highlighting the primary clinical signs and pathological findings observed. The most frequent abnormalities were acute renal and hepatic lesions, with common biochemical markers including elevated ALT, AST, GGT, and ALP enzymes. Clinical symptoms such as fever, vomiting, depression, and muscle tremors were noted. Rapid immunochromatographic tests confirmed *Leptospira* antibodies in all cases. Treatment included antibiotics, fluid therapy, and supportive care, leading to a favorable outcome in two of the three cases. The study emphasizes the zoonotic risk of leptospirosis and the need for accurate diagnostic tests and appropriate handling to minimize transmission.

Keywords: *Leptospira species*, zoonosis, treatment, kidney lesions, liver lesions.

• Introduction

Leptospirosis is a widespread zoonotic bacterial disease with significant public health and veterinary impact. Caused by *Leptospira* spp., this infection affects various animal species, including domestic animals, livestock, and humans. The disease is primarily transmitted through contact with contaminated urine, water, or soil, with factors like high humidity and unsanitary conditions facilitating its spread. Clinically, leptospirosis presents a range of manifestations, from asymptomatic infections to severe cases with acute kidney failure, jaundice, hemorrhage, and even death. This study presents three clinical cases of leptospirosis in dogs, highlighting the diagnostic approach, clinical evolution, and the importance of effective control and prevention measures to reduce the disease's impact on animal and public health.

• Material and method

In this study, three canine cases were examined to evaluate the clinical and diagnostic features of leptospirosis. Case 1 involved a 3-year-old female Akita Inu, presenting with fever (40.5°C), vomiting, anorexia, and depression. Clinical findings included normal lymph nodes, a heart rate of 70 bpm, and yellowish urine. Anti-*Leptospira* antibodies were detected using a rapid immunochromatographic test, and supportive treatment was administered, including antibiotics, fluids, and supplements.

Case 2 described a 15-year-old mixed-breed male with severe symptoms such as high fever (41.0°C), tremors, vomiting, dehydration, and hemorrhagic signs, including hematemesis, melena, and petechiae. The patient displayed tachypnea, an irregular pulse, and prolonged capillary refill time, with suspected renal and hepatic failure based on clinical progression.

Case 3 involved an 8-year-old female Shih Tzu, showing fever, lethargy, jaundice, and altered urinary characteristics. In all cases, anti-*Leptospira* antibodies were confirmed using the WellTest *Leptospira* spp. Ab rapid test, an immunochromatographic method designed for qualitative antibody detection in canine serum, plasma, or whole blood. This test demonstrated effectiveness for rapid diagnosis, supporting its application in clinical practice for identifying leptospirosis in dogs.

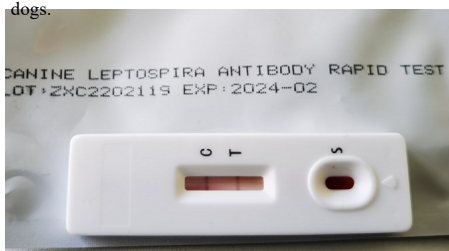


Fig.1. Positive result on the WellTest *Leptospira* spp. Ab rapid test.

• Results and discussions

In examining three canine cases with suspected leptospirosis, the most frequent clinical and pathological findings included signs of acute renal and hepatic injury, with azotemia being the most common biochemical abnormality. Elevated liver enzymes (alanine aminotransferase, aspartate aminotransferase, and alkaline phosphatase) and bilirubin levels were also observed. Hematologic abnormalities included electrolyte imbalances such as hyponatremia, hypokalemia, hypochloremia, and hyperphosphatemia.

For the first patient, a 3-year-old Akita, bloodwork revealed significantly elevated levels of alanine aminotransferase (ALT), aspartate aminotransferase (AST), gamma-glutamyltransferase (GGT), and alkaline phosphatase (ALP), suggesting hepatic dysfunction. The second patient, a 15-year-old mixed-breed male, exhibited decreased albumin and total protein levels with elevated ALT, ALP, and AST, indicating potential liver disease. The third case, an 8-year-old Shih Tzu, showed elevated ALT, AST, urea, GGT, and ALP levels, consistent with both liver and possible kidney impairments.

Urinalysis findings in these cases included isosthenuria, glucosuria, and proteinuria, while bilirubinuria was noted in two cases with associated hepatopathy. All three patients received antibiotic and supportive treatments, including fluid therapy, vitamins, and symptomatic medications (e.g., gastric protectants, antiemetics, and antipyretics).

In similar studies, dogs are highlighted as reservoirs for pathogenic *Leptospira* strains, particularly *L. canicola* and *L. interrogans*, which pose zoonotic risks. Grippi et al. (2023) described an acute leptospirosis case in a shelter dog, finding positive serological results for *L. interrogans icterohaemorrhagiae* in 12% of the dogs tested. Another study by Piredda et al. (2021) observed that 44.1% of stray dogs tested in Italy showed positive reactions for *Leptospira* serovars, underscoring dogs' role as sentinels for zoonotic diseases. Mazotta et al. (2022) found no increased leptospirosis risk in veterinarians compared to the general population, potentially due to effective awareness and preventive measures. Together, these findings emphasize the zoonotic risks and the importance of monitoring *Leptospira* prevalence among canines, especially in high-density populations like shelters (14, 19, 26).

• Conclusions

In Romania, few options exist for rapid leptospirosis diagnosis in dogs, yet accurate diagnosis enables appropriate care and often a favorable prognosis. Confirmed leptospirosis cases require careful handling due to the zoonotic risk from leptospires in urine and blood, though this risk significantly decreases within 72 hours of starting antimicrobial treatment.

Acknowledgement: