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DIROFILARIOSIS, INCIDENCE AMONG STREET DOGS IN ORADEA

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Abstract

Dirofilariose, a non-contagious helminthosis of carnivores, is a disease with localization in tissues and tissue spaces in vertebrates (except fish) in the pulmonary arteries, right atrium, right ventricle, vena cava and subcutaneous connective tissue, most commonly being encountered in canine and feline, but it has been reported in ferrets, beaver, rabbit, deer, bear, horse, cat, monkey and man. Dirofilariose is spread worldwide, directly related to the existence of intermediate hosts vector (mosquitos), and some filariae species (fleas, ticks, diptera).

Key words: filariose, D. immitis, D. repens

INTRODUCTION

Sources of infestation are the domestic and wild carnivores, especially dogs, which can have up to 30,000 microfilariae/ml of blood. Mosquito populations from endemic areas constitute the major sources of parasites. Hosts' long hair is not an impediment to mosquitoes attack.

Infestation of human and animal occurs to the skin, by mosquitoes' sting. Transplacental transmission is possible in dogs with either L3 or with microfilariae.

Adult longevity in the blood of animals is 3-8 years. Microfilariae deposited by females are living in blood from several months to over a year.

The immune response in dirofilariose infestation is not fully known. It is believed that each developmental stage of the parasite adopt certain strategies to avoid the host having a low potential for antigenic stimulation.
In chronic infestations immune response is weak and the parasite can avoid the host'a action of reducing the immunogenicity by inducing a state of immunotolerance (Simon et al., 2001).

Cosoroabă and Chiţimia, in 2008, stated that the host is able to "control" filaria's intra-population inside limits compatible with its life, in the case of massive infestation, and young dogs, exposed to a single infesting dose, exhibit acute developments, some with fatal outcomes.

During canine infestation, antibodies IgG, IgM and IgE are developed against antigens of adults, as well as antigens of different stages of development, however, the immunization tests proved inconclusive or

negative.

It is still unknown why *Wolbachia pipientis*, a gram negative bacterium that belongs to the order Rickettsiales, is so important to the host of filariae. It was suggested that, while the worm gives bacteria the amino acids needed for growth and replication, Wolbachia produces important molecules essential for worm as glutathione and heme (Foster et al., 2005).
Wolbachia has the potential to play an important role in the pathogenesis and an immune response in filariae infestation. Future researches are under consideration, including the possibility of diagnosis through specific immune response to Wolbachia, its potential immunomodulatory effects of antibiotic treatment on infected animals.

MATERIAL AND METHOD

The event took place at Vet Clinic Oradea during these year. Responsiveness is very large at dogs. Wolf, coyote, fox, dingo, cat, horse and man are less receptive. Dogs older than 1.5 years seem receptive. Hounds and the folds are most subjected to contact with mosquitoes, therefore, their prevalence to infestation is higher
Horses and humans are not usual hosts, since their cycle is complete. Even if they can reach the adult stage, they are not able to produce microfilariae (Dărăbuş et al., 2006).

Epidemiological diagnosis envisages the existence of endemic areas. Clinical diagnosis is based on the fact that symptoms of cardio-respiratory failure, diarrhea (sometimes bleeding) may occur, associated with nervous and skin symptoms, on the account of which disease can be suspected.

Radiological, electrocardiographic and angiographic, we can find an enlargement of the right ventricle and pulmonary artery distention.

Serological diagnosis can be made by IFAT, ELISA, latex particle agglutination method, with the possibility of giving false positive reactions due to cross-reactions with other filariae. Serological reactions remain positive after treatment, even if the parasites disappeared from the body.

Microscopic diagnosis is performed on smears from the peripheral blood, in order to highlight the microfilariae by direct examination between the blade and the lamella, when a drop of fresh blood or collected in EDTA is put on a slide and covered with glass. It has to be examined under the bright light of a microscope. One can observe the movements of microfilariae. It is a quick method that gives results in over 61% of cases.

The methods used to identify the species of Dirofilariabased on larvae morphology are Knott method modified and histochemical color with acid phosphatase.

RESULTS AND DISSCUSIONS

Adult presence can be made through specific antigen tests, rapid, which is based on identifying circulating antigens of pregnant females of D. immitis.

The ELISA exam is an immunoassay method for detecting D. immitis antigen in canine plasma/serum. This method detects circulating antigens of adult females. The test result is obtained quickly, in 15 minutes. In terms of accuracy, the test has no false positive reactions. The test can be used to detect infestation with Dirofilaria immitis in dogs, bit also in cats.

Ultrasounds make it possible to view worms. Haematologically, we can find eosinophilia and basophilia. Biochemical examinations highlights: albuminuria, hemoglobinuria, bilirubiniria, azotemia and increased serum enzymes.

Pathological diagnosis is easy to be made by highlighting the adult worms in the right cord (D. immitis) and in the subcutaneous connective tissue (D. repens).

Morphopatological diagnosis will be made to the cardiopulmonary inadequacies of other nature, skin diseases, nerve disorders with other etiology, leishmaniasis or a*ngiostrongyliasis* (missing the cutancous signs). Dirofilariose therapy can also be approached by intervention with doxycycline against endosimbiontic bacteria from the Wolbachia genus, before melarsomine therapy, reducing pro-inflammatory actions as a reuslt of the death of adult worms.

Dirofilariose prevention is based on actions being taken on the definitive and also intermediate hosts, in seasons in which they are active. *Dirofilaria immitis* is a potentially fatal parasite for several species of animals. Dirofilariose is a disease that can be prevented due to the availability of preventive drugs which are safe, effective, convenient and easy to manage. According to a guide published by the American Society Heartworm, all animals at risk of infection should receive preventive treatment (Nelson et al., 2005).

Chemoprohyilactics for heartworm medicines are divided into two main groups: macro-cyclic or macrolide lactones (ivermectin, milbemycin oxime, moxidectin and selamectin) and diethylcarbamazine (DEC).

In areas where heartworm is endemic, in dogs that are born during the transmission season, should receive the first dose of macro-cyclic lactones in 2-8 weeks after their birth, i.e. 6-8 weeks. Daily administration of DEC is not convenient, because omitting a dose can lead to insufficient protection, prevention program being difficult to manage. Using DEC is limited in the United States and in Europe the drug is no longer

manufactured.

Treatment with any of these macrolide and macro-cyclic compounds should begin one month after the start of the transmission season and the final dose should be administered one month after cessation of mosquitoes' season activity, although currently the most widely accepted recommendation is a year duration treatment (Nelson et al., 2005).

Actions against intermediate hosts aim measures to reduce culicide population during summer. To reduce mosquito attack in dogs we may apply insecticide collars (Dărăbuş et al., 2006).

CONCLUSIONS

Surgical therapy aimed at extracting adult worms is quite a delicate operation. Surgery is indicated in dogs with massive infestations, when the risk of post-treatment adulticide thromboembolism is very high, when vena cava syndrome is installed or when there are aberrant localizations. It can be done under general anesthesia, with Flexibile Alligatar Forceps introduced through the jugular vein and fluoroscopic guided to the right atrium or even the right pulmonary arteries. It can also be worked out through dissecting jugular vein under local anesthesia and the introduction of a Kanagawa forceps or an endoscope to remove worms from the right atrium and the caudal vena cava. Whatever the method, the surgery must be followed by a treatment with adulticide substances (Venco, 2007).

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