



Diagnostic epidemiological differential study of the intestinal parasites infecting horses in Kerbala province, Iraq

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Abstract

This study aimed to investigate the infection of horses with some types of internal parasites in Kerbala province, Iraq. This purpose was examined by a flotation test of 110 horse fecal samples, divided according to age and sex. The results of this study showed two types of internal parasites, Nematodes and Protozoon; some horses were infected with more than one type of these parasites simultaneously. Examined horses were infected with *Strongylus* spp. by 71.8%, *Parascaris equorum* by 33.6%, and *Eimeria* spp. by 20%. Some of examined horses were suffering from infection with more than one types of internal parasites in same time, so that 12.7% of examined horses were infected with three types of parasites *P. equorum* , *S. spp* , *E. spp*, while 16.3% of these animals were infected with *P. equorum* , *S.spp*. However, 3.6% , 1.8% were infected with *P. equorum* , *E. spp.*, and *S. spp* , *E. spp*. Female horses were more infected with these parasites than male horses, and percentage rates of female infection reached 73.1%, 30.9%, and 21.6% with the parasites *S. spp*, *P. equorum*, *E. spp.*, while the rates of infection with these parasites in males animal were 61.5%, 53.8%, 7.6%. Animals that were smaller than one year old were more infected with these parasites than animals that were older than one year, so infection rates in smaller animals were 74% , 34 % and 21% with the parasites *S. spp* , *P. equorum*, *E. spp*, while in older animals were 50% , 30% , 10% receptively.

Keywords: Epidemiological differential, Intestinal Parasites, Horses, Kerbala province.

Introduction

The important parasites which can infect horses maintained in pastures some this helminthes like nematode (Ascarids, Strongyles, Oxyurids) and some cestoda are frequently detected, whereas protozoa or trematoda are rarely can be found in the feces of these animals [1, 2]. The important worms of different families Ascarididae, Strongyliidae, and Oxyuridae can be affected all species of equines, whether stabled or on grass.

The high indensity of horses per paddock increases infection incidence and intensity overgrazing forces horses to graze rough patches of grass growing around droppings. The increasing in the numbers of worm eggs are passed in the droppings onto the pasture and ingested, leading to re-infection and high worm counts [3]. Parasitic diseases are the major obstacle in the growth and development of animal health. Incidence of clinical and sub-clinical diseases of horses can be minimized through controlling the gastrointestinal parasites [4]. The important Problems which associated by parasite infection can be include diarrhea, weight loss, colic, emaciation, poor in growth, unexpected sudden death, impaired growth, and predisposition to other infectious diseases [5]. There no have been survey of internal parasites of horse in Erbil province and no attempts have been to that, it was therefore decided to survey the gastrointestinal parasites in horses.

Materials and Methods

Present study included examination 110 horses fecal samples of different ages (100 animals that lower than one year and 10 animals larger than one year) and including 97 female horses and 13 males horses at Kerbala city, through period of six months for detecting infection with intestinal parasites by using Flotation test .

All data were statistically analytic by using chi- square.

The well-sealed fecal samples (10-20 gm) were transferred in ice boxes for corpological examination, which including direct smears, acid-ether sedimentation and sheather's sugar flotation techniques, were used according to methods described by [6]. Cellophane (scotch) tape technique was used for Oxyuriasis [7]. Direct smear by placed a drop of dilution fluid on a glass microscopic slide and thoroughly mixed, a bit of feces with it, applied a cover slip and examined at low power. Acid-ether technique: added 10 ml of 5% hydrochloric acid to 1 gm of feces in a test tube, mixed thoroughly and sieved, placed the strained suspension in centrifuge tube and added an equal amount of ether and shakes thoroughly, then centrifuged for 1-2 minutes at 2500 rpm. Discarded the first three layers and with a pustules pipette removed from sediment (layer 4) placed it on a glass microscope slide and applied a cover slip and examined. Flotation technique; about 2 gm of feces thoroughly mixed with sufficient water to make a fluid mixture and sieved, then centrifuged for five minutes at 1000 rpm, poured the supernatant fluid, added sheather's sugar solution, thoroughly mixed and centrifuged again for further 5 minutes at 1000 rpm, by using a wire loop for removed the top of centrifuge tube, and placed it on a glass slide and applied a cover slip for examination. Cellophane (scotch) tape technique, in this technique a length of clear cellophane tape 3 or 4 fingers with the sticky side out, and the tape it pressed against the perineum, then placed onto a glass slide, saline placed over the tape and a long cover slip added to facilitated visualized the ova. All eggs, larvae, and oocysts found were identified according to morphologic characteristics under light microscopy [8].

Results and Discussion

Results of this study showed infected of examined horses with two types of internal parasites which were Nematodes and Protozoon. Some horses were infected with more than one type of these parasites.

Strongylus spp infect 79 of examined horses while 37 of other examined horses were infected with *Parascaris equorum*, as well as *Eimeria spp* infect 22 of total examined horses. Table (1).

Table (1): Types of parasitic infection that infected of examined horses

Total of examined horses	Type of parasitic infection	Genus of parasites	No. of infected horses	% of infected horses
110	Nematodes	<i>Parascaris equorum</i>	37	33.6
110	Nematodes	<i>Strongylus spp</i>	79	71.8
110	Protozoon	<i>Eimeria spp</i>	22	20

Flotation test explained infected of some horses with more than one types of internal parasites in the same time so that infected 12.7% of examined horses with three types of these parasites (*Parascaris spp* , *Strongylus spp* , *Eimeria spp*) , while 16.3% of these animals were infected wit.

(*Parascaris spp* , *Strongylus spp*) but 3.6% , 1.8% were infected with (*Parascaris spp* , *Eimeria spp*), and (*Strongylus spp* , *Eimeria spp*) versa versa. Table -2-.

Table (2): Infected of horses with more than one types of internal parasite

Types of parasitic infection	Total of examined horses	No. of infected horses	% of infected horses
Horses infected with (<i>Parascaris equorum</i> , <i>Strongylus spp</i> , <i>Eimeria spp</i>)	110	14	12.7%
Horses infected with (<i>Parascaris equorum</i> , <i>Strongylus spp</i>)	110	18	16.3%
Horses infected with (<i>Parascaris equorum</i> , <i>Eimeria spp</i>)	110	04	3.6%
Horses infected with (<i>Strongylus spp</i> , <i>Eimeria spp</i>)	110	02	1.8%

Examined female horses were more infected with these parasites than males horses

as showing in table -3- in which appeared percentage rates of females infection were 73.1% , 30.9% , 21.6% with the parasites *Strongylus spp* , *Parascaris spp*, *Eimeria spp* versa versa , while the rates of infection with these parasites in males animal were 61.5% , 53.8% , 7.6% respectively.

Table (3): Infection rates of horses with internal parasites divided according to sex of animal

Types of parasitic infection	Total of examined animals		Infected Females		Infected Males	
	Males	Females	No.	%	No.	%
<i>Strongylus spp</i>	13	79	71	73.1%	08	61.5%
<i>Parascaris spp</i>	13	79	30	30.9%	07	53.8%
<i>Eimeria spp</i>	13	79	21	21.6%	01	7.6%

At the other hand the animals smaller than one year old were more infected with these parasites than animals that larger than one year old , so infected rates in smaller animals were 74% , 34 % and 21% with the parasites *Strongylus spp* , *Parascaris spp*, *Eimeria spp* versa versa, while in larger animals were 50% , 30% , 10% Table (4).

Table (4): Infection rates of horses with internal parasites divided according to age of animal.

Types of parasitic infection	Total of examined animals		Infected <1 age		Infected >1age	
	<1 age	>1age	No.	%	No.	%
<i>Strongylus spp</i>	100	10	74	74 %	05	50%
<i>Parascaris spp</i>	100	10	34	34 %	03	30%
<i>Eimeria spp</i>	100	10	21	21 %	01	10%

In this study, a survey was conducted as preliminary attempt to demonstrated prevalence of intestinal parasites in 110 horses in middle and south Iraq. Overall prevalence of infection was 65/92 (70.65%). Six species of parasites were found among them, the most important pathogenic parasite found in a high prevalent (71.8%) was *Strongylus vulgaris* and the lowest prevalent was the protozoa *Eimeria leukarti* (20%), (16.3%) of horses at least infected with a mixed type of infection and (1.8 %) with a mixed infection. In one similar study by [9] found a distribution of intestinal parasite in Mosul province which neighboring to Erbil, the rate was (58%) with a single and (42.1%) with a mixed infection, and they found three species of nematodes namely *Strongylus spp* (31.58%) *Oxyuris equi* (15.75%) and *Paracaris equorum* (10.52%). At same area other study by [10] found the prevalence rate of infection was (66%) and 11 species of



parasites were found in these horses. Only six species of them nematodes, and the prevalent one (28%) *Parascaris equorum*, the small *Strongyles* (26%) and large *Strongyles vulgaris* (16%) and one species of *Eimeria* spp (4%). In other countries like Saudi Arabia [11] found the prevalence rate of parasitic infection was (86.6%), and seven species were recorded, the most prevalent was *Strongyloides* (64.4%) and *Parascaris equorum* (28.8%) followed *Habronema muscae* (22.2%), *Trichostrongylus axei* and *Oxyuris equi* were less common at (11.1%) and (8.8%) respectively. In Greece [12] found a high prevalence of internal parasitic infection in horses (34.5%) with one or more species, and the most common recorded were eggs of *Strongyles* *Strongyloides* spp and *Parascaris equorum*, *Anaplocephala* spp, *Habronema* spp and *Eimeria* spp and *Cryptosporidium* spp. In Pakistan [13] found a high prevalent rate of *Parascaris equorum* (36%) However, variability in prevalent rate of gastrointestinal parasites in this study as compared with other authors' finding. May be attributed to the number of sample size, analysis techniques used, the mode of infection related to feeding horses on pastures infected with third stage or contaminated with infected eggs, and lack of using anthelmintics by farmers, these may cause re infection and remaining in the ground, food and pastures continuously made it a sources for infection. Some studies performed in other developing countries have been shown that usually there is a limited use of deworms and pasture hygiene leading to high infection of parasites [14]. In present study the prevalence rate of infection with high in young horses less than 1 years than older, similar to [15], found the prevalence (50%) in horses less than 2 years and (23%) in horse older than 2 years, which was broadly consistent with our results, this may be due to the initial infection of young horse from pastures and to pica (coprology) on farm. Furthermore, young animals have most likely had no or infrequent treatment with anthelmintic [16]. In general we found *Strongylus vulgaris* more prevalent in this study among those horses have been clearly signs mentioned in the result, and known that the *Strongyles* parasites are ubiquitous in grazing horses worldwide and known to constitute a threat to equine health. The most pathogenic *Strongyle* species is the large *Strongyle* (*Strongylus vulgaris*) which cause thrombosis and thromboembolic colic.

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