

## **Detection and characterization of *Leptospira* spp. in dogs diagnosed with kidney and/or liver disease in Selangor, Malaysia**

Leptospirosis is a serious bacterial disease that affects both humans and animals. A wide range of symptoms have been described in humans; the disease in dogs is commonly associated with kidney and/or liver disease. In Malaysia, information about the common serovars infecting dogs is limited. Therefore, we investigated the occurrences of leptospirosis in 124 pet dogs diagnosed with kidney and/or liver disease. Blood, urine, abdominal effusion, and/or kidney and liver were collected from the dogs. Based on microscopic agglutination testing, 53 of 124 (42.7%) dogs were seropositive for leptospiral exposure. Sera were frequently positive to serovars Bataviae (n = 12), Javanica (n = 10), and Icterohaemorrhagiae (n = 10). Direct detection using PCR showed that 42 of 124 (33.9%) of the whole blood and 36 of 113 (31.9%) urine samples were positive for pathogenic *Leptospira* spp. By PCR, 2 of 23 (9.1%) kidney and 2 of 23 (9.1%) liver were positive for pathogenic *Leptospira* spp. Abdominal effusion from 4 dogs were PCR-positive for pathogenic *Leptospira* spp. The species detected were *L. interrogans*, *L. borgpetersenii*, *L. kirschneri*, and *L. kmetyi* by partial 16S rRNA sequencing. We further identified and characterized 11 *Leptospira* spp. isolates from 8 dogs as serovars Bataviae, Javanica, and Australis. The mortality rate of the *Leptospira*-infected dogs was high (18 of 53; 34%).

**Keyword:** *Leptospira*; Malaysia; Canine; Detection; Isolation; Serovars