Case of Toxocariasis in a Cat Presented to a Private Veterinary Clinic

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Abstract
In this study, a case of zoonotic toxocariasis seen in a cat brought to a private veterinary clinic is presented. The case data were obtained from a 2.5 kg male tabby cat, aged 6 months, who was presented to a private veterinary clinic. Following the examination of the cat, vomiting was observed as a side effect of the anaesthetic administered during the eye removal surgery. Macroscopic parasites were detected in the stomach contents. In order to identify the species, the parasite was placed in a tube filled with 70% alcohol. The *Toxocara cati* was later identified microscopically at the Parasitology laboratory of Selçuk University Faculty of Veterinary Medicine. Our case report contains useful information since toxocariasis infection in cats is rarely seen in the stomach contents and has zoonotic importance. This case is presented with the hope of raising awareness, especially among veterinarians working in animal hospitals and small animal clinics.
Keywords: Cat, toxocariasis, veterinary clinic, zoonosis.

Özel Bir Veteriner Kliniğine Getirilen Kedide Toksokariazis Vakası

Öz
Bu çalışmada özel bir veteriner kliniğine getirilen kedide görülen zoonoz karakterli toksokariazis vakası sunulmuştur. Olgu materyalini özel bir veteriner kliniğine getirilen 6 aylık ve 2,5 kg ağırlığında olan tekir ırkı bir erkek kedi oluşturmuştur. Kedide muayene sonrası göz ekstirpasyonu ameliyatı esnasında verilen anestezi ilacının yan etkisiyle kusma şekillenmiştir. Mide içeriğinde parazitler makroskobik olarak görülmüştür. Tür teşhisinin yapılması için parazit %70 alkol içerikli tüpe konulmuştur. Selçuk Üniversitesi Veteriner Fakültesi Parazitoloji laboratuvarında yapılan mikroskobik inceleme sonucunda *Toxocara cati* tespit edilmiştir. Vaka sunumumuz kedilerde toksokariazis enfeksiyonunun mide içeriğinde nadir olarak görülmesi ve zoonotik öneme sahip olduğundan yararlı bilgiler içermektedir. Bu vaka özellikle hayvan hastaneleri ve küçük hayvan kliniklerinde görev yapan veteriner hekimlerde farkındalık yaratması umuduyla takdim edilmiştir.
Anahtar kelimeler: Kedi, toksokariazis, veteriner kliniği, zoonoz.

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Introduction

Toxocariasis is a zoonotic infection in cats caused by *Toxocara cati, Toxascaris leonina*, and *Toxocara malaysiensis* species (Hanedan & Bilgili, 2021). Although toxocariasis is a common infection worldwide, those living in areas with poor sanitation are at a higher risk of infection (Despommier, 2003).

People become infected when the eggs of the second-stage larvae of *Toxocara* spp. are accidentally swallowed by humans. Children stand out as the most vulnerable social group to infection due to their intense contact with soil (Martınez-Barbabosa et al., 2003).

Toxocara cati (*T. cati)* are cream-coloured nematodes with females 4-10 cm long and males 3-6 cm long. The cervical wings of these parasites are arrowhead-shaped. Their eggs are 65-75 µm in diameter, brown, round and thick-shelled, and their shells are serrated. *Toxocara cati* are parasites that live in the small intestines of domestic and wild cats. These parasites develop directly and do not require intermediate hosts. However, certain creatures, including rodents, certain insects, and earthworms, may act as paratenic hosts in the life cycle of *T. cati* has a complex life cycle and can develop in cats in different ways (Tınar, 2011; Doğanay, 2021). Infection usually occurs via galactogen or by ingestion of infected paratenic hosts. Therefore, the larvae do not experience lung-tracheal migration, so the kittens are less affected by tracheal migration-related symptoms because they are older when the parasites mature. Although lesions are only observable within the intestines, infected animals exhibit a range of symptoms, including abdominal bloating, dehydration, diarrhea, dull coat, respiratory complications, and growth retardation (Taylor et al., 2007). Adult ascarids diagnosis is determined by identifying the characteristic eggs via stool examination with the flotation technique. Furthermore, during anaesthesia, there is a chance that ascarids may appear in the vomit sample (Burgu & Sarımehmetoğlu, 2005; Aydenizöz, 2013).

Toxocariasis is a disease which can be asymptomatic in many cases. Disease symptoms may vary depending on the parasite load to which the creature is exposed and the location of these parasites in the internal organs of the creature. When clinical cases are evaluated, two different disease conditions are taken into consideration: Visceral Larva Migrans (VLM) and Ocular Larva Migrans (OLM). VLM, which is usually seen in children, presents with symptoms such as fever, abdominal pain, and cough. Eosinophilia and leukocytosis are usually observed in patients. Pica is a condition frequently encountered in patients' stories. If the patient does not reinfect, recovery may occur within a few weeks. In the case of re-infection, symptoms such as lymphadenopathy, hepatomegaly, urticaria, interstitial pneumonia, in which other organs and systems are also affected, and meningoencephalitis, when the central nervous system is affected, may be observed. If the parasites settle in the central nervous system, lungs, and heart tissues, the patient may die. In OLM cases, the age of the patient does not matter much. Even a single larva can unilaterally cause OLM. Visual acuity, visual clarity, visual acumen, visual performance, etc. may deteriorate. It manifests itself with symptoms such as endophthalmitis, uveitis, chorioretinitis, and granulomas in the retina. During eye examination, sometimes a moving larva can be seen inside the eye. In OLM cases, eosinophilia and leukocytosis may not always be seen in the patient's blood parameters (Anğ et al., 2011).

This research aims to provide information about the zoonotic toxocariasis case seen in a cat presenting to a private veterinary clinic.

Case Description

A 6-month-old male tabby cat weighing 2.5 kg was presented to a private veterinary clinic. The cat's owner reported an initial increase in the tear discharge, which eventually led to complete eye closure. It was revealed during the cat's anamnesis assessment that it had a prior calicivirus infection during its kitten period. After a comprehensive examination by the veterinary practitioner, it was concluded that the cat had experienced loss of vision in its right eye. The surgical procedure for eye removal is illustrated in Figure A. The cat experienced vomiting shortly after the administration of anesthesia. Visible and mobile parasites in the stomach contents are shown in Figure B. To identify the species, the parasite was placed in a tube containing 70% alcohol. The diseased right eye was sutured subsequent to the removal of the eyeball. After the patient wakes up after the operation, it is seemed appropriate to use the commercially prepared antibiotic clavulanic acid and amoxicillin trihydrate (Synulox®, Zoetis, Italy) subcutaneous injection at a daily dose of 8.75 mg/kg for 5 days and use 2 tablets of the commercially prepared antiparasitic drug fenbendazole, pyrantel pamoate and praziquantel (Caniverm®175 mg, Bioveta, Czech Republic) for 1 day. The patient was discharged after a 7-days stay in the hospitalization unit of the clinic (Figure C). The ascarid placed in the tube was examined under an Olympus Cx31 trinocular microscope in the Parasitology Laboratory of Selçuk University Faculty of Veterinary Medicine. Tınar (2011) was used as the identification key for species identification of the parasite. As a result of the examination, it was determined to be a *T. cati* as shown in Figure D.

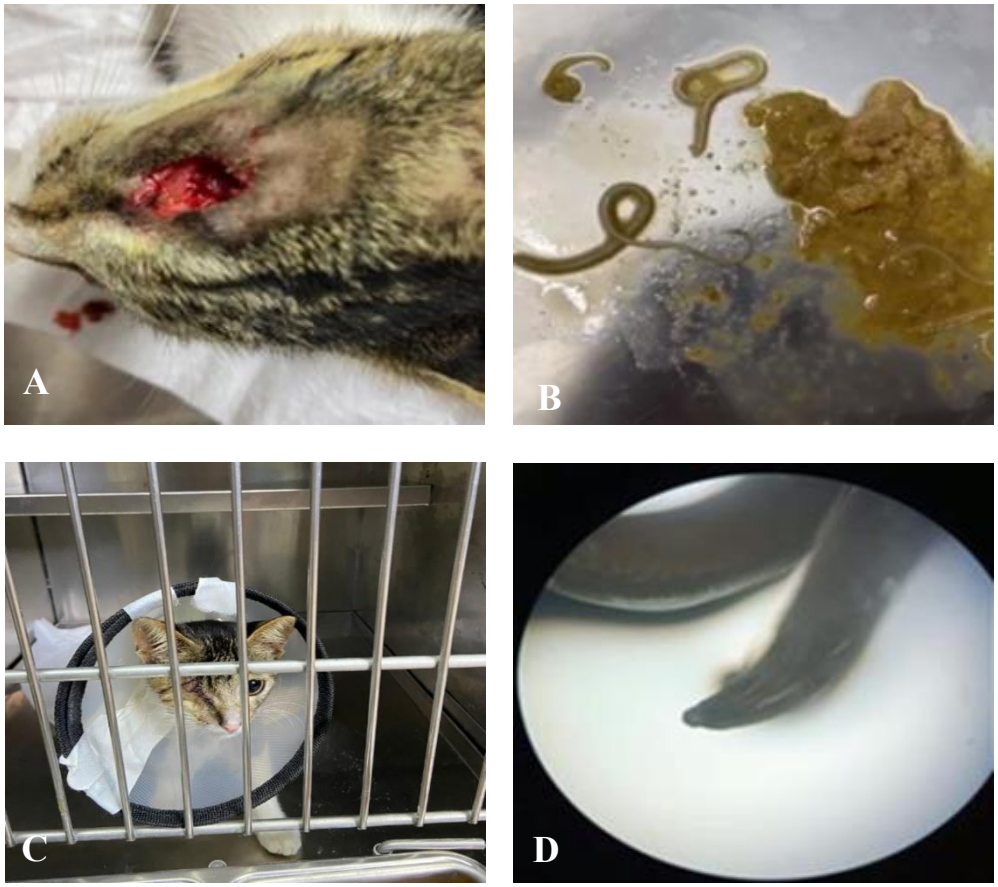

Figure. A) Macroscopic visual observation of parasites, B) Eye extirpation during surgery, C) Hospitalization of the patient after the operation, D) Detection of the parasite under the microscope.

Discussion

Toxocara spp. prevalence studies are present in Türkiye. These studies indicate the presence of *Toxocara* spp. in soil samples. The presence of their eggs has been detected at different rates in different regions. For instance, Şimşek et al. (2005) found that the presence of the substance was identified at a rate of 4.16% in Konya, 30.6% in Ankara, and 25.97% in Van. However, it was only detected in one out of the 744 samples collected from Elazığ. In 2015, a study was carried out in Samsun which involved the analysis of 187 samples of cat faeces gathered from the streets using the flotation method. The results showed that 32.1% of these samples were found to be infected (Gürler et al., 2015). A study conducted in Kırıkkale on 100 cats' fecal examination results revealed that 48.9% of the cats had *Toxocara* spp. The study reports that eggs of the causative agents were found (Korkmaz et al., 2016). Similarly, another examination method was used to examine the fecal samples of 465 stray cats in Izmir in 2021. The study identified that 16 of these cats had at least one *Toxocara* spp., *Hymenolepis* spp., and were found to be infected with *Dipylidium caninum* (Karakavuk et al., 2021).

Upon review of existing literature, it is reported that toxocariasis infection in cats has a global prevalence of roughly 17% (Rostami et al., 2020).

In recent years, it has been determined that toxocariasis infections in cats continue to be important. During this study, *T. cati* was found in the stomach contents as a result of anesthesia-induced vomiting, which is similar to previous observations of this species in the literature but differs from its appearance in stool samples in studies.

Conclusion

As a result, it is necessary to take a series of precautions to prevent Toxocara infections, which are of zoonotic importance. Regular parasitological testing of owned cats, as well as cats within shelter systems, is recommended to be carried out by a veterinarian. These tests should occur at established intervals or in certified facilities when appropriate. It should be known that the faeces of stray cats are a source of infection. It should be collected regularly by municipalities. Parks and gardens should be surrounded not only to define their boundaries but also to prevent the entry of cats. The stray cats population needs to be controlled. In the long term, ear tags or microchips should be applied to monitor animals after neutering and interventions should be carried out if necessary. As can be seen, there are certain responsibilities among individuals, educators, media, local governments, and general governments in solving this problem, which has educational, cultural, and economic aspects. Monitoring both stray and domestic cat populations worldwide are important in terms of toxocariasis infections, a zoonotic disease.

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Ethical Statement

This study does not present any ethical concerns.

Author Contributions

Investigation: B.Ş.; H.Ö.; Material and Methodology: B.Ş.; U.U.; H.Ö.; Supervision: B.Ş.; P.Ş.; U.U.; Visualization: B.Ş.; H.Ö.; Writing-Original Draft: B.Ş.; P.Ş.; U.U.; Writing-review & Editing: B.Ş.; P.Ş.; U.U.; H.Ö.

Conflict of Interest

The authors declared that there is no conflict of interest.

Data Availabilty Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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