Case Report

Clinical presentation, diagnosis and therapeutic management of *Dipylidium caninum* (Cestoda: Dilepididae) infection in a domestic cat (*Felis catus*): a case report

Md. Shahadat Hossain¹, Ausraful Islam¹, Sharmin Shahid Labony¹, Md. Mokbul Hossain², Md. Abdul Alim¹ and Anisuzzaman¹*

¹Department of Parasitology, Faculty of Veterinary Science, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh
²Department of Pathology, Faculty of Veterinary Science, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh

Abstract

**Background:** *Dipylidium caninum*, a zoonotic cyclophyllidean tapeworm, mainly infects dogs, cats, and occasionally humans as well. Here, we present *D. caninum* infection in a domestic cat. A cat of about one year of age with a history of intermittent diarrhea and shedding stool containing whitish cooked rice like soft particles.

**Methods:** The case was identified by thorough clinical, coprological, and parasitological examinations, and treated accordingly.

**Results:** During the physical examination, the cat was found to be infested with flea, and coprological investigation revealed the presence of gravid segments of cestodes. By preparing a permanent slide, we conducted a microscopic examination, and the cestode was confirmed as *D. caninum*. The cat was treated with albendazole and levamisole, which were ineffective; additionally, levamisole showed toxicity. Then, we administered niclosamide which completely cured the animal. On re-examination after a week, feces were found negative for eggs/gravid segments of any cestode.

**Conclusion:** Niclosamide was found effective against dipylidiasis and can be treated similar infections in pets.

Introduction

*Dipylidium caninum* (Cestoda: Dilepididae) is an arthropod-borne zoonotic tape worm that is commonly known as dog tapeworm, flea tapeworm, double-pored tapeworm, or cucumber tapeworm, and it has a global distribution. The adult worm is about 46 cm long and mainly infects dogs and cats; however, it can also cause infection in humans [1]. It is primarily transmitted by fleas such as *Ctenocephalides canis*, *C. felis*, and *Pulex irritans*, and the dog biting louse, *Trichodectes canis*. Animals infected with *D. caninum* shed proglottids with feaces, which rupture in the environment, releasing thousands of eggs. Developmental stages of flea and lice become infected through the consumption of eggs in which cysticercoids develop [2]. Cysticercoids become infective when the developmental stage of the flea molts to an adult and starts feeding on host’s blood. Usually, after ~36 h of a blood meal, the cysticercoid becomes infective inside the flea. Definitive hosts get the infection by accidentally ingesting infected flea or lice [2,3]. Adult worms live in the small intestine and can cause damage of tissues at the site of attachment, leading to the development of enteritis, diarrhea, and hemorrhages in
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Dipylidium caninum infection is a common zoonosis among human beings and their animal companions. The infection is transmitted to humans by the intermediate host flea, which serves as a crustaceal stage of the parasites. Humans can become infected by picking up the infective larvae (cysticercoids) from a contaminated flea [3].

The clinical presentation of a D. caninum infection in a domestic cat is characterized by intermittent diarrhea, presence of white segments with feces [3] and pruritus. The pruritus may be caused by gravid segments passing through the anus of the infected host [3]. The presence of these segments is a diagnostic feature of the infection, as they are easily visible to the naked eye in the feces of infected cats [3].

The diagnosis of D. caninum infection can be confirmed by identifying the characteristic morphological features of the parasitic segments. These segments are typically white, cylindrical, and can measure up to 250 μm in length and 5 mm in width [3]. They are usually seen in clusters and are shed in the feces of infected cats [3].

The therapeutic management of D. caninum infection involves the use of anthelmintic drugs. The most commonly used anthelmintics are albendazole and levamisole, but the efficacy of these drugs can be variable [3]. In the case reported here, the cat was treated with both albendazole and levamisole, but the worm was found ineffective, failing to respond to either drug [3].

Niclosamide was administered as a second-line treatment, but the worm remained ineffective [3]. Therefore, the cat was managed with a combination of anthelmintics, namely albendazole and levamisole, with the addition of ivermectin to treat the flea [3].

In conclusion, D. caninum infection in domestic cats is a common zoonotic disease that can be managed effectively with a combination of anthelmintics and flea control measures [3]. The identification and management of such infections is crucial for the health of both cats and their human companions [3].

References