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Case Report

Dirofilariosis: A Different Approach to the Treatment

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Abstract

Globalization and climate change have as a result, diseases like dirofilariosis which are endemic in certain areas of the planet, mostly in the Mediterranean basin, to spread across continents. Influenced by this situation we will report a case of an infected male English Shepherd who was treated by an alternative protocol with a long-term administration of macrocycline lactones, which is under discussion and incredulity.

Keywords: *Alternative Protocol; Dirofilariosis; Endemic Disease; Long-Term Administration; Macrocycline Lactones*

Introduction

Heartworm disease is a life-threatening disease especially for dogs, with worldwide distribution. It is caused by *Dirofilaria immitis*, an intravascular parasite that resides in the pulmonary arteries, the right side of the heart, and the venae cavae. Mosquitoes feeding on the blood of infected dogs ingest the infectious microfilariae. Their antigens cause secondary changes in the heart and the parasites cause obstruction of the pulmonary arteries. Pulmonary hypertension develops so when the infection is severe, right-sided heart failure (cor pulmonale) may be the consequence. In caval syndrome may be evolved liver and kidney failure. Hepatic venous congestion and ascites are caused by obstruction of caval flow. Dogs housed outdoors have an increased risk compared to those who live indoors. The disease is most common in dogs 4 to 7 years of age. However, in endemic regions the disease is very common in younger dogs. Infected dogs are usually asymptomatic carriers if the parasite burden is small. Severe or moderate respiratory signs may be caused by an allergic response to the worms. Dogs with chronic infections and moderate or large parasite burdens develop low exercise tolerance, poor condition, and loss of body weight. Coughing and vomiting are usual symptoms. Signs of right heart failure may be present. *Wolbachia pipiensis* is a symbiotic organism of the canine heartworm. Wolbachia is gram-negative bacteria belonging to the groups of intercellular rickettsia. They are found in many nematodes producing microfilaria. Female heartworms transfer the *Wolbachia* bacteria into their offspring. They are essential for the heartworm due to the fact that they have a significant role in worm's embryogenesis, development of larval stages, and maturation into an adult.

Case Report

Nio, a male English shepherd dog (32 kg), 6 years old, was found positive after serological test by antigens to adult heartworms on 2012 after a typical annual checkup. The blood swab showed mildly microfilaremia (5 microfilaria/visual field). Blood count and biochemical results were normal. A modified Knott test performed in order to identify the larvae of *Dirofilaria immitis*. The owner could not afford the cost of the treatment while mela-sormine was not available in the country for months; we decided to use an alternative protocol to treat or better to maintain the disease. Long-term administration of macrocyclic lactones (ivermectin and related drugs) could be

used. Although it is not suggested from many veterinarians. The therapy started with doxycycline(administration dose: 10 mg/kg body weight, BID, for 4weeks). Doxycycline reduces the number of Wolbachia in all forms of parasite and cause death to all L3 and young L4 larvae.

Parallel administration of doxycycline and macrocycline lactones reduces the space of sensitivity of parasite, decrease the reproduction activity of them and adult parasite become weaker.

Steroids were unnecessary as clinical symptoms were not found from respiratory system but the acetylsalicylic acid was used in dosage: 5 mg/kg body weight for 10 days/month (5 before and 5 after the administration of macrocycline lactones) in order to avoid thrombus by sudden and massive death of microfilariae, although it is doubtful in many researches.

Macrocycline lactones and specifically the milbemycin oxime in dosage:(for killing of heartworm microfilaria) 0.5 mg/kg. The bodyweight was administrated every month for two years as it is recommended by the alternative protocol. Ivermectin should have better results but was forbidden for the race (collie). Additionally, an antiparasitic collar was put on because Nio was housed outdoors.

Results and Discussion

Every six months a serological test completed as far as 2014 and afterward every year by 2018(died on a car accident). All tests were negative. Milbemycin oxime was administrated once in a month for the next years and antiparasitic collar was replaced every six months after the 2014.This alternative protocol was not the proper one for the treatment and many scientists and veterinarians have their doubts but it was the most suitable at that time. The cost of the therapy was affordable for the client and it was the only solution due to the lack of melarsomine in the country. Nio was in a good shape and the owner was satisfied. If x-rays were taken before and after treatment and a heart ultrasound was available, the results would be more accurate and valuable [1-4].

Conclusion

Alternative protocols like this one are rarely used as first choices of treatment but in cases where dogs are overage or a systemic disease coexists are the best solutions. Never forget that there is a great possibility to create impervious populations with the long-term usage of macrocycline lactones and the probability of reinfection.

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