Case Report

First Report of *Capillaria contorta* in the Crop of a Wild Eurasian Sparrowhawk (*Accipiter nisus*): A Case Report

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ABSTRACT

Capillaria contorta is a capillariid nematode of the upper digestive tract of wild and domestic birds, but reports in raptors, particularly the Eurasian sparrowhawk (*Accipiter nisus*), are scarce. On December 2024, an adult male Eurasian sparrowhawk was presented to the Clinic in poor condition, with traumatic rupture of the esophagus and crop sustained during prey consumption. Despite emergency supportive care, the bird died shortly after admission and a complete necropsy was performed. Segments of the digestive tract were collected for parasitological examination. These were processed using standard methods including fixation, graded ethanol dehydration, clearing in lactophenol, and permanent mounting. Examination was performed using stereomicroscopy and light microscopy. A single elongated nematode with a stichosome esophagus was recovered from the crop and identified morphologically as *C. contorta* based on adult body and spicule measurements and the presence of characteristic lemon-shaped eggs with bipolar plugs. No gross lesions attributable to parasitism were observed in the upper digestive tract. To the authors' knowledge, this is the first report of *C. contorta* from the crop of a Eurasian sparrowhawk, and illustrates that capillariid infections in raptors may be subclinical and easily overlooked. Routine parasitological examination of the upper gastrointestinal tract is recommended in necropsy and clinical evaluations of birds of prey to better define the prevalence and clinical relevance of *Capillaria* infections.

Keywords: Birds of prey, Eurasian Sparrowhawk, Nematode, *Capillaria contorta*, Case report

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Case History

The Eurasian sparrowhawk (*Accipiter nisus*) is a small accipitrid raptor widely distributed across Europe and much of the Palearctic, with marked sexual dimorphism (females: 290 g; males: 150 g) (Zuberogoitia et al., 2011). Males mainly prey on small passerines up to 120 g, whereas females may capture larger birds, such as wood pigeons (Panter & Amar, 2021). Morphological adaptations, including a small head, slender body, relatively short rounded wings, and a long tail, support high maneuverability in cluttered habitats and rapid pursuit of avian prey (Hamid & Taha, 2021).

Among important health problems in birds of prey, capillariid nematodes (family Capillariidae) are frequently located in the upper gastrointestinal tract (oral cavity, esophagus, and crop), where they may cause proliferative or necrotizing lesions and can be associated with anorexia and poor body condition (Santos et al., 2011). *Capillaria contorta* is a filamentous nematode that preferentially affects the upper digestive tract, and its eggs are typically lemon-shaped with bipolar plugs (Yabsley, 2008).

Capillariasis in free-living birds can range from subclinical infection to severe disease. Stressed or heavily infected individuals can develop oral and esophageal lesions, whereas clinically normal wild birds can harbor substantial worm burdens (Atkinson et al., 2009). Reported clinical signs include anorexia and necrotic lesions involving the mouth and upper gastrointestinal tract. Gross oral lesions may resemble those observed in trichomoniasis infections in birds (Gharagozlou et al., 2019). Despite the recognized importance of *Capillaria* spp. in a variety of avian hosts, information on *C. contorta* infection in birds of prey, and particularly in the Eurasian sparrowhawk, remains limited.

The present case report described the recovery and morphological identification of *C. contorta* from the crop of an adult male Eurasian sparrowhawk and highlights the relevance of routine parasitological evaluation of the upper digestive tract in raptors for accurate assessment of helminth burden and health monitoring.

Clinical Presentation

On December 2024, an adult male Eurasian sparrowhawk (*A. nisus*) was presented to the clinic, with a history of esophageal and crop rupture in the cervical region that had occurred during prey consumption (Figure 1). Because the bird was a free-living wild raptor, no reliable history regarding prior health status, comorbidities, or prior interventions was available. To the best of our knowledge, the bird had not previously received veterinary treatment or rehabilitation before admission.

On admission, the bird was severely depressed, in poor body condition, and showed signs of respiratory distress. No other external lesions, discharge, or neurological signs were observed. Emergency supportive care was initiated, including warmed crystalloid fluids, oxygen supplementation, and analgesia; however, the bird died shortly after presentation due to the severity of the lesions and its compromised condition.

Diagnostic testing

Necropsy, immediately after death, revealed no gross changes in the gastrointestinal tract aside from a traumatic crop/esophageal rupture associated with prey consumption.

For parasitological examination, segments of the digestive tract, including esophagus, proventriculus, gizzard, small intestine, ceca, and rectum, were collected and fixed in 70% ethanol (Merck KGaA, Darmstadt, Germany) (Tamaru et al., 2015). After 24 hours, the samples were submitted to the Parasitology Department. Tissue samples were then dehydrated through a graded ethanol series (80%, 90%, 96% and absolute ethanol; Merck KGaA, Darmstadt, Germany), with 15 minutes in each concentration, followed by three changes in 100% ethanol to ensure complete removal of water (Subhagan & Susannamma Kurian, 2016). Subsequently, worms were cleared in lactophenol (Merck KGaA, Darmstadt, Germany) in a water bath (Memmert, Schwabach, Germany) at 45 ˚C for 30 minutes to allow visualization of internal structures (Nickle, 2020). Cleared specimens were mounted permanently on glass slides using Kaiser's glycerol gelatin mounting medium (Merck KGaA, Darmstadt, Germany) according to standard techniques and examined under stereomicroscope and light microscope (Olympus, Tokyo, Japan) (Azodi et al., 2017; Zahabiun et al., 2015).

Microscopic examination of crop material revealed a nematode with an elongated, filamentous body. The esophageal region contained regularly arranged stichocytes (Figure 2). The anterior end was simple, without prominent cuticular expansions, and appeared almost rounded in profile. In female specimens, the vulvar opening could not be clearly visualized, but its approxi-

mate position was inferred from the arrangement of internal organs. The uterus contained numerous large eggs (approximate mean length: 62 µm), which were oval in shape with bipolar plugs and arranged in single or double rows (Figure 2). In a male specimen examined in detail, the total body length was about 11 mm, and a single needle-shaped spicule was present, measuring approximately 0.6 mm (Figure 3).

Based on these morphological characteristics, particularly the filamentous body, stichocyte pattern, egg morphology, and spicule features, the nematode recovered from the crop was identified as *C. contorta*. The combination of a stichosome esophagus, inferred vulvar position, the morphology and length of the male spicule, and lemon-shaped eggs with bipolar plugs supported differentiation from other capillariid species (e.g. *Eucoleus* spp.) that may infect the upper digestive tract of birds.

Assessments

This case report documented *C. contorta* in the crop of an adult male Eurasian sparrowhawk (*A. nisus*) that died shortly after presentation due to traumatic rupture of the esophagus and crop, a condition not attributable to parasitism. No gross lesions consistent with helminth-associated disease were observed at necropsy, which supports the notion that capillariid infections in raptors may remain clinically silent or subclinical despite colonization of the upper digestive tract. Similar patterns of high helminth or capillariid prevalence with absent or mild clinical signs have been reported in free-living and captive raptors and in other avian species (Atkinson et al., 2009; Santos et al., 2011). To the authors' knowledge, this finding expands the reported host range of *C. contorta* to include the Eurasian sparrowhawk.

C. contorta is classically described as a nematode of the crop and esophagus in domestic and wild birds, where it may be associated with epithelial spongiosis, hyperkeratosis, and, in some cases, epidermoid metaplasia of the upper digestive tract. Such histopathologic changes have been demonstrated in red-legged partridges, with parasites embedded in the epithelium and eggs within epithelial layers (Pizarro et al., 2000). Comparable lesions have also been reported in poultry and waterfowl

Figure 1. Eurasian sparrowhawk (A. nisus) with esophageal and crop ruptures

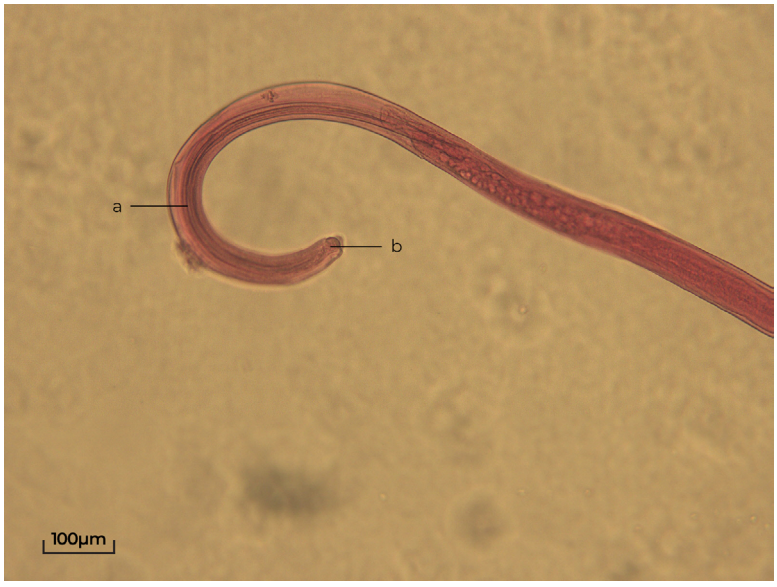

Figure 3. Microscopic image of the distal part of the male worm body showing (a) a single thick spicule without protrusion from the distal end of the body and (b) a distal end lacking a reproductive sac and having a rounded, knobbed distal end

Note: Image taken with a light microscope and ×40 magnification.

infected with *C. contorta* or related capillariid species, and these may be associated with weight loss, decreased performance, or mortality (Belete et al., 2016; Gharagozlou et al., 2019; Hamadani et al., 2023). In contrast, the sparrowhawk in the present report showed no gross pathologic changes associated with *C. contorta*, suggesting that the pathogenic expression of this parasite in raptors may be influenced by infection intensity, host condition, and concurrent diseases.

Several large surveys have demonstrated that helminth infections of the digestive tract are very common in raptors. In a study of 119 diurnal raptors from Catalonia, Spain, 79.8% of birds were infected with at least one helminth species, and nematodes were the most frequently detected group (75.6% of birds), including capillariids, in kestrels, buzzards, sparrowhawks, and goshawks (Clausen & Gudmundsson, 1981; Ferrer et al., 2004a). Similar findings have been reported for nocturnal raptors in the same region, where nematodes dominated the helminth fauna of owls (Ferrer et al., 2004b). More recent

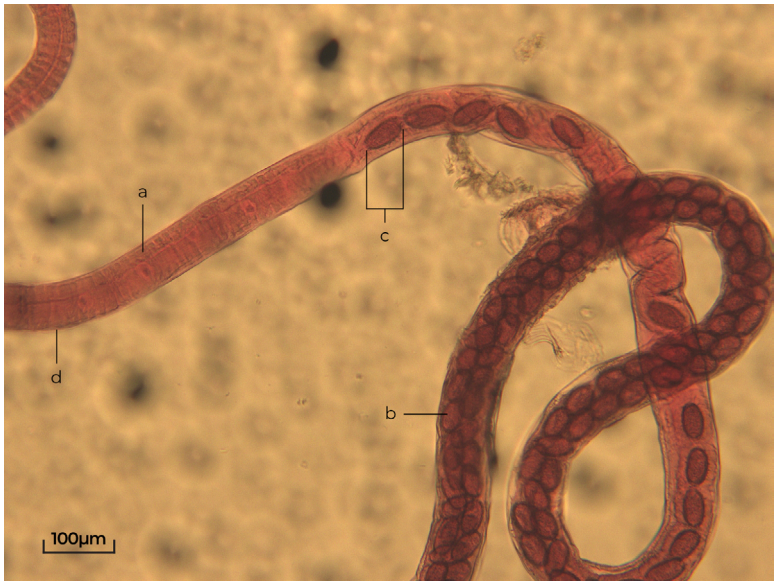

Figure 2. Morphology of the female worm, showing (a) regular stichocytes, (b) large eggs in single or double rows, (c) oval egg valves with an average length of 62 µm, and (d) a smooth surface without protrusions and patterns of the body cover

Note: Image taken with a light microscope and 40× magnification.

necropsy studies from Italy recorded capillariid nematodes in 71.4% of positive raptors (Rossi et al., 2021). Together, these data reinforce that capillariids are among the most consistent gastrointestinal parasites of birds of prey (McAllister et al., 2017).

Although many capillariid infections are subclinical, clinically apparent oral or upper digestive disease has been described in raptors. For example, oral capillariosis due to *Eucoleus dispar* was reported in migrating sharp-shinned hawks (*Accipiter striatus*) presenting with caseous oral lesions that grossly resembled trichomoniasis, despite otherwise good body condition (Childs-Sanford et al., 2019). In addition, capillariid eggs may be detected on coprological examination in captive and free-ranging raptors without overt clinical signs (Santos et al., 2011). These observations, together with the absence of gross lesions in the present case, emphasize that *C. contorta* and related species may act as chronic, often subclinical infections that only occasionally result in clinically apparent disease.

From a clinical and diagnostic perspective, the present case underlines several important points. First, capillariid infections of the upper digestive tract can be easily overlooked in raptors if only gross lesions are considered, especially in individuals that die or are euthanized for unrelated reasons, such as trauma. Routine microscopic examination of the crop and esophageal mucosa, coupled with targeted parasitological evaluation, is therefore recommended in necropsy protocols for birds of prey, even when the upper digestive tract appears grossly unremarkable. Second, the morphologic features of capillariid lesions may overlap with those of *Trichomonas gallinae* infection and other causes of necrotizing stomatitis and esophagitis in raptors, as has been documented in studies (Childs-Sanford et al., 2019). Differentiation between trichomoniasis and capillariid infection requires a combination of cytology, parasitologic examination, and, when available, histopathology and molecular diagnostics.

The main limitations of this report include the single-bird sample size, the absence of histopathologic examination of the crop and esophagus to detect subtle epithelial changes, and the lack of molecular confirmation. Although the morphologic criteria used were consistent with *C. contorta* as described previously (Atkinson et al., 2009), molecular characterization would strengthen species confirmation and enable comparisons across regions and hosts. Future work combining necropsy surveys, histopathology, and molecular typing in raptors from different habitats would help clarify the epidemiology, host specificity, and pathogenic potential of *C. contorta* and related capillariids.

In conclusion, this case report documented *C. contorta* infection in the crop of a free-living Eurasian sparrowhawk without associated gross lesions. Together with existing literature, it supports the notion that capillariid nematodes are common but often subclinical parasites of raptors, with the potential to cause significant disease under certain conditions. Routine parasitologic and, when possible, histopathologic examination of the upper digestive tract of raptors is recommended, both in clinical practice and necropsy studies, to better define the true burden and clinical relevance of capillariid infections in these key avian predators.

Ethical Considerations

Compliance with ethical guidelines

Ethical review and approval were not required for this study, as the manuscript reports a natural infection observed and treated at a veterinary clinic. The bird was presented to the clinic for clinical care, and no experimental procedures or interventions outside routine veterinary practice were performed. All activities were conducted in line with standard veterinary procedures and applicable animal welfare regulations.

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Authors' contributions

Conceptualization: Seyed Hossein Hosseini, Morteza Nikzad, and Jamshid Razmyar; Resources: Artin Sheibani; Data curation: Morteza Nikzad and Yaser Kianfar; Investigation: Mohammad Barari, Morteza Nikzad, Shaghayegh Hosseinpour, and Yaser Kianfar; Formal analysis: Artin Sheibani, Seyed Hossein Hosseini, and Shaghayegh Hosseinpour; Validation: Artin Sheibani, Mohammad Barari, and Jamshid Razmyar; Writing the original draft: Artin Sheibani, Mohammad Barari, and Shaghayegh Hosseinpour; Review and editing: Seyed Hossein Hosseini, Jamshid Razmyar, Morteza Nikzad, and Yaser Kianfar; Project administration and supervision: Jamshid Razmyar.

Conflict of interest

The authors declared no conflict of interest.

References

Atkinson, C. T., Thomas, N. J., & Hunter, D. B. (2009). *Parasitic diseases of wild birds*. New Jersey: John Wiley & Sons. [Link]

Azodi, M., Peyghan, R. , Razi Jalali, M., & Ghorbanpour, M. (2017). Investigation on worm infestation of digestive tract in Persian gulf Cynoglossus bilineatus. *Veterinary Research & Biological Products, 30*(4), 114-124. [Link]

Belete, A., Addis, M., & Ayele, M. (2016). Review on major gastrointestinal parasites that affect chickens. *Journal of Biology, Agriculture and Healthcare, 6*(11), 11-21. [Link]

Childs-Sanford, S., Lejeune, M., Abdu, A., Buckles, E., Renshaw, R., & Ford, D., et al. (2019). Oral Capillariosis Due to Eucoleus dispar in Migrating Sharp-shinned Hawks (Accipiter striatus) in New York, USA, 2016-18. *Journal of Wildlife Diseases, 55*(4), 928–934. [PMID]

Clausen, B., & Gudmundsson, F. (1981). Causes of mortality among free-ranging gyrfalcons in Iceland. *Journal of Wildlife Diseases, 17*(1), 105-109. [DOI:10.7589/0090-3558-17.1.105] [PMID]

Ferrer, D., Molina, R., Adelantado, C., & Kinsella, J. M. (2004). Helminths isolated from the digestive tract of diurnal raptors in Catalonia, Spain. *The Veterinary Record, 154*(1), 17–20. [DOI:10.1136/vr.154.1.17] [PMID]

Ferrer, D., Molina, R., Castellà, J., & Kinsella, J. M. (2004). Parasitic helminths in the digestive tract of six species of owls (Strigiformes) in Spain. *Veterinary Journal (London, England : 1997), 167*(2), 181–185. [DOI:10.1016/s1090-0233(03)00103-5] [PMID]

Gharagozlou, M. J., Mobedi, I., Aghaebrahimi Samani, R., Taghizadeh, F., & Mowlavi, G. (2019). Esophageal-Crop Capillariasis and Proventriculus Ventriculus Hystrichisiasis in a Migratory Duck (Anas crecca). *Iranian Journal of Parasitology, 14*(3), 413–420. [PMID]

Hamadani, H., Bihaqi, S., Salahuddin, M., Khan, A., Sheikh, I., & Haq, Z., et al. (2023). The Kashmir duck: an important poultry genetic resource of India. *World's Poultry Science Journal, 79*(2), 391-401. [Link]

Hamid, H. H., & Taha, A. M. (2021). Anatomical and histological structure of the cornea in sparrow hawk Accipiter nisus. *Iraqi Journal of Veterinary Sciences, 35*(3), 437-442. [Link]

McAllister, C. T., Durden, L. A., Richardson, D. J., & Hnida, J. A. (2018). Some parasites (Apicomplexa, Trematoda, Nematoda, Acanthocephala, Phthiraptera) of the common great horned owl, Bubo virginianus virginianus (Aves: Strigiformes: Strigidae), from southeastern Oklahoma. *Proceedings of the Oklahoma Academy of Science, 97*, 83–90. [Link]

Nickle, W. R. (2020). *Manual of agricultural nematology*. Boca Raton: CRC Press. [DOI:10.1201/9781003066576]

Panter, C. T., & Amar, A. (2021). Sex and age differences in the diet of the Eurasian Sparrowhawk (Accipiter nisus) using web-sourced photographs: Exploring the feasibility of a new citizen science approach. *Ibis(International Journal of Avian Science), 163*(3), 928-947. [DOI:10.1111/ibi.12918]

Pizarro, M., Villegas, P., Rodriguez, A., Gonzalez, M., & Flores, J. M. (2000). Capillaria contorta parasitism in red-legged partridge under farm conditions in Spain: Histopathology of the upper digestive system. *World's Poultry Science Journal, 56*(2), 159-166. [DOI:10.1079/WPS20000013]

Rossi, G., Terracciano, G., Gherardi, R., Galosi, L., & Perrucci, S. (2021). Parasites, Bacteria, and Associated Pathological Changes in the Digestive System of Diurnal and Nocturnal Raptors in Central Italy. *Pathogens (Basel, Switzerland), 10*(12), 1567. [DOI:10.3390/pathogens10121567] [PMID]

Santos, T., de Oliveira, J. B., Vaughan, C., & Santiago, H. (2011). Health of an ex situ population of raptors (Falconiformes and Strigiformes) in Mexico: Diagnosis of internal parasites. *Revista de Biologia Tropical, 59*(3), 1265–1274. [PMID]

Subhagan, S. R., & Susannamma Kurian, S. K. (2016). Identification of root knot nematode in thippali. *International Journal of Plant Protection, 9*(2), 611-614. [Link]

Tamaru, M., Yamaki, S., Jimenez, L. A., & Sato, H. (2015). Morphological and molecular genetic characterization of three Capillaria spp. (Capillaria anatis, Capillaria pudendotecta, and Capillaria madseni) and Baruscapillaria obsignata (Nematoda: Trichuridae: Capillariinae) in avians. *Parasitology Research, 114*(11), 4011–4022. [DOI:10.1007/s00436-015-4629-2] [PMID]

Yabsley, M. J. (2008). Capillarid nematodes. In C. T. Atkinson, N. J. Thomas & D. B. Hunter (Eds.), *Parasitic diseases of wild birds* (pp. 463-497). New Jersey: John Wiley & Sons, Inc. [DOI:10.1002/9780813804620.ch27]

Zahabiun, F., Sadjjadi, S. M., & Esfandiari, F. (2015). Development of a Double Glass Mounting Method Using Formaldehyde Alcohol Azocarmine Lactophenol (FAAL) and its Evaluation for Permanent Mounting of Small Nematodes. *Iranian Journal of Parasitology, 10*(4), 617–624. [PMID]

Zuberogoitia, I., Alonso, R., Palomares, L. E., & Martínez, J. A. (2011). Sex determination in Eurasian sparrowhawks (Accipiter nisus). *Journal of Raptor Research, 45*(1), 48-55. [DOI:10.3356/JRR-10-76.1]