

***Pterygodermatites cahirensis* IN PALM CIVET CAT (*Paradoxurus hermaphroditus*): A CASE REPORT**

**S.T. Bino Sundar^{1*}, Thirunagari Ramanujadas², K.T.Kavitha³
Bhaskaran Ravi Latha⁴, B. Nishanth⁵, M. Palanivelrajan⁶ and K. Sridhar⁷**

Department of Veterinary Parasitology

Madras Veterinary College

Tamil Nadu Veterinary and Animal Sciences University

Chennai – 600 007

ABSTRACT

The occurrence of the spirurid nematode, Pterygodermatites cahirensis in a Palm civet cat (Paradoxurus hermaphroditus) observed during necropsy is reported. The worms were found in the intestinal content. Male worms were small and slender compared to females. The worms had two rows of spines on the lateroventral sides along the whole length of the body. Males had short spicules. Females had uterus filled with developing ova. Eggs were thick-shelled with undifferentiated yolk mass.

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¹ Assistant Professor, Office of the Registrar, TANUVAS, Madhavaram Milk Colony, Chennai-600 051,
*Corresponding author Email id: microfilbino@gmail.com

² M.V.Sc Student, Department of Veterinary Parasitology, Madras Veterinary College, Chennai-7

³ Assistant Professor, Department of Veterinary Parasitology, Madras Veterinary College, Chennai-7

⁴ Professor and Head, Department of Veterinary Parasitology, Madras Veterinary College, Chennai-7

⁵ Assistant Professor, Office of the Director of Research, TANUVAS, Madhavaram Milk Colony, Chennai-600 051

⁶ Assistant Professor Department of Wildlife Science, Madras Veterinary College, Chennai- 7

⁷ Zoo Veterinary Assistant Surgeon, Arignar Anna Zoological Park, Vandalur, Chennai-600 048

Helminthic infections are among the common problems affecting the health status of wild animals maintained in captivity (Rao and Acharjyo, 1984). Parasitic nematodes commonly infect wild carnivores due to the constant access and consumption of infected intermediate/paratenic hosts found in the enclosures in addition to contaminated food and water sources. Only limited reports are available on the incidence of helminth parasites in captive carnivores of India (Tripathy *et al.*, 1971; Gogoi, 1994; Rao and Acharjyo, 1995; Varadharajan and Kandasamy, 2000; Kashid *et*

al., 2003). The Asian palm civet (*Paradoxurus hermaphroditus*), also called common palm civet, toddy cat and musang, is one of the carnivores commonly maintained in zoos and national parks. Several helminths infect civets and one nematode of importance is the spirurid *Pterygodermatites cahirensis*. These nematodes have been reported in dogs, cats, civet cats, rodents, reptiles and bats (Yamaguti, 1961). Infections have been observed in local cats in Mukteswar, India (Srivastava, 1940), Lucknow (Sood, 1972), Bhubaneswar (Acharjyo, 2004; Mahali *et al.*, 2010), Pantnagar (Kumar *et al.*, 2005). Human infection has also been reported in New York (Kenney *et al.*, 1975). The present paper reports the occurrence of *Pterygodermatites cahirensis* detected during necropsy in a Palm civet cat maintained at Arignar Anna Zoological Park at Vandalur, Chennai died due to septicaemia.

Palm civet cat (*Paradoxurus hermaphrodites*) was found dead in the enclosure maintained in captivity at Arignar Anna Zoological Park, Vandalur, Chennai. Necropsy was performed in the zoological park and roundworms were observed in the intestine. The nematodes and intestinal contents were collected and preserved in 10% formalin. Gross examination and processing of the specimens and intestinal contents were carried out at the Department of Veterinary Parasitology, Madras Veterinary College, Chennai. Worms were counted, male and female worms were separated based on gross

observation of the length of worms and then they were processed. The nematodes were washed well in water to remove the preservative and the intestinal contents, followed by dehydration in ascending grades of alcohol (70%, 90% and absolute alcohol) for 5 min each. Then the worms were cleared in carbolic acid and mounted in DPX. Identification was done based on the morphological characteristics (Srivastava, 1940; Hyman, 1951; Yamaguti, 1961; Kumar *et al.*, 2005). The intestinal contents were processed by sedimentation technique and examined for the presence of ova.

A total of 136 worms were recovered out of which 66 were males and 70 were females. Males were smaller and slender compared to females (Fig. 1). The average length of female worms was 1.83 cm with a maximum of 3.5 cm whereas the male worms measured an average length of 0.85 cm. The average width of male and female worms was 1 and 3 mm, respectively.

The worms were creamy white with a thick cuticle. Externally the cuticle of both male and female worms had two rows of spines on lateroventral sides almost throughout the entire length (Fig. 2). The spines had a characteristic rose thorn-like appearance which could be easily appreciated with an unaided eye. The size of the spines increased from the anterior end to the middle and then decreased from the middle to the posterior end. The average number of spines on the male worms was 90 pairs while in the females

it was 125 pairs. Along with spines, transverse striations were also seen on the cuticle.

Microscopic examination of the worms revealed the presence of a small sclerotized buccal capsule the opening of which was seen on the dorsal side of the anterior end. The buccal cavity was followed by the oesophagus which had an anterior muscular portion and posterior glandular portion. The muscular portion was seen as a rigid tube whereas the glandular portion was seen as a wavy structure (Fig. 3). Posterior ends of the male and female worms bend like a hook. In male worms, a pair of short spicules was seen at the posterior end which was underdeveloped (Fig. 5). In females, the posterior end had a uterus filled with developing eggs (Fig. 4). The eggs recovered from the intestinal contents were smooth, oval and thick-shelled with undifferentiated embryonic mass inside (Fig. 6). The morphological features of worms were correlated with the observations of Gibbs (1957) and Johnson (1969) and the worms were identified as *Pterygodermatites cahirensis*.

Pterygodermatites genus contains many species which have been reported in wild animals. They are parasitic spirurid nematodes in carnivores, rodents, reptiles as well as humans (Yamaguti, 1961; Kenney *et al.*, 1975). The infection is most commonly seen in carnivores. Adults live in the small intestine of the carnivores.

In the present study, worms were

speciated as *P. Cahirensis* based on the average lengths of male and female worms and a number of cuticular spines (Gibbs, 1957; Johnson, 1969).

Palm civet cats are arboreal and live on the trees. They are omnivores and feed on fruits, insects, lizards, frogs, rodents and small birds. As per the reports of Quentin *et al.* (1976), the insect *Trachyderma hispida* acts as an intermediate host for *P. cahirensis*. The larvae of this parasite were also found encapsulated in the wall of the intestine of lizard, *Hemidactylus flaviridis* (Gupta and Pande, 1970) and the frog, *Ranati grina* (Gupta and Pande, 1977). Because of the predatory habits of the animal, it might have ingested any of the intermediate or paratenic hosts.

Reports on *Pterygodermatites* infection recorded profound weakness, anaemia, and hypoproteinemia in heavy infections (Montali *et al.*, 1983). In the present case during the necropsy of the animal, the cause of death was recorded as septicaemia. The high worm burden could have contributed to the pathogenesis. However, septicaemia may not be attributed to the *Pterygodermatites* infection.

Usually, the infection is mild and clinical signs may not be present. However, the ova shed with the faeces contaminate the surroundings and serve as the source of infection for the animal handlers and the care takers (Kenney *et al.*, 1975). Therefore,

strict control measures are essential. In captive animals, reducing the exposure to the intermediate and paratenic hosts may contribute significantly in controlling the infection. Feed and water, free from larval stages of the parasite, may contribute further to the control strategies. Routine faecal examination of the captive civet cats may prevent the incidence of *Pterygodermatites* infection.



Fig. 1. Male and female *Pterygodermatitescahirensis* worms: gross appearance.



Fig. 2. Two rows of spines are conspicuous on the latero-ventral aspect of the male worm



Fig. 3. A thick buccal capsule present at the anterior end. Oesophagus showing two distinct parts



Fig. 4. Posterior end of female worm with uterus filled with eggs



Fig. 5. Posterior end of male worm showing short spicules

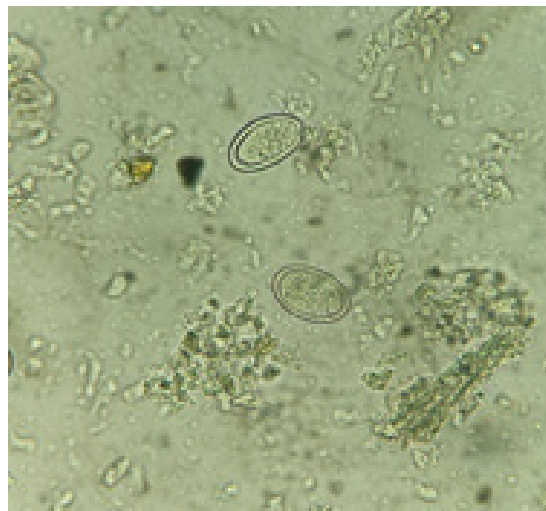


Fig. 6. The eggs of *Pterygodermatites* spp. recovered from the intestinal contents are oval in shape and contain a smooththick shell with undifferentiated embryonic mass

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