



The Identification of *Toxocara canis* on puppy in Makassar Pet Clinic

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Abstract

*Toxocariasis in dogs is caused by infection of *Toxocara canis*. The disease is not recognized and often underestimated by the owners. *Toxocara canis* is a pathogenic gastrointestinal worm and the larva could infect the internal organs, which cause diarrhea and kill the animals if the disease is not seriously handled. *Toxocara canis* is not only danger to the animals but it could also infect the human being. The purpose of this study was to identification *Toxocara canis* on puppy in Makassar Pet Clinic. Feces samples were collected from 31 puppies in Makassar Pet Clinic. Feces were examined by native method and floating method to detected eggs of *Toxocara canis* based on their morphology. The result showed 5 samples were identified positive of *Toxocara canis* and 26 samples were negative of *Toxocara canis**

Keywords: *Toxocariasis, Toxocara canis, Endoparasite, Puppy*

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Introduction

The Dogs is one of the popular pets in nowadays because they are loyal, honest, and easy to be friends (Budiana, 2006). The interest in having pets has increased in the last period in the cities. In densely populated areas such as Makassar city, the increasing number of dog populations as pets is increasing. The increase in population also emerges problems with environmental contamination by helminth parasitic eggs and larvae from dogs. In places where pets and humans live together, stools are the main pathway for the spread of helminth infections in dogs and can be zoonotic

Toxocariasis is a parasitic disease caused by a *Toxocara* sp. There are three species of *Toxocara* that are very important in the veterinary world, such as *Toxocara canis* that attacks puppies and adult dogs, *Toxocara cati* that attacks adult kittens and cats, and *Toxocara vitulorum* that attacks calves and buffaloes (Sariego, 2012). Toxocariasis does not only occur in dogs but can also infect humans. Toxocariasis in humans is one of the most common parasitic infections in humans in the world (Manurung and Lambok, 2012). The incidence of toxocariasis in humans is associated on the incidence of toxocariasis in pets. The potential for toxocariasis in humans is possible considering dogs are common pets in some people.

In humans, it has been found that almost 14% of the United States population has been infected with *Toxocara* sp.. Toxocariasis is found in many countries and the prevalence rate can reach as high as 40% or more worldwide. Someone is more likely to be infected with *Toxocara canis* if they have a dog as a pet (CDC, 2013). *Toxocara cati* and *Toxocara canis* are also cosmopolitical spread and are found in Indonesia. The prevalence of toxocariasis was 38.3% in dogs and 26% in cats in Jakarta (Taniawati, 2008). *Toxocara canis* is very harmful to animal health and human health. Losses in economic perspective are also very large, including costs that must be spent to control the parasite. By looking at the losses incurred, the effort to control the parasite is required (Sudarjat, 2012). Considering its effect in dog, its potential as zoonotic disease and causes economic losses to owners, the research on identification of *Toxocara canis* in puppies is very important to be conducted in order to identify the presence of *Toxocara canis* in puppies so that control can be done as early as possible.

Materials and Methods

Sample collection

Samples were collected from Makassar Pet Clinic in a month. Fecal samples were collected from 1-12 month age of dog (puppies) that come to clinic. The fresh feces were taken and put into a plastic clip containing cotton and mixed with 10% formalin solution directly after collection. Plastic clips containing faecal samples are then put into cool boxes to keep the faeces in good and undamaged condition. Samples examined in Balai Besar Veteriner (BBVET) Maros Laboratory to identify the *Toxocara canis* worm eggs used native and flotation tests.

Native method

Two drops aquades are dripped on glass objects. Stool samples are taken using ose and put on glass objects that have been dropped with aquades. Samples and aquades are homogenized using toothpicks. After the stool and distilled water are homogeneous, the homogeneous mixture is covered with a cover glass. Samples then examined under a microscope (Taylor et.al., 2007)

Flotation method

Two grams of samples were mixed with 10 ml of saturated NaCl solution and homogenized (Taylor et.al., 2007). After homogeneous, the solution is filtered using 10x10 cm gauze and poured into a centrifugation tube. The tubes were centrifuged for 5 minutes at 1500 rpm. After centrifugation, the surface solution is taken using ose and dripped on a glass object. Samples then covered with a glass cover and examined the presence and type of endoparasites under a microscope (Natadisastra and Agoes, 2009)

Results and Discussion

A total of 31 fecal samples from clinic were examined. Overall, there are 5 dogs (16,12%) that infected with *Toxocara canis* and 26 were negative (83,88%), indicated by *Toxocara canis* egg that found in fecal samples. All samples were collected from puppies. The prevalence Toxocara in puppies in Makassar Pet Clinic indicates that puppies may have the potential to disseminate Toxocara eggs in their environment.

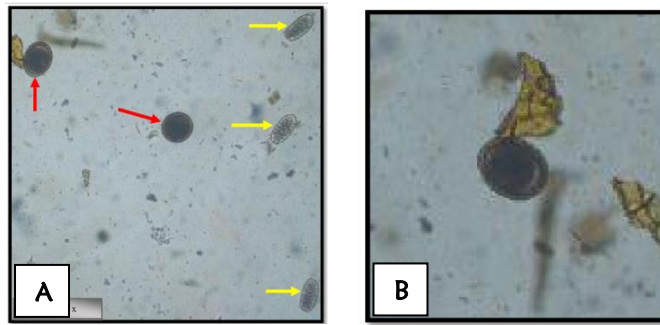


Fig. 1 *Toxocara canis* egg (red arrow) and *Ancylostoma caninum* egg (yellow arrow) [A].
Toxocara canis egg with 40x magnification [B].

Identification with a microscope shows the morphology of *Toxocara canis* eggs have an oval shape and the egg wall has a rough surface. This form is similar with the other research which describe that *Toxocara canis* eggs have an oval shaped morphology with a jagged surface, light brown, thick-walled and has a size of 85 x 75 μm (Soedarto, 2003). *Toxocara canis* eggs can survive for years in the feces of infected dogs and wolves, due to thick walls. It makes *Toxocara canis* eggs are very difficult to eradicate from an infected area (Levine, 1994). Other types of nematode eggs were also identified besides of *Toxocara canis* eggs when examination was performed. The other type of worm egg is *Ancylostoma caninum* that very common in dog as well. *Ancylostoma caninum* is an endoparasitic helminth commonly found in dogs' small intestines. *Ancylostoma caninum* and *Toxocara canis* are included in the same nematodes phylum.

The average sample that positive for toxocarasis occurred in puppies under the age of 6 months. This is similar with the results released by the CDC research in United State in 1996 that showed 30% of dogs under the age of 6 months stored *Toxocara canis* eggs in their feces (CDC, 2013). The incidence of *Toxocara* infection can occur through several routes, including intra-placenta and intramammary (Subronto, 2006). Based on this facts, the puppy's stool samples containing *Toxocara canis* can be transmitted from infected parents. But this cannot be proven further, because in this study the sample collected only from puppies. Besides from their parent, the effect of rearing methode and the environment factors is also very important in the occurrence of transmission of toxocarasis in puppies. Most of infected puppies are free roam to the environment outside the home by the owner and as well as to find their own food. This is resembled with the results of research in Yogyakarta which show that the level of infection of *Toxocara* sp. in dogs that kept outside the home is higher, compared to dogs that are kept inside home. This is very possible for puppies to infected by other infected dogs with toxocarasis through direct contact or through feces that are spread in the environment. Feces can spread into the environment, so puppies can be infected directly through contaminated soil or through consumed paratenic hosts in which the *Toxocara* egg has been inside their body.

One of the other factors that has the greatest influence on the incidence of toxocarasis in puppies is the administration of antihelmintic. The five positive samples that infected with toxocarasis were puppies that had not been given antihelmintic by the owner. While 26 other samples, are puppies routinely given for antihelmintic by the owner. This shows a very significant difference to the examination results between puppies who are routinely given antihelmintic and who are not routinely given. Therefore, client education for administering worm medicine to dogs is very important for the owner to understand, considering that toxocarasis is also zoonotic in humans

Puppies which infected with toxocarasis cannot be identified by just looking at their clinical

signs. Due to the clinical signs that appear to be very dependent on the severity of the occurring toxocariasis infection. The symptoms of the disease that occur in dogs suffering from toxocariasis, ranging from mild where animals show no symptoms sick to severe (Supraptini, 2013). However, clinical signs sometimes were observed. In puppies which infected with toxocariasis showing decrease of growth rates, abdominal enlargement, and diarrhea (Agn, 2009). Therefore, to diagnose a toxocariasis infection in a puppy cannot be done by only looking at the clinical signs that appear, but it must be conducted by stool examination, clinical examination, and examination of anatomic pathology (Sariego, 2012).

Conclusion

Toxocariasis is a parasitic disease caused by a *Toxocara canis*. A total of 31 fecal samples from clinic were examined. There are 5 dogs (16,12%) that infected with *Toxocara canis* and 26 were negative (83,88%), indicated by *Toxocara canis* egg that found in fecal samples. The factors that have the greatest influence on the incidence of toxocariasis in puppies is the administration of antihelminthic and rearing methode. Toxocariasis does not only occur in dogs but can also infect humans. Toxocariasis in humans is one of the most common parasitic infections in humans in the world.

Conflict of Interest

We certify that there is no conflict of interest with any financial, personal, or other relationships with other people or organization related to the material discussed in the manuscript.

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