

**Incidence and treatment of the diarrhoeic syndrome with
parasite aetiology in dogs and cats.
Incidența și terapia în sindromul diareic cu etiologie
parazitară la câini și pisici.
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Abstract

The investigations were carried out on a number of 153 dogs and 23 cats from different breeds and ages with a diarrhoea syndrome after a long therapy with antibiotics. Faecal examinations point out infestations with species of protozoa and nematodes correlated with age of animals. Infestations with *Isoospora* sp. were diagnosed in 49.5 % from examined dogs and in 30.4 % from cats registered only in puppies.

Incidence of infestations with *Giardia* sp. were recorded in 15.6 % dogs from which 83.3 % in puppies and 26.08 % in young cats. The incidence of infestation with *Toxocara canis* was 28.7 % in dogs from which 81.8 % in puppies and with *Toxocara cati* 21.7 % in cats from which 60 % in young cats. Infestations with Ancylostomidae were diagnosed in 18.3 % dogs from which 53.5 % in puppies and 8.6 % in young cats. Infestations with *Trichocephalus* were registered only in dogs with an incidence of 11.7% from which 61.1 % in adults.

The control of infestations with *Isoospora* sp. was carried out with Ultrasol 20 - 30mg/Kg i.m. for 3 days running with 96 % efficacy. Infestations with *Giardia* sp. were carried out with Flagyl administered orally for 6 days running with 30 -40mg/Kg registered 85 % efficacy. The control of infestations with nematodes was carried out with usual antihelminthics and registered an entirely efficacy after 10 days.

Key words – protozoas, nematodes, dogs, cats, incidence, therapy.

Introduction

The diarrhoeic syndrome in pets is a frequent disorder observed mainly in young animals (6). The treatment uses a range of antibiotics but the cure is not always 100% because the syndrome's aetiology may also involve parasitic agents (protozoa and helminths). The determination of the polyfactorial aetiology of the diarrhoeic syndrome requires the identification of the endoparasites species in laboratory. Minnaarn W.N. et al. (8) investigated 164 pet dogs and reported 88% incidence of infestation with *Ancylostoma caninum*, 36% with *Toxocara canis*, 9% with *Toxascaris leonina* and 6% with *Trichocephalus vulpis*. The authors mentioned the zoonotic potential of these nematoda species. Horejs R., Kondela B.(5) reported a 53.2% incidence of infestation with *Giardia* in puppies aged 6-12 weeks, 3.4% in adult male dogs and 7% in bitches. O Lorcaín P. (7) investigated 350 dogs and 81 cats and reported Ascaridae infection in 82.6% of the puppies aged 3-6 months and in 42% of the young cats. Gonenc A. și col.(3) used Drontal plus in Ascaridae infections in dogs and reported 100% efficacy.

Material and methods

The investigations were conducted within the clinic of the Faculty of Veterinary Medicine, Spiru Haret University, during February 2006 – June 2007, on 153 dogs and 23 cats of various breeds and ages. The animals displayed a persistent diarrhoeic syndrome after long-term medication with antibiotics. The laboratory investigations were conducted by direct examination of the coprologic samples, using warm saline to detect *Giardia* trophozoites. We also used Willis and Mc. Master ovoid helminthoscopic flotation techniques. The incidence of endoparasite infestations was determined by age category.

Treatment of *Isospora* infestations was done with Ultrasol, 20 – 30 mg /kg, IM, for 3 consecutive days. *Giardia* infestations were treated with Flagyl, 30 – 40 mg/kg. per os, for 6 days. Toxocarosis and ancylostomosis were treated with Drontal plus, Cestel plus or Pratel, per os, in usual doses. *Trichocephalus vulpis* infestations were treated with Triantelm or Paratak, per os, in usual doses.

Results and discussions

The coproscopic revealed infestations with protozoa and nematodes correlated with pet's age. Table 1 displays the incidence of *Isospora* sp., infestations showing 76 positive cases (49.6 %) in the examined dogs, 100 % in the puppies. Only 7 positive cases (30.4 %) were detected in cats, all in the young felines.(Table 1)

Table 1

Incidence of *Isospora* sp. infestations

Species	Examined animals	Positive	Percentage	Youngs		Adults	
				Nr.	%	Nr.	%
Dogs	153	76	49.6	76	100	-	-
Cats	23	7	30.4	7	100	-	-
Total	176	83	47.1	83	100	-	-

Mitchell S.M. et al.(9) conducted in 2007 experiments of Beagle bitches aged 6 – 8 weeks infested with 5×10^4 *Isospora canis* oocysts and observed the start of the syndrome 9 – 11 days after infestation, with a patience of 7 – 18 days. The authors concluded that *Isospora canis* may be the main cause for the diarrhoeic syndrome in puppies.

Papazahariadon M. et al. (10) observed in 2007 a 3.9 % incidence of the *Isospora* sp. infestation in the coprologic examination of 281 puppies.

Of the 76 dogs infested with *Isospora canis*, in 67 cases (88.1 %) the infestations occurred in puppies aged 1 – 3 months and in 9 cases (11.8 %) the infestations occurred at the age of 4 – 6 months. In kittens, on 7 positive cases, in 5 animals (71.4 %) the infestations were diagnosed at the age of 1 – 3 months and in 2 cases (28.5 %) in cats 4 – 6old. (Table 2).

Table 2

Incidence of *Isospora* sp. infestations by age group

Species	Positive	Age 1-3 months		Age 4-6 months	
		Nr.	%	Nr.	%
Dogs	76	67	88.1	9	11.8
Cats	7	5	71.4	2	28.5
Total	83	72	86.5	11	13.2

The incidence of *Giardia* infestation is as follows: of 153 examined dogs, 24 (15.6%) were infested with *Giardia canis*, of which 83.3% were puppies and 16.6% were adult dogs. Of 23 examined cats, 6 (26.08%) were infested with *Giardia*, all being kittens. (Table 3)

Table 3

Incidence of *Giardia* sp. infestations

Species	Examined animals	Positive cases	Percent %	Youngs		Adults	
				Nr.	%	Nr.	%
Dogs	153	24	15.6	20	83.3	4	16.6
Cats	23	6	26.08	6	100	-	-
Total	176	30	17.04	26	86.6	4	13.3

The incidence of *Giardia* sp. infestations by age groups is as follows: 75% of the infestations occurred in puppies aged 1 to 3 months, 20% in puppies aged 4 to 7 months and 5% in dogs aged 8 to 10 months. In the young cats infested with *Giardia cati*, 66.6% of the cases occurred in animals aged 1 to 3 months and 16.6% each in cats aged 4 to 7 months and 8 to 10 months. (Table 4)

Table 4

Incidence of *Giardia* sp infestations by age group in young animals

Species	Positive cases	Age 1-3 months		Age 4-7 months		Age 8-10 months	
		Nr.	%	Nr.	%	Nr.	%
Dogs	20	15	75,0	4	20,0	1	5,0
Cats	6	4	66,6	1	16,6	1	16,6
Total	26	19	73,0	5	19,2	2	7,6

Heusinger A.(4) reported in 2007 a 21% incidence of *Giardia* sp. infestations in dogs, determined by ELISA on 3999 coprology samples.

Papazahariadon M. et al. (10) reported a 4.3 % incidence of *Giardia canis* infestations in 281 examined coprology samples. Diaz V. et al. (1) published in 1996 the results of the epidemiological study of giardiasis in dogs conducted by coproscopy

examination and on the samples of matter curretted from the duodenum from slaughtered animals and from corpses.

The incidence of Giardia infestation was 21.9% in puppies aged a few months and 10.8% in adult dogs.

Toxocara canis infections was observed in 28.7% of the examined dogs, of which 81.8% in puppies and 18.1% in adult dogs. Five cats (21.7%) showed Toxocara canis infections, 60.0% in kittens and 40.0% in adult cats.(Table 5)

Table 5

Incidence of Toxocara sp. infestations

Species	Examined animals	Positive cases	Percent	Youngs		Adults	
				Nr.	%	Nr.	%
Dogs	153	44	28.7	36	81.8	8	18.1
Cats	23	5	21.7	3	60.0	2	40.0
Total	176	49	27.8	39	79.5	10	20.4

Jacob H.T. et al. (6) surveyed in 2007 the prevalence of gastrointestinal infections with nematodes in dogs, determined by coprologic examination and necropsy. The incidence of Toxocara canis infestation was 21.0%, of Ancylostoma caninum infestation was 32.0% and of Trichocephalus vulpis was 3.0%.

Papazahariadon M et al. (10) diagnosed a 12.8% prevalence of Toxocara canis infestation, 19.6% for Trichocephalus vulpis, 2.8% for Ancylostoma caninum and 0/7% for Toxascaris leonine.

El. Memjakić S. M et al. (2) conducted investigations on the importance of the Toxocara species to the public health. The authors mention the zoonotic character of Toxocara infestations in the carnivore pets and its implication to the health state of the children. The incidence of Toxocara infestations was 14.6% of the dogs and 5.2% in cats. The presence of adult ascarids was observed in 18.7% of the slaughtered dogs and in 7.4% of the cats. The authors verified the destructive effect of 4 chemical disinfectants on Toxocara eggs and noticed that 5% ammonia is the most efficient, followed by the phenolic acid, formaldehyde and betadine solution.

Of the 153 examined dogs, 28 (18.3%) showed infestation with Ancylostoma caninum, of which 15 (53.5%) were puppies and 13 (46.4%) were adult dogs. The incidence was 8.6% in cats, all in kittens.(Table 6)

Table 6

Incidence of Ancylostoma sp. infestations

Species	Examined animals	Positive cases	Percent %	Youngs		Adults	
				Nr.	%	Nr.	%
Dogs	153	28	18.3	15	53.5	13	46.4

Cats	23	2	8.6	2	100	-	-
Total	176	30	17.04	17	56.6	13	43.3

The incidence of *Trichocephalus vulpis* infestation in dogs was 11.7%, of which 38.8% in puppies and 61.1% in adult animals. *Nr.* *Trichocephalus vulpis* infestation was observed in the examined cats.(Table 7)

Table 7

Incidence of *Trichocephalus vulpis* infestations

Species	Examined animals	Positive cases	Percent %	Youngs		Adults	
				Nr	%	Nr.	%
Dogs	153	18	11.7	7	38.8	11	61.1
Cats	23	-	-	-	-	-	-
Total	176	18	10.2	7	38.8	11	61.1

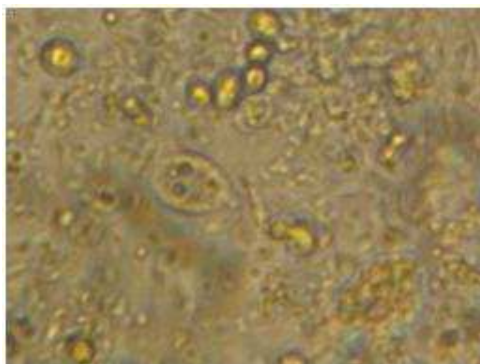


Fig. 1 *Giardia canis* trophozoite

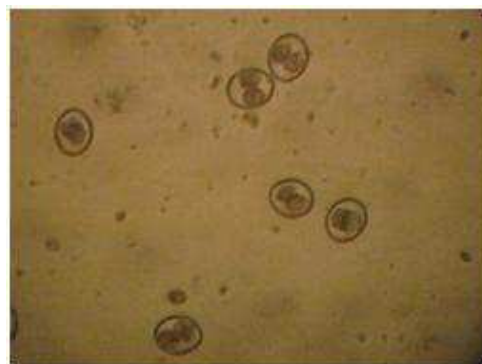


Fig. 2 *Isospora canis* oocysts

Isospora sp. infestations were treated with Ultrasol, 20 – 30 mg / kg, IM, for 3 days. The treatment conducted on 46 puppies with infestations cured 44 of the animals (95.6% efficacy). *Giardia* sp. infestations were treated with Flagyl, 30 – 40 mg / kg. per os, for 6 days, with an efficacy of 85% (Table 8).

Table 8

Therapeutic aspects in protozoosis

Disease	Level of infection-OPG		Animals		Efficacy %
	before	after	treated	cured	
	treatment				
Isosporosis	150-1500	0-100	46	44	95,6
Giardiosis	++++	+ -- ++	20	17	85,0

Nematodes infestation was treated in dogs as follows: *Toxocara* and *Ancylostoma* infestations were treated with one of the following drugs, Drontal plus Cestol plus or Pratel, in the usual doses, with 100% efficacy. *Trichocephalus vulpis* infestations in dogs were treated with Triantelm or Paratak, per os, in the usual doses, with 100% efficacy (Table 9).

Table 9

Therapeutic aspects in nematodes infestations

Disease	Level of infection-OPG		Animals		Efficacy %
	before	after	treated	cured	
	treatment				
Toxocarosis	50-1500	0	36	36	100
Ancylostomosis	100-1650	0	28	28	100
Tricocephalosis	50-2000	0	18	18	100

Conclusions

1. The incidence of *Isospora* sp. infestation was 57.1 % in puppies and 30.4 % in kittens.
2. The prevalence of *Giardia* sp. infestation was 11.7 % in dogs and 26.08 % in kittens.
3. The incidence of *Toxocara* sp. infestation was 28.7 % in dogs and 21.7 % in cats.
4. The incidence of *Ancylostoma* sp. infestation was 18.3 % in dogs and 8.6 % in cats.
5. The prevalence of *Trichocephalus vulpis* infestation was 11.7 % in dogs, of which 61.1 % in adult dogs.
6. The treatment of *Isospora* sp. infestation with Ultrasol was 95.6 % efficient.
7. The treatment of *Giardia* sp. infestation with Flagyl was 85 % efficient.
8. The treatment of nematodes infestations with the usual antihelminth preparations was 100 % efficient.

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Rezumat

Cercetările s-au efectuat pe un număr de 153 câini și 23 pisici cu sindrom diareic după terapie îndelungată cu antibiotice. Examenul coproscopic a evidențiat infestații cu specii de protozoare și nematode corelate cu vârsta animalelor. Infestații cu Isospora s-au diagnosticat la 49,5 % din câinii examinați și la 30,4 % din pisici fiind înregistrate numai la tineret. Incidența infestațiilor cu Giardia a fost de 15,6 % la câini din care 83,3 % la căței și de 26,08 la tineretul felin. Incidența infestației cu Toxocara canis a fost de 28,7 % din care 81,8 % la căței, iar cu Toxocara cati de 21,7 % din care 60 % la tineret. Infestații cu Ancylostomidae s-au diagnosticat la 18,3 % din câini din care 53,5 % la căței și 8,6 %

la tineretul felin. Infestații cu *Trichocephalus* s-au înregistrat numai la câini cu o incidență de 11,7% din care 61,1% la adulți.

Combaterea infestațiilor cu *Isospora* sp. s-a realizat cu Ultrasol în doză de 20 – 30 mg /kg. administrat i.m. 3 zile consecutiv cu eficacitate de 96%. Infestațiile cu *Giardia* sp. au fost tratate cu Flagyl în doză de 30 – 40 mg./kg. per os timp de 6 zile cu eficacitate de 85%. Combaterea infestațiilor nu nematode s-a efectuat cu produse antihelmintice uzuale și s-a obținut o eficacitate de 100% la 10 zile după tratament.

Cuvinte cheie – protozoare, nematode, câini, pisici, incidență, terapie.