The Relevance of Rainfall and Leptospiral Seropositive Rate in Regional Shelter Dogs in Yilan County, Taiwan

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ABSTRACT The aim of this study was to investigate the prevalence of the canine leptospirosis in shelter stray dogs in Yilan County in Taiwan during the period from Nov. 2011 to Feb. 2013 by using microscopic agglutination test (MAT). Of 807 dogs screened for 8 leptospiral serovars, 174 (174/807, 21.6%) were tested positive. Among these dogs, 29 (29/174, 16.7%) were further determined to be multiple-infected. A total number of samples tested positive to all serovars was 218 which would, therefore, raise the seropositive rate up to 27.0% (218/807). By evaluating the titers of antibodies against Leptosira spp. of the positive samples, 48.2% (105/218) were considered to be at acute/current infectious stage. The distributions of each serovar were 32.6% (71/218), 22.5% (49/218), 13.8% (30/218), 11.5% (25/218), 7.8% (17/218), 4.1% (9/218), 4.1% (9/218), and 3.7% (8/218) for Shermani, Javanica, Canicola, Patoc, Poi, Icterohaemorrhagiae, Pomona and Kennewicki, respectively. Dogs of ages two months and older showed significant higher prevalence than puppies (less than two months old) (p=0.018). Positive rate of male dogs older than two months was significantly higher than that of male puppies and all female dogs (p=0.003 and p=0.025, respectively). Acute infection as well as Shermani infectious rates of puppies were significantly higher than those of older dogs (p=0.002 and p=9.97E-07). A significant correlation between the 2-months cumulative rainfall and the acute infectious rate three month later could also be noted (r=0.621, p<0.05). We concluded that serovar Shermani, which was with the highest prevalence found in shelter stray dogs, should be considered a candidate for vaccine in Yilan County, and the accumulation of the rainfall of two months could be used as an indicator of the prevalence of Leptospirosis in stray dogs in Taiwan.

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INTRODUCTION

Leptospirosis is one of the most frequently reported and widespread zoonosis in the tropical and subtropical areas in the world [27]. Although it was commonly associated with regions of poor eco-epidemiological status such as southern Asia, central and southern America, Pacific islands and Africa, more and