

GENERAL CONSIDERATIONS OF LEPTOSPIROSIS AMONG DOGS FROM ORADEA

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Abstract

Leptospirosis is a zoonotic disease caused by Leptospira bacteria. Pathogenic leptospires are morphologically identical, being thin, helical, mobile gram-negative bacteria with one or both ends usually hooked. Leptospires persist in the kidneys and genital tract of animals and are excreted in the urine and genital secretions. Survival outside the host is favoured by conditions of humidity and heat. Transmission is by direct or indirect contact with the carrier. Disruption of animal-to-human transmission is a key factor in the control of human leptospirosis.

Key words: gram-negative, bacteria, zoonoses, dogs, humans

INTRODUCTION

The recognition of leptospirosis as a disease in dogs followed rapidly (1916) after its diagnosis in humans. Subsequently, the condition was described in cattle in 1935 and in pigs in 1939.

While in developed countries poor environmental conditions conducive to the development of leptospires have been largely eliminated from the working environment, improved living standards and increased time off have led to leptospirosis as a risk associated with recreational activities in wet environments such as fishing, navigation and boat racing. Increasing travel opportunities has also made leptospirosis a problem for tourists visiting areas with warm and humid climates, especially in south-east Asia.

Leptospires are thin, helical, mobile gram-negative microorganisms with one or both ends hooked. The length varies between 10 and 20 μm , and the diameter between 0.1 and 0.15 μm , with a coil length of about 0.5 μm . Under unfavourable nutritional conditions, leptospires can be much elongated, while in the presence of high concentrations of salt, in old crops or in tissues, can take coccoid forms of about 1.5-2 μm . They multiply by linear division.

The major cellular components are: an outer shell, which surrounds a cell wall or a complex of peptidoglycans and two polar endoflagellates (one at each end, with subterminal origin).

The taxonomy of leptospire goes through a period of change, which can cause considerable confusion to those unfamiliar with the subject. Until recently, only one genus *Leptospira* was recognized in the family Leptospiraceae. Within the genus, two groups were recognized: those found in animal species (parasitic strains) and those found in water (saprophytic strains). These two groups, which were called *interrogans* and *biflexa*, can be differentiated by growth needs and biochemical reactions. Only parasitic strains are of medical and veterinary interest.

For taxonomic purposes and as an aid to epidemiological studies, parasitic leptospire have been divided into serogroups, based on antigenic kinship determined by cross-agglutination reactions, and further into serovars, depending on the type of absorption agglutination. There are about 23 recognized serogroups that include about 212 serovars.

MATERIAL AND METHOD

Under laboratory conditions, the temperature range in which the pathogens will grow is variable, but they are not grown at temperatures below 13 ° C; optimal growth occurs at a pH of 7.2-7.6.

Leptospire are chemo organotrophic microorganisms that grow on aerobic or microaerophilic media. Oxygen protective agents, such as superoxidismutase and/or sodium pyruvate, are required for the initial isolation of some of the most demanding strains. The low oxygen concentration favours primary isolation and growth on solid media.

The experiment was performed between March 2019 and July 2020 and took place at the Pet Clinic in Oradea. During this period, the incidence of the bacterium among the dogs in the city of Oradea and its surroundings was monitored. Rapid bacterial identification tests were used as diagnostic materials and methods.

RESULTS AND DISSCUSIONS

Out of the 50 puppies that clinically showed common signs of leptospirosis (fever, apathy, lack of appetite, diarrhea, blood in urine) and all were tested for leptospirosis, 5 came out positive.

The vast majority of animal leptospiric infections are subclinical. There are two groups of animals with high probability of developing a clinical infection:

1. young animal;
2. sexually mature, lactating and/or pregnant females.

In cases where accidental leptospiral infection causes a clinical condition in animals, there is a close parallel with those observed in severe forms of disease in humans.

The severe form of the disease is characterized by jaundice, hematuria, hemoglobinuria, signs of kidney damage and meningitis, and infections can be fatal, such as jaundice. In addition, dogs infected with certain serovars, the most common being heatwave, can develop a chronic kidney disease, with massive polyuria and polydipsia.

Post-infection, fatigue problems can have serious consequences for performance animals, such as hunting dogs, greyhounds, racehorses and competition horses.

In the absence of characteristic clinical features, the definitive diagnosis of leptospirosis is dependent on laboratory confirmation. The diagnosis may be necessary not only to confirm leptospirosis as being responsible for the clinical condition, but also for other reasons, including:

- assessment of the infection status and/or the immune status of the population, in order to apply control or eradication programs at local, regional or national level;
- epidemiological studies
- assessment of the infectivity of an individual animal, to determine whether it is suitable for export or to be introduced into an uninfected population.

Diagnostic procedures of leptospirosis are divided into two groups. The first consists of tests to highlight leptospire in the body's fluids and in tissues harvested by biopsy and post-mortem, and the second includes tests for the detection of antibodies.

The principles and technique of the tests are similar in human and animal leptospirosis.

CONCLUSIONS

Most patients with leptospirosis heal within 2 to 6 weeks if they do not have jaundice. The death rate in jaundiced patients depends on the facilities available for the treatment of hepatic and renal insufficiency and the early initiation of penicillin treatment.

Patients who survive renal and myocardial insufficiency from severe leptospirosis usually recover completely in 6 to 12 weeks. Convalescence can be prolonged (up to 6 months), and up to 10% of patients report recurrent headaches and uveitis for several years.

In animals, the prognosis is very good if they did not show jaundice. Animals that abort due to leptospiral infection have an extremely low probability of aborting again at a later stage due to an infection with the same serotype.

The prophylactic strategy in animals must minimize contact with carrier animals, by avoiding common sources of watering and providing separate shelters.

Also as a prophylactic measure, the annual vaccination of dogs against leptospirosis is especially important.

In dogs tested positive with leptospira, the necessary measures will be applied to reduce the direct physical contact between animal and human. The owner must be informed about the severity and aggressiveness of the zoonosis on him and the use of protective equipment will be mandatory.

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