

## THE LEVEL OF DOG INFESTING BECAUSE OF WORMS, AS VECTORS OF MANY ZONOTIC DISEASES

Mirela LIKA (ÇEKANI)\*<sup>a</sup>, Violeta ZANAJ<sup>b</sup>, Selman ZANAJ<sup>c</sup>

<sup>a</sup> Tirana University, Faculty of Natural Sciences, Department of Biology

<sup>b</sup> University of Durrës "A. Moisiu", Faculty of Medical Nursing, Department of Nursing

<sup>c</sup> The Veterinary Institute "Bilal Golemi", Department of Parasitology

E-mail: mirela2422@yahoo.com

### SUMMARY

The high level of dog infesting, especially from those which are abandon and live in the street from cestodes, acylostomes and ascarides in an important indicator for the risk that the man live undergoes in the cities were this dogs live and are not in a small town. Dogs are host for the ascarides, which can parasite to human in accidental way. The parasite larva's which can migrate to different organs causing "the syndrome of migratory larva" are very dangerous on the human. This study is performed from 2006 to 2007, where were analyzed the feces of 48 dogs of the age over one year and those 8 puppies of age 2-6 months by Coproscopy methods. During the control was taken a sample in different boxes and every one has its matricul. Feces of every dog ahs been controlled 3 times during the time interval of 1 week with the McMaste method. Those were chosen from the dogs without somebody owning them. From the analyses resulted that 50% of the dogs were infested from cestodes, 60% from ancylostomas, 29% of ascarides and 15% from tricurues. All the puppies (100%) resulted infested of ascarides. Approximately 42% of the tested dogs resulted infested from more than one parasite.

### PËRMBLEDHJE

Njohja e nivelit të infestimit të qenve pa pronarë nga askaridiazat dhe rekomandimi i disa masave për të ulur ngarkesën parazitare për të parandaluar infestimin e njeriut prej tyre ka qënë qëllimi ynë kryesor në këtë studim. Qentë janë bartës të disa askarideve, të cilat në mënyrë aksidentale mund të parazitojnë edhe tek njerëzit. Më të rrezikshëm janë larvat e parazitëve, të cilat migrojnë nëpër organe të ndryshme duke shkaktuar të ashtuquajturën "Sindromi i larvave

migruese" me pasoja të rrezikshme për shëndetin e njeriut. Studimi është kryer në vitet 2006-2007, në rrethin e Tiranës. U analizuan me metodën koproskopike feçet e 48 qenve të moshës mbi 1 vjeç dhe 8 këlyshëve të moshës 2-6 muajsh për praninë e vezëve të askarideve. Analizat u kryen me metodën e McMaster duke përdorur solucion  $ZnCl_2$  me densitet 1.3. Nga studimi ka rezultuar se niveli i infestimit të qenve të rrugës nga askaridet është shumë shqetësues, e varion nga 20,8% në 37,5%. Tek këlyshët e moshës 2-6 muajsh niveli i infestimit nga askaridet ka rezultuar 100%. Në 10% të qenve të rritur dhe në 62% të këlyshëve janë zbuluar si *Toxara canis* dhe *Toxascaris leonina*. Nga analizat rezulton se 50% e qenve janë të infestuar nga cestodët, 60% nga ancylostomas, 29% nga ascarides dhe 15% nga tricurues. Të gjithë këlyshët (100%) rezultojnë të infestuar nga askaridet. Afërsisht 42% e qenve të testuar rezultojnë të infestuar nga më shumë; se një parazit.

Pra, niveli i lartë i infestimit të qenve të rrugës nga askaridet evidenton rrezikun që i kanoset shëndetit të njerzve nga këta parazitë.

**Key words:** parasites, ascarides, coproscopy methods, public health, etc.

### INTRODUCTION

Knowing the level of the infesting of street dogs by ascarides and the recommendation of several measures for decreasing the parasite load in order to prevent the infesting of mankind has been our main objective in this study. The dogs carry several ascarides that accidentally may parasitize to the people (2,5). The most dangerous are the larvae of parasites, which migrate in different organs destroying the so-called

“Syndrome of migrating larvae” with dangerous consequences for human health.

The infested dogs with ascarides eliminate through feces a great number of eggs, which are spread everywhere the dogs move, especially dogs without an owner, or as differently called “street dogs” (1,4,7). A female of a roundworm produces 200 000 eggs every day. These eggs contaminate the vegetable gardens, the environments around apartment buildings, parks, public squares, markets, etc.

Their spread is amplified through different coprofagus insects, human shoes, vehicle tires, through wind and rain, etc. they reach the digestive apparatus of humans where they start to develop through unwashed hands, fruits and vegetables, contaminated water and food. We shall say even the intestine of a child endangers his life seriously (3,5,6).

Besides it may go to the liver through coelodoc duct and destroy the parenchyma of the organ, or it may go up to the pharynx through esophagus and pass to the larynx and trachea during the night, thus creating serious respiration problems and severe coughs that may cause death.

Those who are more at risk are the children, because they play around apartment buildings, in parks, etc. their hands are constantly in contact with the earth. On the other hand, to the children it is completely possible the realization of the biological cycle of ascarides. To adults the larvae of ascarides in general are eliminated in the liver (2,4).

This study has served for getting to know the epidemiologic situation of such invasions in their bearers and for defining the measures in order to protect the public health.

## MATERIAL AND METHOD

The study was conducted from 2006 to 2007, in the district of Tirana. Through the coproscopic method were analyzed the feces of 48 dogs 1 years of age and 8 puppies 2-6 years of age for the presence of the ascarides eggs. The analyses are performed at Veterinary Institute, Tirana.

The dogs were registered and separated in two groups with 24 of them in each group. The first group was checked during the period December 2006- January 2007; the second group was checked and formed during the period February – March 2007. The group of puppies was formed and checked during February 2007.

All the dogs were taken from the streets in Tirana and in the place of the garbage collection of the city in

Sharrë, thus they had no owner and were fed and sheltered where they could. During the period of the experiment they have stayed in a hatch in separate boxes and each of them had a registration number.

The feces for analysis have been taken in the morning in the box of each dog. They were individually packed in plastic glasses in which was written the number of the registration of each dog and the date of sample (2,4).

Every dog gave the sample 3 times a week. Each sample was composed of 5-10 gr of feces.

The analyses have been done in the Parasitological Laboratory of the Institute of Food and Veterinary Safety (IFVS) through the method of McMaster, using the solution  $ZnCl_2$  with a density of 1.3.

The principle of the method Mc Master consists in counting the parasite elements in a specified volume of feces suspension (2,4,6,7).

During observation was placed attention in the differentiation of *Toxocara canis* eggs from *Toxascaris leonine* eggs as well as from the eggs of other parasites found in the intestines of dogs (ancylostomat, cestode, trichiure, etc).

The formula about the evaluation of the egg's number in 1 gram faeces is:

$N/3 \times 200$ , where,  $N$  = number of the eggs which have resulted from 3 cameras; 200 = the coefficient of the eggs in 1 gram of faeces.

The eggs of *Toxocara canis* are round, with thick walls, dimensions 90 x 75  $\mu$  and with small granules in the surface, while the eggs of *Toxascaris leonina* are 75-85 x 60-75  $\mu$  and with smooth walls.

## RESULTS AND DISCUSSION

The number of eggs represents the average amount of the eggs discovered with McMaster in three coproscopic checks for every dog.

From the results of table 1 del results that the first group of dogs (period December 2006 – January 2007) have resulted infested by *Toxocara canis* 5 dogs (20,8%) and by *Toxascaris leonine* 2 dogs (8,3%). In the whole group of dogs infested by one type of roundworm have resulted 22 dogs (91,6%); and infested by two types of ascarides have resulted 2 dogs (8,3%). In total have resulted 5 dogs infested or 20,8%.

Table 2 gives the results of coproscopic analysis for the second group of dogs. From the gathered dogs we had 6 cases (25%) infested by *Toxocara canis* and 3 cases (12,5%) by *Toxascaris leonine*. Infested by one type of roundworm have been 9 cases (33,3%) and there was

no case with dogs infested by the two types of ascarides.

In this graphic are given the results of coproscopic analysis for the group of puppies. All 8 puppies included in the experiment have resulted infested by *Toxocara canis* (100%); while by *Toxascaris leonina* have resulted 5 puppies or 62,5%. Infested by two types of ascarides have resulted 5 puppies or 62,5% and infested only by one type of roundworm have resulted 3 puppies or 37,5% of them.

For humans, the risk of infestation by ascarides is greater in spring and autumn, because they may be infested through the swallow of invasive eggs, which may become such in natural conditions only in these two seasons.

The changes noticed in the level of infestation of both groups of dogs by the two types of ascarides, respectively the first 20,8% and the second 37,5% are casual differences that relate to the way of the nutrition of dogs, to their place of stay, etc., because these dogs are taken from different areas of the city of Tirana.

Registration number of the dog	The amount of eggs in 1 gr of feces	
	The type of roundworm	
	<i>Toxocara canis</i>	<i>Toxascaris leonina</i>
1	0	0
2	0	0
3	0	0
4	0	0
5	4000	1000
6	400	0
7	0	0
8	0	0
9	0	0
10	0	0
11	100	0
12	0	0
13	0	0
14	0	0
15	800	200
16	0	0
17	0	0
18	0	0
19	0	0
20	1200	0
21	0	0
22	0	0
23	0	0
24	0	0
% infestation	20,8	8,3
No. Eggs/gr. fece	1300 eggs/gr/fece	600 eggs/gr/fece

Table 1: Results of coproscopic analysis of the 1st group of grown up dogs

The characteristics of biological cycle of ascarides make difficult the evidence of the influence of the season on the level of dog's infestation.

Registration number of the dog	The amount of eggs in 1 gr of feces	
	The type of roundworm	
	<i>Toxocara canis</i>	<i>Toxascaris leonina</i>
1	0	0
2	0	0
3	100	0
4	300	0
5	200	0
6	0	0
7	0	0
8	0	100
9	0	0
10	0	0
11	100	0
12	0	0
13	200	0
14	100	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	300
21	0	0
22	0	100
23	0	0
24	0	0
% infestation	25 %	12,5 %
No. Eggs/gr. fece	166 eggs/gr/fece	167 eggs/gr/fece

Table 2: Results of coproscopic analysis of the 2nd group of grown up dogs

Age and sex influence the infestation level, but these have not been subject of our work.

If we compare our results, those of table 1 and 2, with those of foreign authors, they are the same stating that *Toxocara canis* is the most spread and the most dangerous roundworm amongst the ascarides of carnivores.

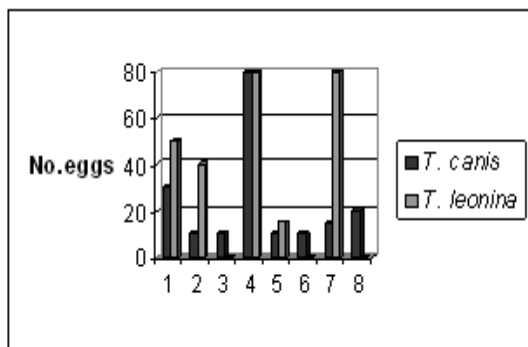


Chart 1. Number of eggs per gram Feces of ascarides to puppies

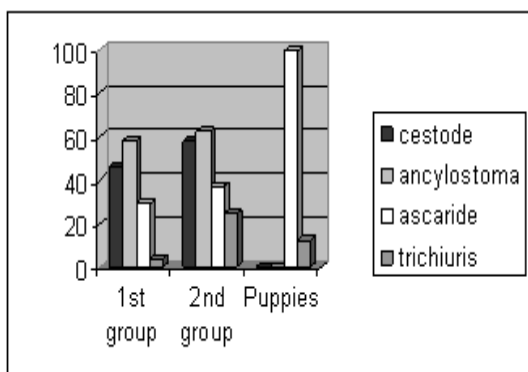


Chart 2. The percentage of infestation level in the dogs by cestodes, ancylostomes, ascarides and trichiures.

In the first table we notice that there are big differences between *Toxocara canis* and *Toxascaris leonine*, regarding the number of eggs discovered in one gram of feces, respectively 1300 v/g/f and 600 v/g/f. this is not seen in the second group, where the number of eggs for one gram feces results almost equal for both types of ascarides. On the amount of eggs produced by ascarides influence many factors: the age of the population of ascarides, the age of the bearers of ascarides, the health condition of the bearer, type of the feeding of the bearer (ascarides are

fed by sucking in a selective way the food digested in the intestines of the bearer), the number of ascarides that colonize the intestines of the bearer, etc..

If we look at chart 1 it has resulted infested by ascarides the 8 puppies that form the experiment group. Thus, their level of infestation is 100%. In 5 puppies, or in 62% of them have been discovered eggs from the two types of ascarides. besides, they have had a high load of parasites, in 1 gram of feces have been found averagely 8262 eggs of *Toxocara canis* and 3860 eggs of *Toxascaris leonina*, where in the two first groups of grown up dogs have been found averagely 500 v/g/f (eggs in 1 gram feces).

The puppies are born infested when their mother are infested by the ascarides. The fact that 100% of the puppies that we have tested resulted infested, shows that their mother have been 100% infested by ascarides. The reason why in these puppies is noticed such a high level of infestation shall be searched in the way of infestation, in the age and way of their feeding. In many cases there are children in different areas of residence that keep in their hands puppies of street dogs and play with them for many hours, and they also may put the puppies inside their houses. All those children that play with puppies infested by ascarides after 20 days will start to complain by belly ache, they want to vomit, and have cough, temperature and hives or other signs.

**CONCLUSIONS AND RECOMMENDATIONS**

From the study has resulted that the level of infestation of street dogs by ascarides is very alarming, and varies from 20,8% to 37,5%.

To the puppies of the age 2-6 months the level of infestation by ascarides has resulted 100%.

In 10,4 % of grown up dogs and in 62% of puppies have been discovered *Toxocara canis* and *Toxascaris leonina*.

Thus, the high level of infestation of street dogs by ascarides evidences the danger caused to the health of people by these parasites.

*We recommend*

Taking drastic measures for decreasing and eliminating the population of street dogs;

Organizing the study of the parasites in public areas of the main cities of the country and based on the results shall be taken measures for public health;

All the citizens that carry dogs in their family shall remove their poison every 3 months.

## REFERENCES

1. Casarosa L. (1980): *Parasitologia degli Animali Domestici*. Seconda Edizione. Edizioni medico Scientifiche. Torino: 42-44
2. Euzeby J. (1982): *Diagnostic Experimental Des Helminthoses Animales Tom 1, Travaux Pratiques d'Helminthologies Veterinares*. Paris: 89-94
3. Manahasa M. (1991). *Parazitologjia veterinare*. Vol.1: 157-165
4. Puccin V. (1992): *Guida alle Malatie Parassitarie degli Animali Domestici Edagricole*, Bologna: 134-139
5. Sloss M.W., Kemp R.L. (1982): *Parasiti in Medicina Veterinaria, metodi di identificazione ed indagine microscopica*. Edi-Ermes. 355-357
6. Zanaj S. (2003): *Konsiderata të përgjithshme për parazitizat si patologji në kafshë dhe në njerëz*. *Revista Veterinare*. Nr.1: 112-116
7. Zanaj S. (2003): *Mbi efikasitetin e disa metodave diagnostikuese për llogaritjen e ngarkesës parazitare*. *Revista veterinare*. Nr.1: 66-84