A Case of Contracaecum sp. (Ascaridida: Anisakidae) Infection in Dalmatian Pelican (Pelecanus crispus)

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Summary

Contracaecum genus (Ascaridida: Anisakidae) is a nematode parasite of the fish-eating birds throughout the world. A heavy infection of Contracaecum sp. was detected at the necropsy of a Dalmatian pelican (Pelecanus crispus) that had been referred to an animal hospital due to trauma and died before the initiation of any treatment. Intense parasitic infection was seen in the proventriculus and within the lumen of oesophagus to duodenum. This is the first case of intense adult Contracaecum sp. infection in a piscivorous bird in Turkey.

Keywords: Contracaecum sp, Infection, Pelican, Turkey

INTRODUCTION

The Contracaecum (Railliet & Henry, 1912) genus contains approximately 50 nematode species of which the mature ones parasitize fish-eating birds and mammals. Their complex life cycle consists of four larval stages and involves copepods, aquatic vertebrates and fish as intermediate and/or paratenic hosts. The high prevalence of Contracaecum in freshwater or marine fish may affect their health. When in the stomach of the definitive host, L3 molts to become L4 and both the larvae and the adults may affect the host health negatively. If the larvae are accidentally taken by humans by consuming raw or undercooked fish meat, they may cause anisakiasis, a zoonotic infection characterized by stomach pains, fever, diarrhea and vomiting.

Adult nematodes of the genus Contracaecum have been reported in fish-eating birds throughout the world. Morphological characterization and molecular techniques are used to differentiate species.

This case presents intensive parasitism in a Dalmatian pelican; the parasites were identified with their morphological characteristics.

CASE HISTORY

A wounded Dalmatian pelican (Pelecanus crispus) was referred to the Animal Hospital of Uludağ University and...
A case of Contracaecum sp. ... the animal died before any intervention. At necropsy, severe haemorrhage was observed in regio sterno-abdominalis and from scapula to carpometacarpus. There was a complete oblique fracture at the ulnar bone with a haematoma formation around the fracture site. The venous congestion of the liver and lungs were thought to be related with haemorrhagic shock and was considered to be the cause of death. Numerous worms, approximately 4 cm in length, were found in the alimentary tract lumen, from the oesophagus to duodenum. A large number of nematodes were lying freely in the lumen of proventriculus and some of them were attached to the wall (Fig. 1.A). Parasites were observed also at the cut surface of liver. Organs were fixed in 10% buffered formalin and were embedded in paraffin for pathological examination. Sections were cut at 5 µm and stained with haematoxylin and eosin (H&E) stain.

Approximately 400 parasites were counted in the lumen of the alimentary tract. The lengths of the parasites were 2-4 cm and they had body shapes similar to nematodes. All parasites were immersed into 70% ethanol and kept a few days in alcohol before identification.

Parasites were put in lactophenol solution to obtain optimum transparency and identification. Upon examination, they were identified as Contracaecum sp. (Ascaridida: Anisakidae) (Fig. 1.B and 1.D). Some larval nematode forms were also found.

Histopathologically, the surface epithelium of proventriculus and the epithelium of submucosal glands were desquamated in some areas. Multifocal eosinophilic homogenous material was found in the affected mucosa sites (Fig. 1.C). These dead parasite materials were surrounded by mononuclear inflammatory cell infiltrations, particularly macrophages and foreign body giant cells. Colonies of bacteria were present around hyaline substances in the mucosa accompanied by heterophile leukocyte infiltration. The villi of duodenum and lamina epithelialis were lost. Severe cryptal damage was observed; proprial mucosa was thin and eroded, with marked mononuclear cell infiltration throughout the mucosa of the duodenum. Diffuse congestion, haemorrhage and emphysema were seen in the lungs, and haemorrhage in subepicardium was observed in the heart. Vacuum degeneration of hepatocytes, congestion in sinusoids, accumulation of mononuclear cells in Kiernan's spaces (especially around the bile ducts) and hyperplasia of bile ductules were seen in the liver.

**DISCUSSION**

Different species of adult Contracaecum have been reported as a parasite of fish-eating birds belonging to the Pelicanidae from Central/South Americas and Mediterranean area. Up to now, three species of parasite; C. multipapillatum, C. gibsoni and C. overstreeti have been detected from Pelecanus crispus. However, some other Contracaecum species have been reported from other genus of Pelicanidae.

Diagnosis of Contracaecum species from fish-eating birds can be conducted by using morphological characteristics such as the length of the spicules, the morphology of the distal end of the spicule, and the bifurcation of the interlabial tip. However, these features sometimes may exhibit differences, and therefore current...
tendency is to use genetic/molecular techniques for
definitive diagnosis. The accurate identification of
species will be conducted at further investigations by
detailed measures.

The histopathological findings in the present case
were related to pathological changes in proventriculus and
small intestines. The cellular reactions caused by these
nematodes consist of mononuclear and heterophilic
infiltrations. Penetration of nematodes causes pro-
ventricular and duodenal lesions. The hyaline substance
observed in propria mucosa is possibly from the secretions
of the larvae mixed with necrotizing cells. Supportively,
these findings have been reported in other Contracaecum
sp. cases before.

The present study revealed an intensive infection of
Contracaecum sp. in a Dalmatian pelican and is the first
report of mature Contracaecum sp. infection in a piscivorous
bird in Turkey.

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