

B. Family DIPYLIDIIDAE

1. *Dipylidium caninum*

- a. This is the most common dog and cat tapeworm, and has a worldwide distribution.
- b. Adults can reach 30 - 50 cm; oval or cucumber seed-shaped proglottids. Each proglottid has bilateral genital pores. Adults within the definitive host are of little pathological concern.
- c. Egg packets are released with the terminal gravid segment. Insect larvae [fleas (*Ctenocephalides canis*, *C. felis*, *Pulex irritans*), and lice (*Trichodectes canis*)] feed on debris/eggs and the parasite develops into a cysticercoid within the insect. The flea is inadvertently ingested by the definitive host during grooming; children may be accidentally infected in similar fashion.
- d. The prepatent period is 2-3 weeks.
- e. Treatment for the tapeworm should include a flea eradication program (adulticide, insect growth regulator, vacuuming often, etc.).
- f. Emerging issue: multi-drug resistance.

C. Family ANOPLOCEPHALIDAE:

1. In General

- a. Adult tapeworms of large animals (equine & ruminant)
- b. Free-living oribatid mites are the intermediate hosts contain cysticercoid infective larvae.
- c. Eggs have granular shells with irregular or angular shapes.

2. Tapeworms of horses.

a. *Anoplocephala perfoliata*

- found in the intestine (especially the ileocecal junction)
- Inflammation & intestinal intussusception due to obstruction of ileocecal junction.
- Treatment with praziquantel or pyrantel (at 2x nematode dose) is indicated even if eggs are not detected. Assume infection at the end of the grazing season and treat.

3. Tapeworms of ruminants.

a. *Moniezia* spp.

- Very common.
- Little, if any, clinical significance.
- Segments & eggs often seen in feces.

D. Family MESOCESTOIDIDAE

1. *Mesocestoides corti*

- a. Rare infections in dogs & cats in North Carolina.
- b. Requires 2 intermediate hosts
 - 1st intermediate host is a dung beetle [cysticercoid]
 - 2nd intermediate host can be a mammal, bird or reptile. [tetrathyridium]
 - Dogs or cats can also act as 2nd intermediate hosts
- c. Dogs and cats are typically infected by predation of snakes, birds, and small mammals.
- d. Prepatent period is ~ 2 weeks. Small, sesame seed-sized proglottids are seen in the feces.
- e. Adult worms in the intestine. (=> dog, cat as definitive host)
 - Can multiply by asexual fission, therefore, anthelmintics used must be 100% effective to eradicate the infection.
 - Can cause diarrhea
- f. Larval worms (tetrathyridium) in the peritoneal cavity. (=> dog, cat as 2nd intermediate host)
 - Can multiply by asexual fission, therefore, anthelmintics used must be 100% effective to eradicate the infection.
 - Can cause ascites.

IV. PSEUDOPHYLLIDEAN tapeworms

Spirometra sp.

A. Morphology:

- Scolex has 2 long shallow grooves called bothrium (bothria, plural) that help in attachment.
- Adults can be 6 ft long.
- Genital organs and genital pores are centrally placed on the ventral surface of each proglottid.
- Unlike the other tapeworms, the egg is operculated, oval and brown, and easily confused with the trematode eggs.

B. Life-cycle

1. Requires 2 intermediate hosts - the first host is a copepod, and the second host is a vertebrate.
 - a. Eggs are released through a uterine pore (not with in segments)
 - b. Eggs hatch in water to release a free-living coracidium.
 - c. A copepod ingests the coracidium, which becomes a proceroid larva.
 - d. The second intermediate host (amphibian or reptile) ingests the copepod & a 2nd larvae (pleuroceroid) develops.
 - e. A paratenic host (reptile, mammal [rodent or pig]) may become infected with the pleuroceroid by ingesting the 2nd intermediate host.
 - d. The definitive host (bobcat, dog, cat, raccoon.) is infected by ingestion of the second intermediate host, or a paratenic host.
 - e. Infection is becoming more common in the southern U.S., including North Carolina.
 - C. Diagnosis is by observing eggs in a fecal sedimentation. Although the tapeworms usually release so many eggs that the ova can be detected on a direct smear. Do **not** confuse the ova of this tapeworm with that of the lung fluke, *Paragonimus*.
 - D. Human ingestion of a proceroid or pleuroceroid can lead to the zoonotic disease, sparganosis.
 - While “simple” sparganosis results in a single larvae, but proliferative sparganosis is a disease in which the pleuroceroid stage proliferates through asexual multiplication and can spread throughout the body of humans or pets.
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