Biomarkers & Slow-Kill Protocol for Heartworm Disease

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In the Literature

Yoon WK, Kim YW, Suh SI, Hyun C. Evaluation of cardiopulmonary and inflammatory markers in dogs with heartworm infection treated using the slow kill method. *Vet Parasitol*. 2017;244:35-38.

FROM THE PAGE ...

The therapeutic protocol for treatment of canine heartworm disease recommended by the American Heartworm Society consists of 3 intramuscular injections of melarsomine, with steroid and antithrombotic agents as needed. This regimen has long been the basis for heartworm adulticidal therapies and is safe and effective when used as directed; however, melarsomine periodically has limited availability and is unavailable in many countries. Thus, many slow-kill protocols have been circulated as possible alternatives when melarsomine is unattainable. Critics of these techniques have argued that dogs with high worm burdens would be at greater risk for complications (eg, pulmonary and systemic inflammation, pulmonary thromboembolic events, myocardial ischemia) related to their worm burden. In addition, it is assumed that dogs with a higher worm burden would be more resistant to effective long-term elimination of disease with a slow-kill protocol.

This study looked at a small population of shelter dogs with heartworm disease and assessed cardiac, hemostatic, and inflammatory biomarkers to try to correlate worm burden with changes in biomarkers during a course of a slow-kill protocol. The slow-kill protocol consisted of 4-week administration of doxycycline (10 mg/kg PO q24h) and 6-month administration of ivermectin (6-10 µg/kg PO every 15 days). All dogs survived and tested negative for microfilariae at the 6-month recheck; however, 4 of the 12 treated dogs that had higher worm burdens were still positive for heartworm antigen at the end of treatment, and 3 of the 4 remained positive at the end of the study. All biomarkers tested were initially higher (and pathologically abnormal) in dogs with higher worm burdens. Dogs with higher worm burdens and clinical signs had higher elevations in all biomarkers before therapy, and these elevations decreased during the course of therapy.

... TO YOUR PATIENTS

Key pearls to put into practice:

1. The slow-kill method does not appear to be an effective protocol for managing heartworm disease, particularly in dogs with higher worm burdens; current American Heartworm Society recommendations for adulticide therapy should continue to be followed.
2. Use of biomarkers as a tool to provide additional or supplementary prognostic information when other tools (eg, echocardiography) are not available may be helpful in identifying dogs with higher worm burdens. Clinical signs and radiographic or echocardiographic evaluation remain the gold standard for such investigation.
3. The slow-kill method appears to reduce biomarkers associated with cardiac, systemic, and pulmonary inflammation but not such that it would be recommended as initial therapy in an attempt to reduce possible complications from adulticide therapy.