THE IMPORTANCE OF VACCINATION AMONG DOGS REGARDING LEPTOSPIROSIS AS A ZOONOTIC DISEASE IN A SMALL VILLAGE NEAR ORADEA

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RESEARCH ARTICLE

Abstract

Leptospiroses are infectious-contagious diseases, generally with natural focality, common to humans and many species of domestic and wild mammals, with acute evolution expressed by hypothermia, anemia, hemoglobinuria, sometimes jaundice or subacute and chronic in which symptoms of nephritis predominate. The disease was described in dogs in 1901 (Poenaru and Udrischi) and in 1902 (Ciurea). Leptospirosis is widespread throughout the world and is of particular economic importance because of the losses it causes due to mortality, abortions, premature parturitions of non-viable or improperly shed products, expenditure on prophylactic and control measures, etc. The disease is also of health importance as a zoonosis.

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INTRODUCTION

Etiology. The aetiological agents are spirochetal micro-organisms belonging to the family Leptospiraceae, genus Leptospira. Leptospires are filamentous, thin germs with fine, close coils, 0.3µ deep and 0.1 - 0.5µ wide and with tapered, S- and C-bent ends. Leptospira's length is 3-20 µm (on average 6-12 µm, but some strains can reach up to 150 µm). Uncoloured leptospires can be seen under the microscope against a dark background, with a shiny, silvery appearance, and under the electron microscope they appear as a twisted thread around an axis. The germs are motile, they multiply by transverse division, stain with Giemsa solution (prolonged method) or Tribondeau-Fontana argentic impregnation and grow under aerobic conditions at 28-30 °C. Special media containing rabbit serum, which is essential for growth in the allantoic fluid of hen embryos, are used for culture (Korthof, Uhlenhuth, etc). The pathogenicity of leptospires is variable and is due to the mechanical factor and enzyme equipment with which they are equipped, and the antigenic structure is very complex, with immunological differences between them. The aim of this study was to investigate the effects of supplementing the diet of broiler chicks with stinging nettle (*Urtica dioica* L) meal on performance, carcass traits, fatty acid (FA) profile and meat cholesterol content and meat antioxidant status.

Pathogenic leptospires belong to the interrogans species which comprises 212 serovars divided into 3 serological groups (Parker and White, 1992). The serovars are unevenly distributed, some are universal, such as icterohaemorrhagiae, canicola and even pomona and hardjo, while others are only found in certain geographical regions. Each serovar has a certain reservoir host, but the same serovar can occur in several host species.

In domestic animals in our country, the following serovars have been implicated in clinical or subclinical leptospira infections: pomona (in suines, bulls, equines, sheep, goats and less frequently in dogs), icterohaemorrhagiae (in suines, dogs, bulls, equines, sheep and goats), tarassovi (in suines, bulls, sheep and goats), grippothphosa (in equines, suines, bulls, dogs), sejroe (in equines, bulls, in suines and less frequently in dogs), bataviae (in equines, sheep, goats, suines), canicola (in dogs, suines, bulls), hebdomadis (in equines, bulls), australis (in equines, less frequently in dogs), wolfi (in bulls, suines) and roumanica, moldaviae, monyakov, mozdok, bakeri, in suines (Perianu, 1974; Răducănescu, 1980, Bercea and Dobre, 1988).

Leptospires are sensitive to pH below 6 and above 8, to temperature above 34-36°C or below 7-10°C, and to dryness. In flowing water, leptospires can survive up to 15 days, in stagnant water much longer, and in water-

saturated soil more than 180 days. Germs are destroyed by gastric juice in 10-15 minutes, instantly in acidic urine, bile and bile salt solutions (Răpuntean and Răpuntean, 1999) and cannot be preserved by freeze-drying. Most antiseptics and disinfectants have a bactericidal effect on germs, the most active being 2% acetic acid. Leptospires are sensitive *in vitro* and *in vivo* to antibiotics (penicillin, streptomycin, tetracycline, erythromycin, neomycin, kanamycin, etc.) and some chemotherapeutics, but are resistant to bacitracin and sulfonamides.

Epizootology. Most species of domestic mammals and a large number of wild species are susceptible. In decreasing order of disease susceptibility: dogs, cattle, sheep, goats, horses, cats, foxes, otters, etc. Susceptibility is highest in weaned young. Very young animals are resistant due to transplacental or colostral immunity.

MATERIAL AND METHOD

An experimental study was attempted with a number of 20 dogs ranging in age from 8 months to 3 years. The experiment started in spring 2022 and ended in autumn 2022. The entire research took place in a village near Oradea, more precisely at a puppy shelter in Tămășeu. The shelter is located on the outskirts of Tămășeu, away from the local people's shelters, somewhere in a field.

The staff involved in this experiment and who came into contact with these animals undergoing the experiment were told that this is a zoonosis with a high risk of contagiousness, about the measures they should apply and, very importantly, what to look out for. The 20 dogs in the experiment were set up in separate areas at a distance from the dogs in the kennel. No deratification measures were carried out in 2022 as the intermediate host in this zoonosis is known to be the mouse or the rat.

The 20 dogs were divided into 3 groups. All the dogs in this study came from the streets, found by animal-loving volunteers. Batch 1 consisted of 10 dogs in which the prevention protocol was properly carried out according to the current prevention rules, by vaccination at entry and booster at 2-3 weeks. A multivalent vaccine was used which included prevention for Leptospira spp. Batch 2 was represented by 5 dogs which received a single dose of vaccine without booster at 2-3 weeks, and batch 3 was represented by 5 puppies which received no vaccine prevention. Note that batches 1, 2 and 3 were in 3 separate pens spaced far apart.

RESULTS AND DISCUSSIONS

Rapid tests for Leptospira spp were used for interpretation and diagnosis in specimens showing clinical signs of disease. If the test was positive, we used an accredited laboratory for PCR examination. As external factors, we took into account that there is a lake in the area and that no deratization was carried out during that period, being in a field with rodents In terms of the results, both batch 1, 2 and 3 were negative to the disease that was followed in the research. It is worth mentioning that the sensitivity of leptospires to certain disinfectants was taken into account and this aspect was fulfilled according to the protocol.

CONCLUSIONS

Obviously, the recommendation is to keep in mind the prevention protocol in terms of vaccination against leptospirosis and necessarily with booster at 2-3 weeks, then annual vaccination, although in the present study the unvaccinated dogs were lucky and did not get the disease, but from a prophylactic point of view vaccination is the primary recommendation. In herds with larger numbers of dogs, such as puppy kennels, in addition to vaccination, the recommendation is to consider periodic deratization and disinfection according to the protocol depending on the geographical area, season and external factors present in the vicinity, such as stagnant lakes or running water. A

positive disease diagnosis with PCR confirmation is considered a reportable disease with the establishment of quarantine.

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