



Parasite Prevention: A Trip to the Dog Park

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Life often takes us in unexpected directions. Starting out as a Veterinary Technician I never thought, for one second, that I would be where I am today. After graduation from tech school I landed an amazing job at a progressive small animal practice in Beaver Dam, Wisconsin. There began my love affair with the fast-paced life of an emergency technician and my forte was the laboratory. I am a problem solver by nature, so this aspect of practice was my place to shine. Life has since taken me to my current position as an Internal Medicine Technician at Animal Medical Center of Seattle. I love specialty medicine, but I realized that I also love teaching other veterinary technicians. Before I moved to Seattle in search of more progressive medicine, I worked at Globe University in Wisconsin.

During my second quarter at Globe, I was stuck teaching a parasitology class and was none too pleased. Even though I love lab work, poop wasn't really doing it for me. I began the quarter reluctantly, but quickly realized how fun and important these little bugs really are. I even took my class to one of the local dog parks to collect fecal samples to analyze in class. The students loved it! We tested 15 fecal samples in class that day. Five of those fecal samples came back positive for parasites; *Toxocara* spp. and *Isospora* spp. This exercise got me thinking about the role of prevention and treatment in controlling internal parasites in dogs and I was hooked.

Many people living in large cities think that the risk of parasite infection or infestation in their pet is low. The truth is that, when a large number of dogs live in a small area, the risk of parasite infection increases. Dog parks, for example, are receptacles for parasites. This begs the question: Does the risk of acquiring a parasite at the dog park out-weigh the off-leash time your pooch will have?

To answer this question, we first need to understand the best diagnostic tests to detect these parasites.

There has been much discussion regarding which fecal float is the most accurate for detecting ova. To figure this out, you need to understand the specific gravity of the material you are using. What is specific gravity? Specific Gravity (SG) is the weight of an object compared with the weight of equal parts of pure water. Most parasite ova has a SG of 1.1-1.2g/mL and most fecal material has a SG of 1.3g/ml or greater. So how does this help? It is important to have fecal float solution that has a SG of less than 1.3g/ml. Otherwise, the fecal material will float along with the eggs making a less effective visualization of the eggs and ova. A SG of less than 1.2g/mL will be too low to float the ova.

Sheather's solution, sodium nitrate solution, and zinc sulfate solution are the most common solutions that are used with fecal floats today. Sheather's solution has a SG of 1.27g/mL, an advantage over sodium nitrate and zinc sulfate, which have a SG of 1.2g/mL and 1.18g/mL respectively. The other distinct advantage of Sheather's sugar solution is that less

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plasmolysis and distortion occurs in the eggs and oocysts. Fecal-floatation slide preparations from sugar solution can be kept at 4°C for at least 24 hours and often for several weeks to months, with a minimum of distortion of eggs according to Foreyt (2001).

The most common canine parasites are as follows:



Toxocara canis, also known as ascaroid or roundworms, are digestive nematodes that live in the small intestine of the dog. Once in the environment they can last for many years. This parasite can be passed transmammmary, transplacental and through fecal-oral contact. *Toxocara* infections are very common in puppies, causing clinical signs like vomiting and diarrhea or constipation. In adult dogs, you may see vomiting secondary to the parasite in transit to the stomach. According to Foreyt, (2001), bitches should be treated prior to whelping, all puppies should be treated before seven weeks of age and all dogs should be treated if ova are detected. Pyrantel Pamoate at 5-10 mg/kg PO is the most common treatment for *Toxocara canis*. This treatment is often repeated in 2-4 weeks.

Another digestive nematode, *Trichuris vulpis* or whipworm, attaches to the wall of the cecum and colon. According to



the Companion Animal Parasite Council (CAPC), (April 2010) many dogs have subclinical whipworm infections. Some infections result in typhilitis or colitis characterized by diarrhea that is often streaked with mucus and frank blood. Severe infections can result in bloody diarrhea, weight loss, dehydration, anemia, and in the most extreme cases, death. The suggested treatment according to Foreyt (2001), is Fenbendazole at a dosage of 50mg/kg PO q24 x 3 days or Ivermectin 0.1mg/kg SC or PO.

Other common digestive nematode are *Ancylostoma canium* or *Uncinaria stenocephala*, which are more commonly known as hookworms. The hookworm resides in the small intestine by attaching to the mucosal lining of the intestinal



wall. While attached, they extract the blood of the host as sustenance. At the site of attachment they release an anticoagulant, which causes the site to continue to bleed once they release. Due to their unsavory eating methods, some common clinical signs of an infected canine include anemia, weakness, poor growth and black tarry stool. Foreyt (2001) recommends treating with Pyrantel Pamoate at a dose of 5-10mg/kg PO or Ivermectin 0.05mg/kg SC or PO or even

Fenbendazole 50mg/kg PO q24 x 3 days.

Nematodes are but one type of internal parasite. Protozoans can also be implicated in cases of maldigestion, malabsorption and gut hypermotility leading to diarrhea with or without hemorrhage. *Giardia* is a common culprit that takes up residence in the small intestine of the dog. According to the Companion Animal Parasite Council (June 2009), many dogs have subclinical infections and show no signs of disease. It is recommended in Foreyt, (2001) to treat diarrhea and *Giardia* with Fenbendazole 50mg/kg q24x 3 days or Metronidazole 50-70mg/kg PO q24x 5 days.

In addition to *giardia*, there is another protozoon that commonly affects our canine friends called coccidian or *Isospora* spp. This parasite also lives in the small intestine of dogs and, according to Hendrix and Robinson (2006), although rare in adult animals, *Isospora* is the most commonly diagnosed protozoan infection in puppies and kittens. Common signs observed in a patient that is infected with *Isospora* are hemorrhagic enteritis, diarrhea and poor growth. The recommended treatment involves



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Sulfadimethoxine at a dose of 55mg/kg PO q24x 10 days or until asymptomatic for 2 days if there are more than 1,000oocyst/1gram and diarrhea is present (Foreyt, 2001).

The flea tapeworm, or *Dipylidium caninum*, is the most common cestode of dogs. This parasite attaches to the small intestine of the dog. If you find that a dog is infected with this parasite, you must also check and treat for fleas because the flea is the intermediate host to this parasite. Clinical signs include anal pruritis, chronic enteritis, vomiting or nervous disorders. Recommended treatment for this type of tapeworm infection is Praziquantel at a dose 2.5-5mg/kg PO and to treat the fleas infestation (Foreyt, 2001).

Parasite awareness is important for pet health, but also for public health. Many of these common dog parasites are zoonotic. From the list above, *Toxocara*, *Ancylostoma canium*, *Uncinaria stenocephala*, *Giardia*, and *Dipylidium caninum* are zoonotic. *Toxocara* can infect young or immunocompromised individuals. CAPC states “*Toxocara* spp. are well-documented, important zoonotic disease agents. Infection with *Toxocara* spp. is most common in children and occurs upon ingestion of ova from a contaminated environment.” According to CAPC, infected people develop a syndrome called toxocariasis, symptoms of which include: visceral larva migrans, hepatomegaly, pulmonary disease, and eosinophilia; neural larva migrans, which progresses into neurologic disease; ocular larva migrans, and covert toxocariasis, resulting in chronic abdominal pain. The CAPC states “Infections of children with *D. caninum* following ingestion of an infected flea are occasionally reported. The disease induced in the child is generally mild, confined to the intestinal tract, and readily treated, but can still be distressing to the family. *Uncinaria* can infect people and the typical presentation includes a creeping eruption or cutaneous larval migrans that tend to be self-limiting.

Parasite identification is only one part of the puzzle; prevention is key. The best way to prevent parasites is to know your dog’s parasite status. Annual to biannual fecal floats and treatment can help prevent the spread of internal parasites. Cleaning up after your dog will help make a significant change in the number of parasite infections by decreasing the chance of fecal-oral contact. The CAPC suggest that puppies and kittens should be routinely dewormed beginning at 2 weeks of age, with deworming repeated every 2 weeks until the animals are placed on a monthly control product with efficacy against ascarids at 4 to 8 weeks of age.

Improving clinic compliance is another significant aspect of parasite prevention. To achieve this, everyone needs to be on the same page: have monthly staff meetings, highlight the importance of parasite prevention and know the recommended treatment protocols, assign a staff member to keep the clinic updated on changes to deworming protocols and new products. For example, Drontal® Plus (praziquantel/pyrantel pamoate/febantel) for dogs, is the broadest-spectrum canine dewormer available to treat tapeworms, hookworms, roundworms and whipworms. Client education is also an essential piece of the parasite puzzle. Add a blip in a monthly newsletter, include it on the front or back of your postcard reminders, and talk to your clients about the importance of parasite prevention when they come in for appointments.

Owner compliance with a rigorous internal parasite prevention plan may be challenging, but the benefits of implementing such a program far outweigh the harm. Remember, prevention will not only help our furry friends but it will prevent the spread of these parasites to you as well.

References upon request.

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