Prevalences of Gatrointestinal Parasitic in Dogs and Cats at Kaki 4 and K-5 Clinics Kediri City

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Abstract

Parasitic diseases of the gastrointestinal have a bad impact for dogs and cats. This study was conducted to determine the prevalence, types, and different of maintenance system on dogs and cats in Kaki 4 and K-5 clinics Kediri city. This study used 100 samples of cat and dog feses kept in 10% formaline and 2% potassium dichromate. 50 samples were collected from Kaki 4 Clinic and another 50 from K-5 Clinic. The study used native, sediment, and flotation methods. The result showed 4% prevalence i.e. 2 samples are positively infected by *Ancylostoma* sp. (2%), 1 sample is positively infected by *Toxocara cati* (1%), and 1 sample is positively infected by *Ancylostoma* sp., *Dipylidium caninum*, and *Toxascaris leonina* (1%). Classified by maintenance system, the dogs and cats that maintenance with semi-intensif system prevalence was 2.1% (2/96), while intensif prevalence of 50% (2/4). Based on gender, male prevalence of 7.4% (4/54), while a female not infected by gastrointestinal parasite. Classified by age, the dogs and cats under age of one year the prevalence of 4.2% (2/47), while those age one year or more prevalence was 3.8% (2/53). Based antiparasitic drugs that given the dogs and cats prevalence was 2.1% (2/96), while not given prevalence of 50% (2/4). Based on breed, the pure breed prevalence of 2.8% (1/36), mix breed prevalence of 12.5% (1/8), while the domestic breed prevalence was 3.6% (2/56).

Keywords: Prevalence, dog, cat, gastrointestinal, parasite.

Introduction

Kaki 4 and K-5 clinics are two clinics located in Kediri City. The Kaki 4 and K-5 clinics were chosen as research sites because they were the venue for the implementation of the Merdeka Belajar Kampus Merdeka program carried out in Kediri City.

Parasitic diseases of the gastrointestinal tract cause a lot of harm. *Helminthiasis* or helminthic parasitic infections often occur in dogs and cats, causing gastrointestinal infections that affect growth, work productivity, malnutrition, and cause health problems (Janis *et al*., 2019).

Parasites that can infect the gastrointestinal tract of dogs and cats come from the type of worm and protozoa. Worms that often infect the digestive tract of dogs and cats include *Ancylostoma* sp., *Toxocara* sp., *Strong yloides* sp., *Spirocerca* sp., *Trichuris* sp., *Dipyl idium* sp., and *Capillaria* sp. (Oktaviana *et al*., 2014 and Sepalage *et al*., 2020). Protozoa that can infect the digestive tract of dogs and cats include *Giardia* sp., *Cryptosporidium* sp., *Sarcocystis* sp., *Hammondia hamondi*, *Toxoplasma gondii*, *Isospora* sp., and *Neospora* sp. (Sucitrayani *et al*., 2014 and Mekibib and Sheferaw, 2018).

Research conducted on cats in India obtained results from 41 samples there were 22% infected *Trichuris* sp., 10% *Ancylostoma* sp., 2% *Toxocara cati*, 22% *Platynosomum* sp., 2% *Mammomonogamus* sp., and 7% Coccidia (Ketzis *et al*., 2015). A Chinese study of 360 cats found 149 (41.39%) positive samples with details of *Toxocara cati* (17.78%), *Isospora felis* (16.94%), *Isospora rivolta* (11.39%), *Paragonimus* sp. (9.17%), *Ancylostoma* sp. (6.39%), *Toxoplasma gondii* (3.06%), *Trichuris* sp. (2.78%), *Angiostrongylus* sp. (1.11%), *Sarcocystis* sp. (0.56%), and Trematodes (0.28%) (Yang and Liang, 2015). Researchers in Canada also conducted a study in the same year on dogs with the results of 1086 samples there were 12.7% infected with *Toxocara canis* and 10.45% infected with *Cystoisospora* sp. (Villeneuve *et al*., 2015). Indonesia, precisely in Surabaya has also conducted research on cats with a sample of 82

heads and obtained the results of 13% infected with *Isospora* sp., 13% infected with *Ancylostoma* sp., 6% infected with *Toxocara cati*, and 11% infected with *Toxascaris leonina* (Purnama *et al*., 2019).

The obstacle experienced in the maintenance of dogs and cats relate to the maintenance system. Oktaviana *et al*. (2014) stated that wild cats are more susceptible to disease due to dirty environmental conditions, food that is not always enough, and the absence of good care while domestic cats have better environmental conditions, regular feeding and care from their owners so that they have less risk.

Considering the dangers posed, it is necessary to conduct research on the prevalence of parasitic diseases of the gastrointestinal tract. The expected goal is to provide information about the large prevalence and type of parasites that cause gastrointestinal diseases in dogs and cats in Kediri City with invisible clinical symptoms so that the owner can carry out prevention and control.

Materials and Methods

This research conducted at the Kaki 4 and K-5 clinics in Kediri City. The examination of dog and cat feces was carried out at the Lucky Farm Laboratory in Medowo Village, Kandangan District, Kediri Regency. The study conducted from October to December 2021.

The tools used in this study include sample pots, plastic spoons, *Pasteur* pipettes, stirring cups, object glass, cover glass, bunsen, ose, centrifuse, centrifuse tubes, label paper, scales, microscopes, and plastic cups. The samples in this study were dogs and cats who were patient of Kaki 4 and K-5 clinics of Kediri City. The sample size taken in this study amounted to 100 samples, with the number of 50 samples in each clinic. The feces used in this study were fresh stools. Fecal retrieval by taking fresh feces of dogs and cats that have fallen on the floor. Feces taken sufficiently and then put in a sample pot and given 10% formalin. Formalin contains formaldehyde as a preservative. In addition to adding formalin to the egg worm examination sample, the collected feces were also added potassium dichromate 2% for the protozoan examination sample. Each sample pot labeled and adjusted to the sample data collection.

The feces of the sample that has been collected are examined using native, sedimentation, and floating methods, then examined using a microscope with magnification of 100-400 times. The result was positive if a digestive tract parasite found in one of the methods.

Results and Discussion

Based on the results of the examination of dog and cat feces at Kaki 4 and K-5 clinics of Kediri City, a prevalence rate of 4%. The worm eggs found in this study were eggs *Ancylostoma* sp., *Toxocara cati*, *Dipylidium caninum*, and *Toxascaris leonina*. A single infection occurs in the *Ancylostoma* sp. and *T. cati*. Mixed infection occurs in only one sample with the infecting parasites coming from the species *Ancylostoma* sp., *D. caninum*, and *T. leonina*. Infections caused by *Ancylostoma* sp. are higher than infections caused by *T. cati*, *D. caninum*, and *T. leonina*. The types of parasites found in the digestive tracts of dogs and cats in Kaki 4 and K-5 clinics of Kediri City can be seen in Table 1.

Table 1. Prevalence of parasitic diseases of the gastrointestinal tract in dogs and catsat the kaki 4 and k-5 clinics of kediri city.

Species	Positive Sample	Sample Count	Prevalence %
	Single Infection		
Ancylostoma sp.	2	100	2
Toxocara cati	1	100	1
	Mixed Infection		
Ancylostoma sp. Dipylidium caninum Toxocaris leonina	1	100	1
Total	4		4

The characteristics of an *Ancylostoma* sp. worm egg are 64.7 x 48.8 µm, appear segmented, oblong round shape, thin- walled, and contain a blastomer. *Ancylostoma* sp. eggs became the source of infection from 100 samples found two samples tested positive for ancylostomiasis and a mixed source of infection with other types of worm as much as one sample out of 100 samples. *Ancylostoma* sp. worm eggs can be seen in Figure 1.

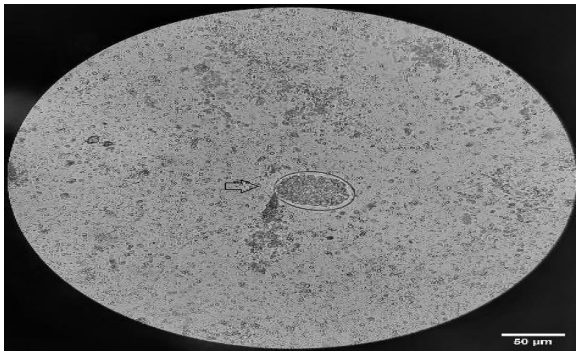

Figure 1. The egg of *Ancylostoma* sp. (400x magnification.

T. cati eggs have characteristics measuring 69.2 x 67 µm, round in shape, thick-walled and jagged. *T. cati* eggs found in only one sample out

of 100 samples observed. The results of the identification of *T. cati* eggs can be seen in Figure 2.

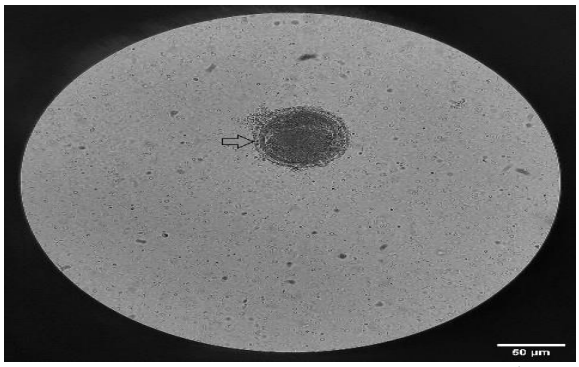

Figure 2. The egg of *Toxocara cati* (400x magnification)

T. leonine eggs have characteristics measuring 83.2 x 63.4 µm, oval-shaped, smooth-walled and thick. *T. leonina* eggs found in only one mixed infection sample out of 100 samples. *T. leonina* eggs can be seen in Figure 3.

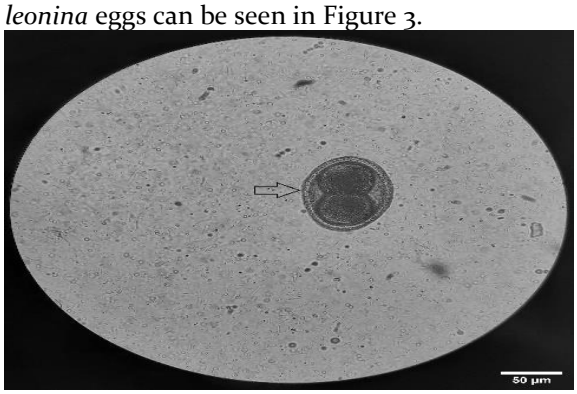

Figure 3. The egg of *Toxascaris leonine* (400x magnification)

D. caninum eggs measure 37.3 x 37.2 µm. The typical form of *D. caninum* eggs is that there are embryonic hexacanths contained in the egg capsule. Each egg capsule can hold up to 20 eggs. This type of egg only found in mixed infections and there is only one positive sample out of 100 samples. The results of the examination of eggs *D. caninum* can be seen in Figure 4.

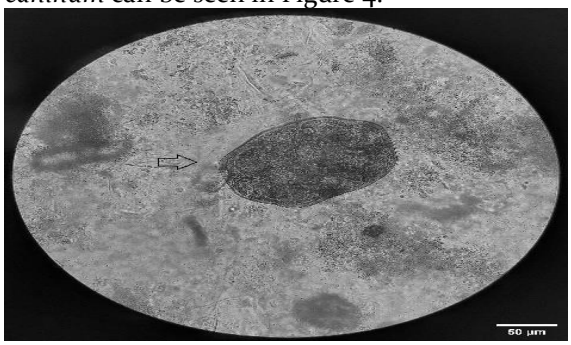

Figure 4. The egg of *Dipylidium caninum* (400x magnification)

Ancylostoma sp. eggs found in this study (Table 1) amounted to 2 (2%) out of 100 samples. This result is lower than the Smout *et al.* (2013) in Australia which has found 3 (11.5%) of 26 dog samples positive for *Ancylostoma* sp. This decrease in prevalence can be due to samples taken in the Smout study coming from stray dogs while in this study dogs and cats were taken from veterinary clinic patients. The eggs of *Ancylostoma* sp. found can help determine the administration of antiparasitic drugs in overcoming parasitic infections of the digestive tract. Efficacy of the administration of febantel, moxidectin, and milbemycin oxime can reach 99% for the treatment of *Ancylostoma* sp. (Castro *et al.*, 2019). More research on *Ancylostoma* sp. is needed because it is zoonotic. *Ancylostoma caninum* is one of the highly pathogenic hookworm species in dogs that is a gastrointestinal parasite and has a significant risk of transmission to humans (Kopp *et al.*, 2007).

T. cati in this study found 1 (1%) out of 100 samples. This result is smaller than the research conducted by Muriana *et al.* (2018). *T. cati* infection in Muriana *et al.* (2018) study is higher due to feces samples taken in the form of cats that are suspected to have been affected by worm infections, while this study took feces from patients whose health status was ignored. Anthelmintics that can be given with the discovery of *T. cati* eggs are pyrantel pamoat, fenbendazole, selamectin, and moxidectin (TroCCAP, 2019). Further examination needs to be done because *T. cati* can cause zoonoses through infective eggs of dogs and cats that go directly into the human environment (Overgaauw and Knapen, 2013).

T. leonina eggs found in this study amounted to 1 (1%) of 100 samples. The discovery of *T. leonina* eggs can help in the treatment of parasitic infections, namely anthelmintic drugs from the sarolaner, moxidectin, and pyrantel pamoat groups with efficacy reaching 89.7% (Becskei *et al.*, 2020). Research related to *T. leonina* needs to be done because infection from *T. leonina* larvae is common in human and has the potential to cause disease (Okulewicz *et al.*, 2012).

D. caninum eggs found in this study were 1 (1%) of 100 samples. This number is as small as the research conducted Bashofi *et al.* (2015) on wild cats in Bogor and found no *D. caninum* eggs at all from 30 samples examined. Infections caused by *D. caninum* in humans need to be considered because they are asymptomatic or non-specific symptoms such as abdominal pain, bloating, diarrhea, difficulty defecating, loss of appetite, pruritus of the anus, sleep disorders, and

hyperactivity (Rousseau *et al*., 2022). Anthelmintics that can be used to treat *D. caninum* infection are the praziquntel or epsiprantel groups (Chelladurai *et al*., 2018).

Conclusion

The type of parasites that infect the digestive tract of dogs and cats in the Kaki 4 and K-5 foot clinics of Kediri City are *Ancylostoma* sp., *Toxocara cati*, *Toxascaris leonina* and *Dipylidium caninum*. Prevalence of parasitic diseases of the gastrointestinal tract by a single infection of *Ancylostoma* sp. 2% and *Toxocara cati* 1% while mixed infections by *Ancylostoma* sp., *Toxascaris leonina*, and *Dipylidium caninum* in dogs and cats at Kaki 4 and K-5 Clinics in Kediri City amounted to 1%.

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