Dipylidium caninum

Dipylidium caninum for Dog Last updated:
Nov 1, 2016

Species

Canine and Feline
Dipylidium caninum

Overview of Life Cycle

Dipylidium caninum has an indirect life cycle that requires fleas or lice as intermediate hosts.

Dogs and cats infected with Dipylidium caninum shed egg-laden proglottids in their feces. These eggs are consumed by a flea larvae (or rarely, immature lice), and develop into a compact structure referred to as a cysticercoid. As the flea or louse matures to the adults the cysticercoid is maintained within the arthropod host.

Dogs and cats become infected when they ingest the infected flea or louse intermediate host during normal grooming.

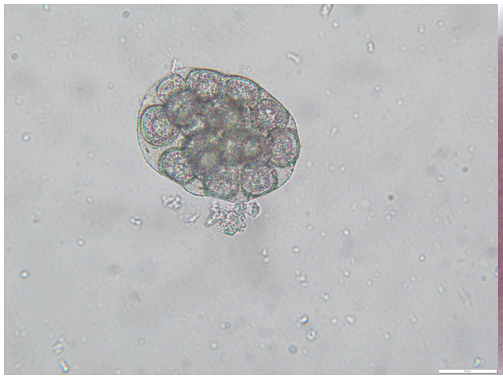
Stages

Dipylidium caninum egg packets are found within proglottids and usually contain clusters of 25-30 eggs and are 120-200µm in length. Each individual egg is 35-60µm in diameter and contains a hexacanth embryo.

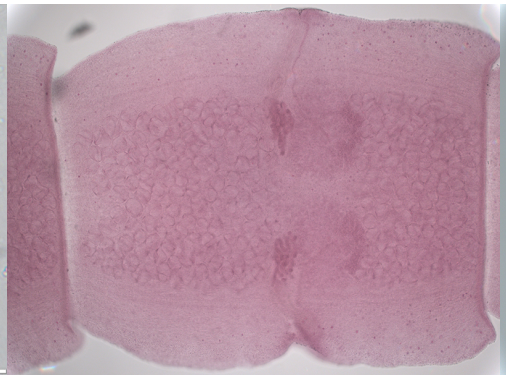
Proglottids are shed in the feces of an infected dog or cat. These proglottids are grossly visible (10-12mm in length), have bilateral genital pores, and look somewhat like cucumber seeds (hence the common name for Dipylidium caninum as the cucumber seed tapeworm.)

After ingestion by a flea or louse, the embryo develops into a cysticercoid, the metacestode stage.

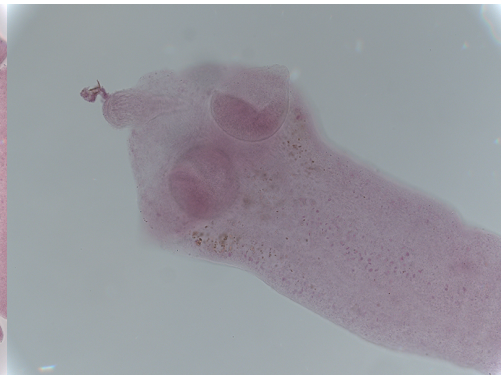
Adult Dipylidium caninum are found in the small intestine of an infected dog or cat. They are 15 – 70 cm in length and attach to the intestinal mucosa via a scolex, which has a retractable rostellum armed with 30 to 150 small hooks and 4 suckers.



Dipylidium caninum egg packet 160X



Dipylidium caninum gravid proglottid



Dipylidium caninum scolex

Disease

Disease in dogs and cats due to infection with adult Dipylidium caninum is considered rare.

Passage of proglottids may be associated with perianal irritation.

Prevalence

The reported prevalence of Dipylidium caninum in published studies varies from 4.0% to 60.0% in dogs and 1.8% to 52.7% in cats. Estimates based on direct examination of the small intestine are more accurate and usually result in much higher prevalence than surveys reporting only fecal flotation.

Prevalence data generated by fecal flotation alone almost certainly underestimate the frequency of infection with cyclophyllidean cestodes, including Dipylidium caninum, because proglottids (and thus eggs) are focally distributed in fecal material and because eggs are heavy and thus do not readily float; a given fecal sample may be negative for tapeworm proglottids or eggs, even in the presence of an infection.

A number of factors influence the likelihood that a dog or cat will be infected with Dipylidium caninum, including the geographic region and the opportunity the animal may have to ingest an infected flea. Dipylidium caninum are found throughout North America and everywhere there are fleas or lice on dogs and cats.

Host Associations and Transmission Between Hosts

Both dogs and cats are susceptible to infection with D. caninum following ingestion of infected fleas (Ctenocephalides felis felis, Ctenopcephalides canis, Pulex irritans) or, more rarely, lice (Trichodectes canis).

Prepatent Period and Environmental Factors

Dogs and cats may begin shedding proglottids as soon as 2 to 3 weeks following infection.

In the absence of appropriate intermediate hosts, the life cycle cannot continue.

Site of Infection and Pathogenesis

Adult Dipylidium caninum are found in the small intestine. Motile proglottids may be seen in the perianal region as they exit the animal, in the pet's environment (e.g., on bedding), or in the fecal material itself.

Dipylidium caninum typically do not cause significant disease in dogs and cats, but because they are aesthetically unpleasant and may pose a zoonotic health risk, treatment is warranted.

There have been reports of young puppies having intestinal impaction from massive Dipylidium caninum infections.

Diagnosis

Diagnosis of infection is reached by identifying proglottids in the fecal material or by recognizing eggs on fecal flotation.

However, because proglottids are not uniformly distributed in the fecal material and eggs do not consistently float, fecal flotation alone is insensitive for diagnosing tapeworm infection in dogs and cats.

In one study of over 100 cats from animal shelters, eggs were not identified by fecal flotation in any cat harboring adult Dipylidium caninum in the small intestine.

Treatment

Praziquantel and epsiprantel are considered the treatments of choice and are highly effective against Dipylidium caninum.

Praziquantel is approved at 5mg/kg orally or subcunateously for elimination of Dipylidium caninum (dogs and cats).

Epsiprantel can be administered at 5.5 mg/kg orally (dogs) and 2.75 mg/kg orally (cats) to eliminate infections with Dipylidium caninum.

Dipylidium caninum infections that are apparently refractory to praziquantel or epsiprantel treatment have been occasionally observed; in these patients, off-label use of nitazoxanide (100 mg/kg) may prove helpful.

For dogs, praziquantel is formulated with some heartworm preventives to provide broad-spectrum internal parasite control. For cats, praziquantel is formulated with emodepside to provide broad-spectrum internal parasite control (visit "Parasite Product Applications" for specific label claims).

Treatment of Dipylidium caninum in dogs and cats must be combined with appropriate flea control (or louse treatment in areas where fleas are rare); in the absence of these changes, re-infection is likely to occur.

Control and Prevention

Stringent adherence to controlling fleas and lice is required to prevent D. caninum infection in dogs and cats.

Monthly control products containing praziquantel are available for dogs to eliminate newly acquired tapeworm infections.

Public Health Considerations

Infection 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.

Monthly administration of a heartworm preventive containing praziquantel in conjunction with an appropriate flea-control regimen will reduce the risk of the pet dog harboring Dipylidium caninum infection.

Selected References

Conboy G. Cestodes of dogs and cats in North America. Vet Clin North Am Small Anim Pract 39:1075-1090, 2012.

Raether W, Hänel H. Epidemiology, clinical manifestations and diagnosis of zoonotic cestode infections: an update. Parasitol Res 91:412-438, 200