



Obstruction in the feline bladder by *Capillaria* sp. – case report

Page 1 a 5

[*Obstrução em bexiga felina por Capillaria sp. – relato de caso*]

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ABSTRACT

Capillaria SP is a nematode parasite that can occasionally affect the bladder, and its most common final host is carnivores, but with felines it is often not known whether they are less affected or not diagnosed, and there are few reports on the subject. The diagnosis of this pathology is made with a sedimentary urine test, investigating the presence of parasite eggs. The present work is a case report, occurred in a semi domiciled feline. The objective of this report is to present new information on the subject that is still poorly publicized today.

Key word: nematode, parasite, bladder

RESUMO

A Capillaria sp. é um parasita nematoide que ocasionalmente pode acometer a bexiga, e tem como seu hospedeiro final mais comum os carnívoros. Porém, no caso de felinos, muitas vezes não se sabe se são menos acometidos ou não diagnosticados, existindo poucos relatos sobre o assunto. O diagnóstico dessa patologia é feito com exame sedimentar de urina, mediante pesquisa sobre a presença de ovos do parasita. O presente trabalho é um relato de caso, ocorrido em um felino semidomiciliado, e o objetivo é apresentar informações novas sobre o assunto, que ainda hoje é pouco divulgado.

Palavras-chave: nematoide, parasita, bexiga

INTRODUCTION

The capillariidae family includes several species, *Capillaria* SP, also called *Pearsonema* or *Eucolus* by some authors. It is a genus of cosmopolitan nematode, belonging to the *Trichinellidae* family. The most reported species are *Capillaria plica* and *Capillaria feliscati*. It is also known as a filamentous or capillary worm due to its thin, whitish, and filamentous body structure. The *capillaria* sp. is a nematode with sexual dimorphism, the males measure 13 to 30 mm length, while the females 30 to 60 mm length, with a filiform shape. The females release eggs measuring about 22 to 32 µm in width and 50 to 68µm in length, colorless and bipercolated

tampons (Bédard *et al.*, 2002; Inforzato *et al.*, 2009; Pagnoncelli *et al.*, 2011).

Going into their morphology, these nematodes have a simple mouth and a stisosome esophagus. The stichosome is a series of glandular cells (osteocytes) that are arranged along the esophagus, communicating with it, and exerting the function of secretory gland and reserve organ.

The life cycle of this parasite is not fully elucidated, as well as its form of host infestation. It can be acquired through ingestion of contaminated water and/or via not very selective feeding of stray animals as well as consumption of carcasses of rodents, mainly of rats. The

possibility of earthworm involvement is suggested as a paratenic host. (Inforzato *et al.*, 2009; Pagnoncelli *et al.*, 2011; Ilha and Barros, 2000).

Once the adult worm containing the larva in the L1 stage is ingested, it penetrates the intestine wall, remaining there until its L3 phase, that can last 8 to 10 days (Pagnoncelli *et al.*, 2011), after this period the larva migrates through the renal pelvis and urinary vesicle through the blood flow and lymphatic system, reaching its fourth and final phase stage of adulthood. It is added that the larvae in L3 are visible in the bladder only after 30 days after the infection (Pagnoncelli *et al.*, 2011).

The females lay eggs in the urinary bladder of the definitive host and through the urination of the host, the eggs are released into the environment where they develop into adult worms. They affect both the urinary tract of domestic animals as well as the wild animals of canid and feline species (Bédard *et al.*, 2002).

This parasite is self-limiting, that is, it has a specific and limited path with beginning, middle and end (Bédard *et al.*, 2002).

There are no pathognomonic clinical signs, and the definitive diagnosis is obtained through the examination of urinary sediment, where it is possible to make the visual identification of the parasite eggs. When the symptoms are present, there is severe pain to urinate or the impossibility of excretion. However, this only occurs in cases of severe infection. (Bédard *et al.*, 2002; 3 Inforzato *et al.*, 2009; Pagnoncelli *et al.*, 2011; Ilha and Barros, 2000).

The treatment recommended by the literature consists in the use of anthelmintics such as Levamisole, mebendazole, albendazole and ivermectin, but it depends on the casuistry for the specific choice of drug. However, it was found that a single dose of 0.2 mg of ivermectin/kg SC, is effective in the treatment of parasitosis (Bédard *et al.*, 2002; Inforzato *et al.*, 2009; Pagnoncelli *et al.*, 2011; Ilha and Barros, 2000).

The present work has the objective of reporting a clinical case in a feline, with scope to compare forms of contamination, treatment and results obtained with the other cases in the literature.

CASUISTRY

A feline, male, approximately 4 years old, weighing 3.5kg, started symptoms of fetal position and constant purring on 7/1/2022. Dipyrone was administered by the caretaker for 3 days; on the second day, he presented vomiting with plastic content (Fig. 1), anorexia, constipation, and anuria. He was seen on 07/04/2022 at a private clinic in the municipality of Lauro de Freitas - BA.

On physical examination, the animal presented a lot of pain upon abdominal palpation and the parameters measured were temperature 37.6°C; depressed; normal colored oral mucosa; repletion from the bladder. A clearance maneuver was performed using a urethral probe and retropulsion using 9ml of saline solution with 1ml of lidocaine, without vasoconstrictor.

After the maneuver, via spontaneous urination, urine was collected for urinalysis and blood collected for blood count and biochemicals (ALT, FA, GGT, total proteins and fractions, fructosamine, Urea and Creatinine) and ultrasound examination.

The laboratory tests showed a slight increase in protein. In the ultrasound examination the pancreas was slightly enlarged, and the intestinal loops were more evident, which could suggest the possibility of pancreatitis, justifying the abdominal pain on palpation. A hyperechogenic filament was also visualized (red arrow) close to the bladder wall (Fig. 2).

Urinalysis examination within normal parameters, however with observation of the presence of colorless eggs, bioperculated, non-embryonated and compatible with *Capillaria sp* (Fig. 3).

Obstruction in the feline...



(Figure 1. Photo of the plastic content that was observed after the animal's emesis - image provided by animal's owner)



Figure 2. image obtained from an ultrasound scan – image provided by the author



(Figure 3: image obtained from the egg via urinalysis – Image provided by the author)

The client attempted treatment with oral ivermectin 6mg in a single dose on July 7.

The animal returned for review consultation on 08/03/2022, in which a urine collection was performed for a further urinalysis, via the cystocentesis collection method. Ivermectin was also administered at a dose of 0.2mg/kg SC. The

result of this urinalysis showed the presence of colorless, bioperculated, non-embryonated eggs compatible with *Capillaria sp.*

A third urinalysis via cystocentesis was performed on September 10 whose result showed absence of alteration and absence presence of eggs (Table 1).

Table 1. Evolution of urinalysis

Date	07/04/2022	08/03/2022	09/10/2022
urinary density	1.064	1,057	1.044
urinary protein	+ (30 mg/dl)	+ (30 mg/dL)	Negative
Bacteria	4-10/cga (+)	Rare <4/cga	Absent
Observation	presence of eggs colorless, bioperculated, non-embryoed, Compatible with <i>Capillaria sp.</i>	presence of eggs colorless, bioperculated, non-embryoed, Compatible with <i>Capillaria sp.</i>	there is no observation

DISCUSSION

With the present case study, it was possible to observe that the clinical signs are compatible with the literature on abdominal pain, high urinary density, presence of proteinuria and the presence of eggs in urinary sedimentoscopy. It was also possible to observe that although the parasite cycle is uncertain, according to the

literature it usually affects street or semi-domiciled animals with instinct for hunting, such as in the present case. The caretaker reported that he has a habit of eating garbage and hunting. At the same colony, urinalysis was performed on another contacting cat, but does not show the same hunting habit, and the urinalysis showed no alterations, reinforcing that this may be the most likely form of contamination.

There is no record in the literature of the use and efficacy of ivermectin with oral administration, which was in the present case study the chosen route of administration in the first pharmacological approach. Corroborating with the literature, after 28 days of treatment it was still possible to identify the presence of parasite eggs in the sedimentoscopy.

After 33 days of subcutaneous use of ivermectin 0.2mg/kg, with change in route of administration, a satisfactory result was obtained, that is, the absence of capillary in the sedimentoscopy performed on September 10, as well as reduction of the urinary density and proteinuria.

CONCLUSION

It is possible to conclude from the present study that, despite the incidence of the diagnosis of parasitism in the urinary bladder by capillaria sp is of singular presence, this is configured as a differential diagnosis for clinical signs of abdominal pain, urinary obstruction, intestinal parasitosis, common to urethral obstruction,

which has a significant presence in feline medical clinic.

Therefore, the relevance for obtaining a diagnosis, due to the performing of the urinalysis is noticed. This exam is often not performed due to difficulty in collecting through cystocentesis in cats and is not given the due importance in compared to other complementary exams.

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