



E-ISSN: 2320-7078  
P-ISSN: 2349-6800  
JEZS 2018; 6(3): 35-37  
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Received: 14-03-2018  
Accepted: 18-04-2018

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## Successful management of *Diphylidium caninum* infestation in a mongrel puppy

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### Abstract

A mongrel female puppy dog about 8 months of age was presented to Teaching Veterinary Clinical Complex (TVCC), Veterinary College and Research Institute, Orathanadu, Thanjavur on August 2017 with the history of dullness, reduced food intake, vomiting, diarrhea and scooting behavior for past 2 days. On clinical examination of dog showed all the vital parameters are found to be within the reference range and animal voided foul smelling diarrhoea along with the gravid segment. Faecal examination showed presence of *Diphylidium caninum* egg. The gravid segment was subjected to microscopic examination which revealed the presence of numerous *D. caninum* eggs in the gravid segment. The fecal samples were also subjected to polymerase chain reaction to identify parvovirus infection. The sample was negative for parvovirus. Then the dog was treated with praziquantel@5 mg/kg b.wt PO and showed uneventful recovery after treatment. On re-examination of faecal sample after a week of treatment, were found negative for all the parasitic eggs.

**Keywords:** dog, *Diphylidium caninum*, gravid segment

### 1. Introduction

*Diphylidium caninum* is commonly known as double pored or cucumber seed tapeworm. Reported in throughout the world which commonly occurs in the small intestine of canids, felids and occasionally in Mans [1, 2]. This parasite transmitted through fleas *Ctenocephalides canis*, *C. felis*, *Pulex irritans* and also by dog louse, *Trichodectes canis* [1]. Dog acquires the infection by accidental ingestion of infected flea or louse [3]. Tapeworm eggs will hatch and begin to mature inside the body of a flea. When a dog or cat nips at, and swallows some of the infected fleas, it becomes infected. The larval stage tapeworm, ingested in the flea, is liberated, and attaches and grows into an adult tapeworm inside the animal. The mature proglottids of this parasite resembling cucumber seed shape. Human also gets the infection by accidental ingestion of infected flea, particularly young children due to their playing nature with pets [4 and 5]. The dog tapeworm has been found in infants as young as five weeks old. Children who ingest these fleas or flea parts will have tapeworms attach in their intestines and grow to maturity. Many of these children will have no symptoms at all. Some will have diarrhea, cramping, abdominal pain, and sometimes rectal or anal itching (if the cucumber shape segments squirm about near the anal opening). It was probably by seeing the moving cucumber-seed-shaped egg sacks in the child's diaper or stool that the tapeworm infestation was diagnosed. Affected dogs have clinical symptoms of unthrifty, pot-bellied appearance, diarrhea, anal anal scooting (anal discomfort) [1, 2]. The prevalence of *D. caninum* in dogs was reported by various researchers in different states of India [6-10]. Present paper describes the successful management of *D. caninum* infestation in a mongrel puppy.

### 2. Materials and Methods

A mongrel female puppy dog 8 month old weighing about 9 kg was presented to Teaching Veterinary Clinical Complex (TVCC), Veterinary College and Research Institute, Orathanadu, Thanjavur on August 2017 with the history of dullness, reduced food intake, vomiting, diarrhea and scooting behavior for past 2 days. Dog was not deworming and vaccination. On Clinical examination of animal revealed dull, depressed, congested conjunctival mucus membrane, temperature 38.6°C with heart rate 102/ min, respiratory rate 36/min and mild dehydration were observed. The fecal samples were subjected to polymerase chain reaction to identify parvovirus infection which was found to be negative. Animal voided foul smelling diarrhoea along with the gravid segment (Fig.1). Thus gross and microscopic examination of

fecal sample confirmed the infection to be caused by *Dipylidium caninum*.

Whole blood sample was collected from cephalic vein in EDTA vial for complete haematological studies at the time of case presentation. Then the whole blood was examined for Total erythrocyte count, hemoglobin, packed red cells volume, total leukocyte count and differential leukocyte count were estimated as per the standard method described by Schalm *et al.* [11].

Dog was treated with praziquantel@5 mg/kg body weight orally along with supportive fluid therapy to stabilize the animal. Dogs showed uneventful recovery during post treatment. On fecal sample re-examination after a week, were found negative for parasitic eggs.

### 3. Result and Discussion

The present study pet infected with *D. caninum* was confirmed. Microscopic examination of fecal sample revealed the presence of *D. caninum* egg (Fig.2) as per the guidelines given by Soulsby [11]. Further gravid segment were separated

from faeces and kept in between two slides and stretched showed the presence of egg capsules containing eggs (Fig.3). Presence of egg capsules containing up to 30 eggs is the characteristic feature of *D. caninum*. Fecal sample was further subjected for polymerase chain reaction to rule out the canine parvovirus infection. Sample was found to be negative for canine parvovirus. It was confirmed as *D. caninum* infestation. Major reason for occurrence of Dipylidium infection is due to the lack of knowledge regarding deworming schedule and choice of anthelmintics for their pets [3].

The occurrence of *D. caninum* eggs in India reported from various places in Jabalpur 1.54% [6], Palambur 17.3% [7], Mathura 50.0% [8] and Bhubaneswar 12.5% [9]. Another study conducted in Nagpur city, *D. caninum* were found to be 6.6% in adults and 11.4% in puppies [10].

Analysis of the blood sample was done, all the blood profile parameters found to be within the reference range. Hematological parameters of the present study depicted in Table 1.



**Fig 2:** *Dipylidium caninum* cucumber shape gravid segment



**Fig 1:** *Dipylidium caninum* egg capsule on fecal sample examination



**Fig 3:** *Dipylidium caninum* gravid segment with egg capsules

**Table 1:** Haematological parameters

Parameters	On the day of treatment	After treatment
Hemoglobin (g/dl)	10.2	11.4
Packed cell Volume (%)	35	37
Total Erythrocyte Count ( $10^6/\mu\text{l}$ )	5.86	5.79
White Blood Cell ( $\times 10^3/\mu\text{l}$ )	7.62	8.12
Neutrophils (%)	68	71
Lymphocytes (%)	27	24
Monocytes (%)	2	4
Eosinophils (%)	3	1
Basophils (%)	0	0

### 5. Conclusion

The present study concluded as presence of *D. caninum* has public health importance in this region. The fleas are bitten by pet dogs; subsequently the larval forms of the dog tape worm stick to the teeth and contaminate the saliva. The children's who are all having the habit of playing with pet dogs may get in contact with the saliva and may accidentally ingest the infective larval forms. So, educating the dog owners about zoonotic nature of this parasites and adapting effective control measures of intermediate host as well as strict periodic deworming of dogs is required.

### 6. Acknowledgements

The authors acknowledge The Dean, Veterinary College and Research Institute, Orathanadu, Tamilnadu, India to carry out the study successfully.

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