HEARTWORM SCREENING METHODS IN DOGS, CATS AND HUMAN

METODE DE REALIZARE A SCREENING-ULUI ÎN CAZUL DIROFILARIOZEI LA CÂINI, PISICI ȘI Oameni

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SUMMARY

Heartworm disease (a zoonosis disease which must be discovered and treated early enough in order to prevent its spreading) represents a real challenge for veterinary practitioners because of its common clinical signs and most of all because of its cronical evolution. The fact that mosquito’s bite is the most frequent cause of heartworm infection makes that the spreading area of the disease to be a large one (we can find dirofilariosis in every area where temperature and humidity are high). This purpose of this paper is not only to raise awareness about the importance of heartworm diagnosis but to describe one of the most efficient diagnostic tool. Diagnostic methods should detect both microfilariae and antigen.

In the last few years, concurrent with international trade development, the incidence of dirofilariosis in Romania has increased. The intermediate host of Dirofilaria immitis (the mosquito) finds in Romania proper development conditions: temperatures of over 14 degrees and high humidity. In most of the human cases of dirofilariosis, Dirofilaria repens is the etiological agent that causes subcutaneous changes. Literature does not mention any case of human dirofilariosis in our country, as opposed to Hungary, where the first case is mentioned in 1879. It seems that the number of cases gradually increased lately if we consult the latest research. The diagnosis in these cases was made following a detailed case history and after a central examination of the parasites found in different areas, subcutaneous space, and the subcutaneous tissue of the high forearm.

The most important element that contribute to the increasing cases of dirofilariosis in Romania consist of: the climatic conditions, international trade development and the fact that people travel along with pets, bringing in contaminated animals from countries with a high dirofilariosis prevalence. There is little information available about the incidence of dirofilariosis in our country. However, infections in dogs range from 2% to 17% in Bulgaria, Greece and Turkey up to 65% in Italy. Romania and some areas considered to be endemic. Bandi I. (University published some years ago) heartworm infections in Romania. 12 out of 52 examined dogs were detected as being contaminated. The lack of information has led to the creation of PETESMIS Network, a network that provides assistance to owners and veterinarians.

The clinical signs that follow the heartworm infection consist of: anorexia, ascites, edema, tachycardia, tachypnea, cachexia, weight loss, dyspnea cough, cough with blood streaks, epistaxis, paresis - paralysis, cutaneous nodules, right heart failure - in case of massive contamination with filaria-, flu pipe. All these clinical signs should lead us to a confirmation diagnosis that can be done by at least two ways. Heartworm treatment includes two aspects: heartworm prophylaxis which consists of drugs belonging to macrocyclic lactones or macrolides class (ivermectin, selamectin, moxidectin) and adulticide therapy (milbemycin, ivermectin). On the other hand, if the test is negative but the animal continues to present specific symptoms an immunologic diagnosis is necessary. Microfilariae identification can be done by: fresh blood examination, concentration methods (Knott test and the filter test) and histochemical exam. The clinical signs that follow the heartworm infection consist of: anorexia, ascites, edema, tachycardia, tachypnea, cachexia, weight loss, dyspnea cough, cough with blood streaks, epistaxis, paresis - paralysis, cutaneous nodules, right heart failure - in case of massive contamination with filaria-, flu pipe. All these clinical signs should lead us to a confirmation diagnosis that can be done by at least two ways.

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Serological tests used for heartworm surveillance/diagnostic:

- ELISA:
  - Testing adult forms antibodies (AB-ELISA);
  - Testing adult forms antigens (AG-ELISA);

- Immunofluorescence:
  - Testing microfilariae - specific antibodies (MF-IFA);
  - Testing specific adult forms antigens (AFA-IFA);

- Immunochromatographic:
  - Specific antibodies for anti-D. immitis (AIDIA-IFA).

HEARTWORM IC – BIOPRONIX – AGROLABO

The efficacy of the serological tests performed by Biopronix, agrolab in several clinical diagnoses. Also, our unpublished studies revealed their practical utility and that they are very helpful diagnostic tool for heartworms. It has been applied in most of the cases and the results are obtained in the laboratory in 2-3 hours. It does not require special equipment and can be made at any veterinary clinic of it has a sensitivity of 97.65%.

TEST PROCEDURE

1. Add two drops of diluent to window no. one of the device.
2. Add two drops of sample (whole blood, serum or plasma) into window no. one of the device.
3. After 10 minutes read the result. It is recommended to read the result after more than 15 minutes.

RESULT INTERPRETATION

If the test is negative, a red line will only appear in window number one (internal control line). If the test is positive, two red lines will appear in windows number two (test line) and one in window number three (internal control line).

For a complete screening, veterinarians should use two diagnostic methods: one for microfilariae and the other for specific antigen detection. Moreover, for an efficient diagnosis it is important to choose high sensitivity and specificity tests.

Important note is that currently the only and most suitable method for screening is the immunochromatographic test – it is fast (results in 10 minutes) and easy to use.

REFERENCES

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