

Coccidia in the Intestines, Liver

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We seem to spend a lot of time in the clinic talking to rabbit owners and referring veterinarians about coccidia. Coccidia are commonly found in rabbits, but only rarely cause disease. As a result they are poorly understood by the rabbit owner, breeder and veterinarian alike. So much so that a local Humane Society shelter once euthanized all rabbits that were found to have the parasite, not knowing that a majority of normal, healthy rabbits are carriers. [The shelter has since changed its policy.-Ed.] Finding coccidia in a fecal parasite examination may not even indicate a need for therapy. The aim of this article is to give you a better understanding of coccidia. I have included some scientific names for those who are interested in the more technical end of things. Don't let them throw you, however, because the underlying message is pretty simple: Prevention depends on keeping rabbits in hygienic conditions and avoiding infected feces, or food and water contaminated with feces. New rabbits, especially those with an unknown past, should be quarantined for at least 30 days before they are introduced to other rabbits.

Coccidia are microscopic, one-celled protozoal parasites that affect the intestinal tract and liver of rabbits as well as other animals. Coccidia are the most common parasites of the rabbit's gastrointestinal tract and a common cause of illness in young rabbits.

All rabbit coccidia are members of a single family, Eimeria. There are 12 species of rabbit coccidia reported to infect rabbits, but only a very few of these are important from a disease standpoint and, then, the rabbit's immune system may have to be compromised, or two or more species of coccidia present to create a disease situation. Therefore, the precise roles of the different species of coccidia in causing disease are not clearly understood. While, the presence of only a few coccidia oocyst (the stage shed in the feces of the rabbit) in a fecal parasite examination does not rule out a diagnosis of coccidiosis, neither does it confirm the diagnosis, since many healthy rabbits are infected to some degree.

Only one species, *E. stiedae* which parasitizes the liver, is found outside the intestinal tract. *E. stiedae* may be found in any large groups of rabbits, from rabbitry to foster home. In mild infections there may be no symptoms or there may be only mild to moderate retardation of growth, but the disease may be fatal, especially in young rabbits. Heavily infected rabbits show signs related to the interference of liver function and blockage of bile ducts. These rabbits stop eating and become debilitated; either diarrhea or constipation may be noted late in the disease. Occasionally a rabbit's abdomen may be enlarged and the skin may appear to have a yellow coloration. X-rays may show that the liver is enlarged and fluid may have accumulated in the abdomen. Blood tests will confirm that the liver is damaged and suggest the diagnosis of hepatic (liver) coccidiosis.

Confirmation of the disease is based on finding oocysts in a fecal or bile samples. Numerous drugs have been used to prevent and treat *E. stiedae*. The sulfa drugs appear to be the most effective. We

recommend sulfamethazine and trimethoprim potentiated sulfa drugs. All the rabbits in an infected rabbitry or household must be treated until the disease has run its course. The major role of these drugs is to control the organism until the rabbits' immunity develops, and immunity resulting from mild infections may be lifelong.

The most important species of intestinal coccidia are *E. perforans*, *E. magna*, *E. media* and *E. irresidua*, although the exact species involved may not be as important as the health status of the rabbit. Rabbits become infected by ingesting feces containing the coccidia oocyst. This can happen when the rabbit cleans its feet or fur that has been contaminated with the feces of another, infected rabbit. Although rabbits are cecotrophic (eaters of their cecotropes or soft feces), it is generally accepted that cecotropes do not contain infectious oocyst.

Clinical signs of intestinal coccidiosis vary widely depending on the age of the rabbit, the organism involved, the degree of infection and the relative susceptibility of the animal (affected by age, stress, diet, etc.). Signs are more often seen in young rabbits with their immature immune systems. Weight loss, mild intermittent to severe diarrhea which may contain mucous or blood, and resulting dehydration may be seen. Animals with severe diarrhea may develop intussusception, a blockage of the intestines caused by a telescoping of the bowel on itself.

Deaths caused by coccidiosis are most often attributed to dehydration and secondary bacterial infections. Treatment and prevention of intestinal coccidiosis are as for hepatic disease. Currently there are no vaccines available against coccidiosis.

However, for the rabbit owner there is this good news: Many rabbits diagnosed with coccidiosis don't have coccidia at all! A common mistake made by veterinarians not familiar with rabbits is to confuse *Cyniclomyces guttulatus*, a rabbit-specific *Ascosporogenous* yeast in the *Saccharomyces* family and part of the normal cecal flora of rabbits, with coccidia on fecal examinations.