

EPIDEMIOLOGICAL STUDY OF GASTROINTESTINAL PARASITISM IN HORSES FROM MEHEDINTI COUNTY

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Abstract

The presence of digestive parasites can alter behaviour, fertility, body condition, juvenile development, decreased resistance to other pathogens, or the performance for which animals are bred. The aim of this study was to monitor gastrointestinal parasite infestation in equines in Mehedinți County. The horses, sport and working, various breeds and half-breeds, came from different localities from Mehedinți County. Samples were collected in plastic bags and examined by flotation, sedimentation, and Baermann methods. Horses were divided into several categories: sex, age, breed, and service. *Strongylidae* and *Parascaris* spp. represented parasitism in recreational and working horses studied in Mehedinți county, no other parasitic elements were identified. The overall prevalence was 43.5% for *Strongylidae* and 21.17% for *Parascaris* spp. The simultaneous presence of at least two parasite species was observed in 17.64% of the horses examined.

Key words: horses, gastrointestinal parasites prevalence, *Strongylidae*, *Parascaris*

INTRODUCTION

Horses can be affected by more than 150 species of internal parasites. A horse may be infested with one or more parasites at a time, but the nature and severity of the damage varies with the type and degree of infestation [Güiris A.D., 2010].

The presence of digestive parasites can alter behaviour, fertility, body condition, juvenile development, decreased resistance to other pathogens or the performance for which animals are bred [Cernea M.; 2015, Cernea M., 2008].

The etiology and evolution of digestive parasitism and serous cavities in equines in our country have been little systematically studied, usually, in small areas, thus imposing the need to complete the data through detailed analyses [Morariu S., 2016, Güiris A.D., 2010].

The aim of this study was to monitor gastrointestinal parasite infestation in horses in Mehedinți County.

Worldwide, research and analysis of the digestive tract and serous cavities of equine animals have led to the diagnosis of the following parasitoses: eimeriosis, giardiasis, fasciolosis, dicroceliosis, cestodosis, habronemosis,

parascaridosis, strongyloidosis, strongylidosis, cyathostomines, oxyuroses, and gastrophilosis.

MATERIALS AND METHODS

For the purpose of this work, 85 faecal samples were collected from equine animals from March 2018 to May 2020 in Mehedinți County (Figure 1). The horses came from localities within the area of the CSVs Malovăț, Șimian, Hinova, Pătulele, and the samples were examined at the Clinic of Parasitology and Parasitic Diseases of the Faculty of Veterinary Medicine, Timișoara, Romania.

Breeds of horses of the riding centre taken in the study and from the households of the population: Hungarian sport horse, Croatian sport horse, Romanian sport horse, Semi-German horse, German sport horse, Arabian Shagya,

- Friesian,
- Lipitan,
- common breed horse.

Faecal samples were collected in plastic bags, labelled and refrigerated until examination.

The examination was carried out by Willis, successive washes and Baerman coproscopic methods.

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The data obtained were statistically analyzed using GraphPad Software Inc.® (QuickCalcs, 2018) and differences were considered significant when $p \leq 0.05$.

RESULTS AND DISCUSSIONS

The horses came from a variety of backgrounds, including both sports and working horses. Where possible, age, sex, and service data were obtained for each animal, based on which horses were divided into several categories. This, according to sex, 2 groups (53 males and 32 females) were obtained, according to age, 3 categories (young animals: 0-5 years-11 mares, adults: 6-15 years-46 mares, elderly: >16-28 mares), according to breed, 20 purebred horses, and 65 half-breeds, and according to service, 2 groups (sport, 30, and work, 55) (Table 1).

Strongylidae infestations were the most common parasitic infestations found in the samples examined in this study (43.5%).

Other infestations detected in the samples were with *Parascaris* spp. (21.17%).

Polyparasitism was observed in 15 animals (17.64%).

A total of 40 horses were found to be infested with at least one species of parasite, giving an overall prevalence of 47.05%.

The prevalence of infestation with strongyles and ascarids in relation to age groups was 45.5 and 72.7 % for the under-five age group, 43.5 and 15.2 % for the six to 15 age group and 42.9 and 10.7 % for the 16-age group.

In terms of sex-specific prevalence, parasitism with strongyles and ascarids was found to be 56.3 and 37.5% in females and 49.1 and 11.3% in males.

Reported to the breed of horses, it was observed that 35 % of purebred horses and 46.2 % and 20 % of half-breeds respectively were positive in the parasitological examination for strongyles and ascarids.

Table 1

Summary of positive samples from the epidemiological investigation of gastrointestinal parasite infestation in 85 study horses

Epidemiologic al data	<i>Strongylidae</i>		<i>Parascaris</i> spp.	
	Willis test		Willis test	
age	n=	%	n=	%
≤ 5 years (n=11)	5	45.5	8	72.7
> 6 - 15 years (n=46)	20	43.5	7	15.2
≥ 16 years (n=28)	12	42.9	3	10.7
sex				
females (n=32)	18	56.3	12	37.5
males (n=53)	26	49.1	6	11.3
race				
pure (n=20)	7	35.0	5	25.0
half-breeds (n=65)	30	46.2	13	20.0
Service				
leisure (n=30)	10	33.3	7	23.3
Labour (n=55)	27	49.1	11	20.0
Total	37	43,5	18/85	21,17
	18	5		

n = positive horses; % - prevalence obtained.

Regarding the lifestyle or service of the horses, it was observed that in recreational horses, the prevalence was 33.3% and 23.3 % respectively, and in working horses, it was 49.1% and 20 % for strongyles and ascarids respectively (Figure 5).

Statistical analysis revealed that in the case of strongyles parasitism there were no statistically significant differences between prevalence values reported by age, breed, sex, and horse service.

In the case of ascarid parasitism, however, there were statistically significant differences

between the prevalence values reported by age (between the under-5 group compared to the other two, but not between the 6-15 and +16 groups) and by race. No statistically significant differences were recorded for the other 2 groups (sex, service).

Among the studies carried out in Romania [Buzatu M.C., et al., 2013, 2014, 2016; Cernea M., et al., 2003, 2008, 2013; Covaşă C.T., Miron L.D., 2011; Morariu S., et al., 2012], is found and those carried out by Morariu S. et al., 2016, focused on the identification of small strongyle species. Forty-seven working horses from Romania have been examined post-mortem for evidence of infestation with small strongyles (*Cyathostominae*). All horses were found to be infected. Twenty-four species were identified. *Cyathostomum catinatum*, *Cylicocyclus insigne* and *C. Nassatus* had a prevalence of 100%. More than 50% of the horses were infected with *Coronocylus coronatus*, *Cylicostephanus calicatus*, *C. goldi* and *C. longibursatus*. Other predominant species (34%-45%) were *Cyathostomum tetracanthum*, *Cylicostephanus minutus* and *Gyaloccephalus capitatus*. *Coronocylus labiatus*, *Parapoteriostomum mettami*, *Poteriostomum imparidentatum* and *P. ratzii* had the lowest prevalence [Morariu S., 2016].

A study carried out in Suceava, Botoşani, Iaşi, Neamţ, Bacău counties and, in addition to the Moldavian region, Bistriţa-Năsăud County identified *Parascaris equorum* infestation by coproscopy and necropsy, establishing a prevalence of 40.62%. Cases of increased infestation in this study were rare, and the number of parasites observed in necropsied animals ranged from 3 to 67. Among the large strongyles, two species were identified: *Strongylus vulgaris* and *Strongylus edentatus*. Together with the large strongyles, the nematode infestation of the subfam. *Cyathostominae* had a prevalence of 100%, thus 25 species belonging to the following 7 genera were detected: *Cyathostomum*, *Coronocylus*, *Cylicocyclus*, *Cylicostephanus*, *Skrjabinodentus*, *Tridentoinfundibulum* and *Petrovinema* [Cernea M., 2015].

A study in Finland tested young horses for *Parascaris* spp. and strongyles. In this study, the 112 horses evaluated, aged between one and three years, were housed in training stables. The prevalence of *Parascaris* spp. was 21% and that of strongyles was 48% [Aromaa M., 2018].

In the US, the prevalence of internal parasites was determined by examining eggs in faeces from thoroughbred foals in central Kentucky in 2003. Faecal samples were examined from 733 foals from 14 farms. The age of the foals in the study ranged from 10 to 223 days old.

Prevalence (mean %) was determined for eggs of *Strongyloides westeri* (1.5%), *Parascaris equorum* (22.4%) and strongyles (27.6%) as well as *Eimeria leuckarti* oocysts (41.6%) identified in foal faeces. Foals had infestations with *S. westeri* on six farms (42.9%), with *P. equorum* on 12 farms (86%) and with strongyles and *E. leuckarti* on all 14 farms (100%) [Lyons E.T., 2003].

Avcioglu H., et al, 2016, in Turkey conducted a study on faecal samples, which were collected from 76 horses of different ages, sexes and breeds in the Erzurum region. Individual faecal samples were collected and then examined by flotation and sedimentation methods. The following species were detected: strongyles eggs (57.89%), *Parascaris equorum* (10.52%), *Dicrocoelium dendriticum* (2.63%), *Fasciola* spp. (2.63%) and *Eimeria* spp. (5.26%) [Avcioglu H., 2016].

A total of 512 horses (320 mares, 170 geldings and 22 stallions) were examined in Poland. In the group of 185 horses from individual farms, 119 animals (64.3%) were infected with gastrointestinal parasites. Of the 372 horses from agritourism farms, 169 (51.7%) were infected with parasites. Most of the animals expelled *Cyathostominae* eggs. In some individuals eggs of *Strongylus* spp., *Parascaris equorum*, *Strongyloides westeri* and *Anoplocephala* spp. were present. The number of infected horses on agritourism farms was lower than on individual farms, probably due to more regular deworming (usually twice a year) and more care of pastures [Sokol R., 2015].

A study carried out to estimate the prevalence of helminths in the horse population in the state of Brandenburg, Germany established the following values at the horse breeding level: *Cyathostominae* (98.4%), roundworms (16.7%), tapeworms (14.3%), pinworms (8.7%) and *Strongyloides* (4.0%). *Strongylus vulgaris* was identified in one farm. No liver flukes and lungworms were found [Hinney B., 2011].

CONCLUSIONS

Parasitism in recreational and working horses studied in Mehedinţi County was represented by *Strongylidae* and *Parascaris* spp., no other parasite elements were identified.

The overall prevalence of identified species was 43.5% for *Strongylidae* and 21.17% for *Parascaris* spp.

The concomitant presence of at least two species of parasites was observed in 17.64% of the horses examined.

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