The Next Generation of Fecal Testing—Whipworm Antigen Testing

Introduction
In order to ensure the health of our patients, a fecal examination for intestinal parasites is an important part of a regular checkup. Regardless of the fecal procedure used, there can be limitations on accurately identifying infections with some parasites. The whipworm, *Trichuris vulpis*, is one parasite that can be difficult to detect, and now IDEXX Reference Laboratories has added whipworm antigen testing as an additional tool for diagnosing this challenging parasite.

Background
Whipworm infections occur primarily in canids (dog, fox and coyote) and rarely in felids. The life cycle is direct, with infection occurring after ingestion of embryonated eggs previously shed in infected feces. In the environment, the eggs may survive for years and are very resistant to desiccation, extremes in temperature and ultraviolet radiation, making it a challenging parasite to eradicate from contaminated environments. Once the larvae hatch from the embryonated eggs in the small intestine, there is a lengthy prepatent period of 74–90 days before maturation into adult worms, which eventually reside in the cecum and adjacent large intestine. This lengthy prepatent period may allow infections to go undetected on fecal flotation for a longer period of time than other nematodes, thus increasing the chance for the appearance of clinical signs prior to evidence of eggs in the stool.

Prevalence
The prevalence of whipworm infections can vary. The whipworm prevalence in the U.S., based on detection of eggs in feces, ranges from 1.2% in pet dogs¹ to 14.3% in shelter dogs.²

Clinical Signs
Many dogs with whipworm infections may be asymptomatic, but others may develop colitis with mucus and/or fresh blood in their stool. More severe clinical signs include bloody diarrhea, weight loss, dehydration, anemia and occasionally death.

Rarely dogs will develop hyponatremia, hyperkalemia, prerenal azotemia and metabolic acidosis, which may often be confused with hypoadrenocorticism.³⁻⁵

Current Diagnostics
Currently, the most common method for diagnosing whipworm infection is fecal flotation, either passive or by centrifugation. Whipworm eggs are ovoid with prominent bipolar plugs and can be confused with capillarid eggs. There are many other issues that can complicate the diagnosis of whipworms by using this method. The first being that the eggs are denser than most other common intestinal parasites, and current passive flotation methods may not be adequate to recover these eggs. Secondly, as a result of the long prepatent period, dogs may develop clinical signs prior to shedding eggs. Lastly, intermittent shedding of eggs can lead to false-negative diagnoses if only a single fecal flotation preparation is examined.

New Testing Option from IDEXX Reference Laboratories
Antigen detection is commonly used today to diagnose heartworm and *Giardia* infections. An enzyme-linked immunosorbent assay (ELISA) for the detection of whipworm antigens in feces is now available through IDEXX Reference Laboratories. The whipworm antigen is secreted from adult whipworms and is not present in whipworm eggs, thus allowing for detection of prepatent stages and overcoming the challenges of intermittent egg laying.

Detect More Infections
In a population of 4,240 canine fecal specimens submitted for ova and parasite (O&P) testing at IDEXX Reference Laboratories, whipworm eggs were detected in 42 (1%) of the specimens. The whipworm-specific antigen ELISA was positive in an additional 1.4% of specimens that were negative for whipworm eggs by the fecal O&P test. Thus bringing the total whipworm detection with the combined O&P and ELISA testing to 2.4%.

Detect Infections Earlier
Because of the lengthy prepatent period of 74–90 days, many whipworm infections may go undetected for a period of time and therefore create a difficulty correlating clinical signs. In an experimental infection study, the whipworm antigen ELISA was able to detect infection during this prepatent stage (see graph next page).
Treatment
There are a variety of anthelmintic products available for both treatment and control of whipworm infections. Treatment should be repeated monthly for at least 3 months because of the parasite’s lengthy prepatent period and because reinfection is common. Both fenbendazole and febantel are common parasiticides used for the treatment of whipworm infections. The recommended dose is 50 mg/kg given daily for 3 days. Milbemycin oxime and moxidectin, common ingredients in monthly heartworm preventives, are also effective in removing and controlling whipworms.2,7,8

Public Health Considerations and Preventive Measures

*T. vulpis* has low zoonotic potential, but it does occasionally infect humans.

The immediate disposal of feces is important to prevent environmental contamination and reduce the likelihood of reinfection. Because of the stable nature of the eggs, they are very difficult to destroy and may survive for many years in the environment. Monthly anthelmintic medications may be helpful in preventing the continuation of the cycle.

Ordering Information

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<td>Fecal ova and parasites, <em>Giardia</em> antigen by ELISA, reflex whipworm antigen by ELISA</td>
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<td>5013</td>
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<td>Fecal ova and parasites, reflex whipworm antigen by ELISA</td>
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Specimen requirements: 3–5 g fresh feces in a clean, plastic container

Turnaround time: 1–2 working days

References

The information contained herein is intended to provide general guidance only. As with any diagnosis or treatment, you should use clinical discretion with each patient based on a complete evaluation of the patient, including history, physical presentation and complete laboratory data. With respect to any drug therapy or monitoring program, you should refer to product inserts for a complete description of dosages, indications, interactions and cautions.

Contacting IDEXX

Laboratory Customer Support
If you have any questions regarding test codes, turnaround times or pricing, please contact our Laboratory Customer Support Team at 1-888-433-9987.

Expert Feedback When You Need It
Our team of internal medicine specialists is always available for complimentary consultation. Please call 1-888-433-9987 if you have questions.