

Small

CANINE SPIROMETRA INFECTION

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Stephen graduated from Charles Sturt University in 2015 with a Bachelor of Veterinary Biology and Bachelor of Veterinary Science. Over the years he has worked in mixed and small animal veterinary practices throughout regional New South Wales and Victoria.

More recently Stephen operates his own large animal (farm animal and equine) ambulatory practice in the Southern Highlands NSW, whilst also working as a locum in small animal emergency practices.

Stephen enjoys all areas of small and large animal veterinary practice, with particular interests in small animal medicine and cattle reproduction, medicine and surgery.

History

A 7.5-month-old female spayed Labrador presented to the emergency centre for lethargy and reduced appetite after defecating a large tapeworm (Figure 1) 18 hours prior. The dog had been defecating tapeworms for several weeks, but the owner became increasingly concerned as this was the largest, they had seen and the dog was not herself.



Figure 1. The tapeworm that was passed.

At 3-months-of-age, the owner noticed worms (suspect roundworms) in the faeces. The owner started the dog on Nexgard Spectra® (afoxolaner and milbemycin oxime) monthly at the label dose.

At 5-months-of-age the owner noticed tapeworm segments in the faeces. The dog was started on Drontal (febantel, praziquantel and pyrantel) at the label dose every two weeks. Despite this treatment regimen the dog continued to defecate tapeworm segments.

In the two weeks prior to presentation the dog had started intermittently regurgitating / vomiting at night, was slow to eat (normally it was a ravenous eater) and became lethargic.

The dog's diet was commercial dry food, pigs ear treats and occasional fresh bones. No offal was fed. The dog lived in suburbia with no access to carcasses.

The dog regularly swam in the local river.

Examination / Diagnostics

The physical examination was within normal limits.

The owner provided a sample of the tapeworm during the consultation which had the appearance of a zipper down the middle (see photo 2 – note this is preserved and not fresh). This is characteristic of *Spirometra* tapeworm.

A faecal sample was sent to Vetnostics for a faecal float which identified ova of *Spirometra* tapeworm seen (Figure 3).



Figure 2. The tapeworm at closer resolution, after fixation in ethanol.

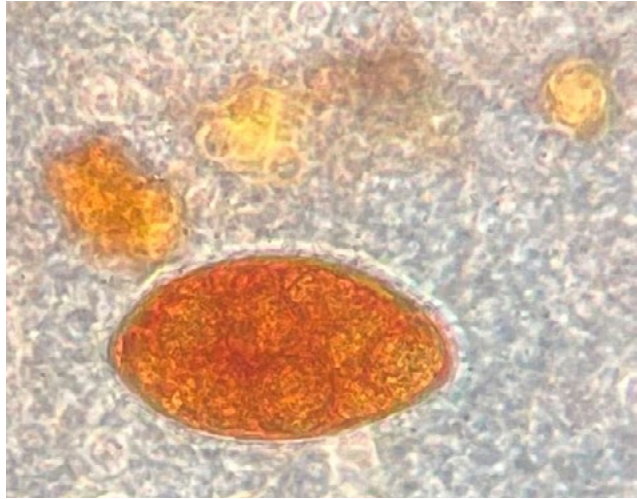


Figure 3. *Spirometra* oocyst in faecal float. Note the hexacanth embryos. Photo courtesy of Sue Jaensch.

Diagnosis

Based on the appearance of the adult tapeworm and the operculated eggs on the faecal float *Spirometra erinaceieuropaei* ('zipper worm') was diagnosed.

Treatment

Treatment for *Spirometra* tapeworm was started based on suspicion (confirmed diagnosis the next day with the faecal float and morphological examination of the gross specimen) with praziquantel at ~22.5 mg/kg PO q24hr for two consecutive days. **Note this is about four times the standard label dose for tapeworms.**

An injection of maropitant at 1 mg/kg SC was also given to help with nausea and vomiting.

A couple of days after starting treatment the owner advised the dog was back to her normal self.

This case is a reminder that identification of tapeworm species in infected dogs and cats is important given that *Spirometra* spp. require MUCH higher doses of praziquantel.

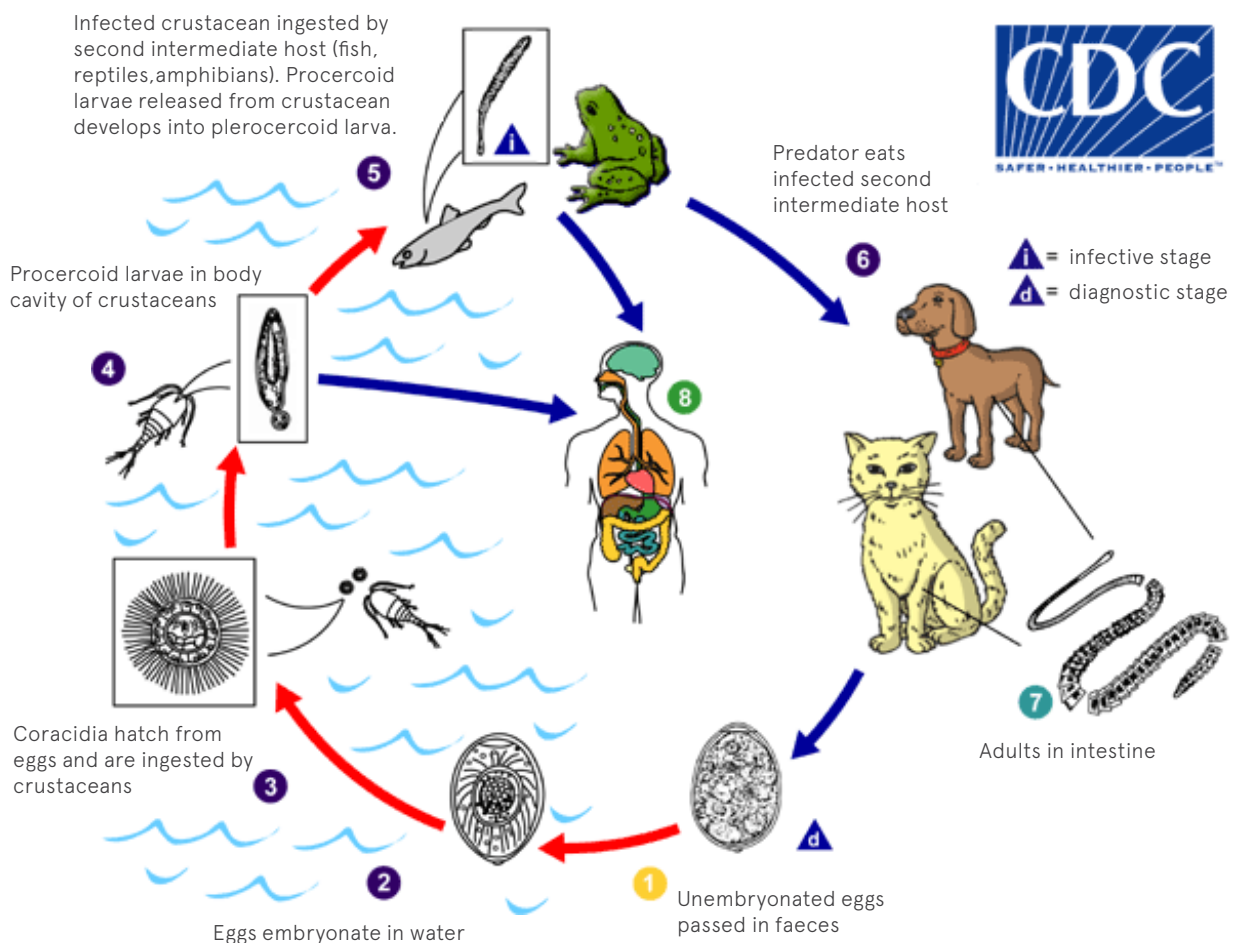


Figure 4. Centers for Disease Control & Prevention
cdc.gov/dpdx/sparganosis/index.html

Discussion

Spirometra spp. have an indirect lifecycle, requiring two intermediate hosts. Dogs, cats or foxes (the definitive hosts) infected with adult *Spirometra erinaceieuropaei* shed eggs in their faeces. In water these eggs embryonate, with coracidia hatching that are then ingested by copepods, the first intermediate host. Within the copepod the coracidia develops into a proceroid.

These infected copepods are then ingested by second intermediate hosts such as snakes, tadpoles/ frogs, lizards, chickens, dogs, cats, pigs, but not fish. Within these second intermediate hosts the proceroid larvae develop into plerocercoid larvae (also called sparganum) and infect the muscle and connective tissues.

Dogs, cats or foxes become infected with adult tapeworms when they ingest an infected second intermediate host, completing the lifecycle. They can also become infected as paratenic hosts if they ingest infected copepods in drinking water, resulting in sparganum in their tissues.

Humans can also become infected with sparganosis by ingesting infected copepods (in drinking water) or under cooked second intermediate hosts.

It is unknown how exactly this dog became infected. The dog swam regularly (multiple times per week) in the local river and so it is possible that given this exposure it was at higher risk to ingestion of an infected secondary intermediate host (i.e. frog).

In addition, many tapeworm species (including *Spirometra* spp.) pose a human health risk, whether that be directly or indirectly.

Acknowledgement

Thank you to Dr Richard Malik for his much-appreciated guidance on this case. Thank you also to Dr Sue Jaensch from Vetnostics for providing the photo of the ova on the faecal float.

References

Australasian Animal Parasites Inside & Out, 2015

parasite.org.au/wp-content/assets/Parasitology2015.pdf

Molecular identification of *Spirometra erinaceieuropaei* infection in a dog with its successful treatment 2018. ♦

Call for Cases

CAN WE PREVENT RAT LUNGWORM DISEASE (NEUROANGIOSTRONGLIASIS)?

Richard Malik, Rogan Lee & Jan Slapeta
CVE, Westmead Hospital &
Sydney School of Veterinary Science
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Rat lungworm disease has become one of the most common causes of meningitis in dogs along the warmer parts of the east coast of Australia.

We think that monthly moxidectin will prevent dogs developing infection based on theoretical concepts and some research in experimental rats. It is proving very difficult to do direct experiments to prove this.

Can you help me?



As a result, we are interested in obtaining data on dogs with naturally occurring rat lungworm disease, specifically, what routine heartworm/tick preventative they had been receiving in the lead up to developing the disease. So, we are asking clinicians who have seen cases of this condition to look back into their records and extract data on what and when the dogs were given in terms of prophylactic worming/heartworm prevention e.g. Bravecto, Bravecto Plus, Simparica, Nexgard, Advocate etc. We realise some pups will not be on any monthly preventative and would like to document this also.

Cases	Monthly Preventative Given (which one? Or nil?)	Timing of monthly preventative relative to developing neuro-angiostrongyliasis
Age, Breed, Sex		

Please provide an email address for follow up questions.

We know it takes time and effort to look up records, but we would be very appreciative.

Thank you. ♦