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SHORT COMMUNICATION

TAENIA TAENIAEFORMIS IN WILD RATS**PREMAALATHA B.¹, CHANDRAWATHANI P.^{1*}, TAN P.S.², THARSHINI J.³, JAMNAH O.¹, RAMLAN M.¹ AND NOR IKHMAL S.⁴**¹ Veterinary Research Institute, 59 Jalan Sultan Azlan Shah, 31400 Ipoh, Perak² School of Marine Science and Environment, University Malaysia Terengganu, Terengganu³ Department of Agro Technology and Bio-Industry, Nilai Polytechnic, Negeri Sembilan⁴ School of Science, Monash University Malaysia Campus, Malaysia

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SUMMARY. *Taenia taeniaeformis* is a parasitic tapeworm that is commonly found in cats. The intermediate hosts for this parasite include mice, rats and other rodents. Cats can be infected by the taeniae by feeding on the rodents harbouring the intermediate stages. A total of 105 wild rats (*Rattus* sp.) in the vicinity of Kuala Lumpur were trapped and a post-mortem was carried out. Observation of whole liver samples showed the presence of cysts grossly on the surface. On cutting open the cysts, tapeworms were found and based on the morphological features of the parasites nine rats were confirmed to be positive for *Taenia taeniaeformis* tapeworms found in cysts in the liver. The cestode was identified based on helminthological keys by Soulsby, 1982.

Taenia taeniaeformis is known as a helminth which has been classified in the family of *Taeniidae*, the flatworm family. According to Mehlhorn and Aspöck (2008), the normal size of the eggs for this species is 35 µm, with the adult worm

having a length of 60 cm. This parasitic tapeworm is normally found in the small intestine of cats, specifically in the region of the duodenum (Combes, 2001). The scolex; which is the head, is the anterior region that is being used to attach to the mucosa of the small intestine.

The life cycle of this helminth begins with the eggs which are swallowed by the intermediate host, normally a rodent such as wild rats. These eggs are normally discharged by the tapeworms in the gut of infected cats or any definitive host and is excreted in faeces and contaminates potential food sources of rodents (Combes, 2001). Once these eggs have been consumed by the wild rats, the embryo in the eggs develop into the earliest larval stage, which is known as *Cysticercus fasciolaris*. At this stage, hooks exist in order to poke the muscle tissues of the wild rats and dig into the liver through the gut and bloodstream. Later, the larvae will emerge into the stage of strobilocerci. At this stage, fluid-filled cysts are produced and comprise of a

scolex which adheres to the mucosa and connects to its terminal bladder until the larvae matures (Rodríguez-Vivas *et al.*, 2011).

The adult of this parasitic tapeworm is a hermaphrodite. Hence, the eggs could possibly develop into mature worms with the strobila (the body) that contains numerous proglottids (the segments) with both male and female reproductive organs.

In fact, wild rats are responsible for the transmission of a number of diseases. Earlier studies by the Veterinary Research Institute, Ipoh has shown that from ten rats caught, seven are mite carriers and four of them are carriers of several bacterial species such as *Leptospira* sp., *Enterococcus* sp., *Escherichia coli* and *Mycoplasma arthritidis* (Premaalatha *et al.*, 2010). Besides that, a study by Mohd Zain *et al.*, 2012 has found that 346 *Rattus rattus* (black rat) and 104 *Rattus norvegicus* (brown rat) caught in Kuala Lumpur were positive with *Taenia taeniaeformis* (60%). In 2009,

Paramesvaran *et al.*, reported 24 out of 30 rodents from five wet markets (Chow Kit, Dato Keramat, Setapak, Jinjang and Kepong) in Kuala Lumpur were positive for cestode *Taenia taeniaeformis*. Thus, the animals that eat wild rats infected with *Taenia taeniaeformis* such as cats would act indirectly as definitive host of *Taenia taeniaeformis*. The cats would be infected by this parasitic tapeworm after ingestion and continue to defaecate infective proglottids containing eggs into the environment. Besides that, the infection of *Taenia taeniaeformis* is classified as asymptomatic since there is no specific sign observed in infected cats.

However, the infected cats may start to lose weight and vomit. This is because, the tapeworms feed on the nutrients from the cats leading to malnutrition in the infected cats. In addition, tapeworms can also be found around the anus of cats and in their faeces. Since a high percentage of rats are infected with taeniasis, it may be

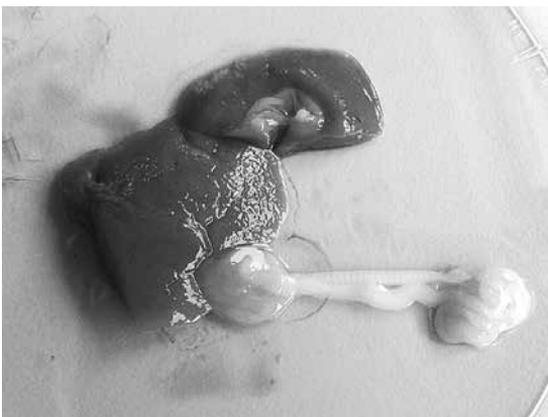


Figure 1. Tapeworm *Taenia taeniaeformis* from the cyst in the liver of wild rat

useful to check faecal samples of domestic cats in the vicinity for tapeworm eggs. Faecal floatation technique is conducted in order to identify either the segmented proglottids or eggs in the faecal samples. The positive faecal floatation analysis would show either spherical eggs with a diameter of 31 μm to 36 μm or the shedding of segment in the faecal samples.

The infected cats could be treated by several prescribed drugs. Cestex, also known as epsiprantel, is a specific drug used to get rid of the *Taenia taeniaeformis* in infected cats. It immediately removes the tapeworms in the gastrointestinal tract as this drug persists within the tract and has minimal rate of being digested. Besides that, praziquantel is widely used in killing of wide range of tapeworms. Animals infected by *Taenia taeniaeformis*, even the wild rats, could be treated effectively by a single dose of praziquantel (Thomas and Gonnert, 1977).

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