

**Prevalence of gastrointestinal parasites in horses in Erbil province. North Iraq**I. K. Zangana<sup>\*</sup>, N. H. Qader<sup>\*\*</sup>, K. J. Aziz<sup>\*\*</sup> and Z. I. Hassan<sup>\*\*\*</sup><sup>\*</sup>Dohuk Veterinary Medicine\ Dohuk University<sup>\*\*</sup>College of Agriculture\ Sallahddin University-Erbil<sup>\*\*\*</sup>Shaqlawah Technical Institute**Abstract**

The survey was conducted to determine the prevalence of intestinal parasites in naturally infected horses in different private breeding stabled horses in Erbil province north Iraq from March-September 2012. 92 fecal samples were examined by acid ether technique, flotation concentration and cellophane tape methods. The overall prevalence was 70.6%, and at least 63.08%, 36.92% horses were infected with single and mixed species respectively. Six species of parasites were recorded and the most prevalent one was *Strongylus vulgaris* 29.35% following *Parascaris equorum* 19.56% and other *Oxyuris equi* 8.7%, *Strongyloides westeri* 5.43%, one species of cestoda *Anoplocephala spp* 4.35% and one species *Eimeria leukarti* 3.26%. There was no significant difference in infected rate between sexes. The prevalence rate was significantly higher in younger age less than 5 years 84% than age more than 5 years 61.1%. The clinical signs of infected horses with *S.vulgaris* and *P. equorum* revealed emaciation, rough coat, dehydration, anemia, perianal scratching, colic like pain.

معدل انتشار الطفيليات المعوية في الخيول في محافظة أربيل - شمال العراق.

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**الخلاصة**

أجريت الدراسة المسحية لتحديد معدل انتشار الطفيليات المعوية في الخيول المصابة بشكل طبيعي في حقول خاصة مختلفة لتربية الخيول في محافظة أربيل شمال العراق من آذار إلى أيلول 2012. تم فحص 92 عينة البراز بتقنية حمض الأثير، طفو المركز والشريط السيلوفاني. كان معدل الإصابة الكلية 70.6%، و63.08%، و36.92% على الأقل من الخيول كانت مصابة بنوع واحد والمختلط على التوالي. وسجلت ستة أنواع من الطفيليات والأكثر انتشارا كان *S. vulgaris* 29.35% ويليها *Parascaris equorum* 19.56%، *Oxyuris equi* 8.7% و *S. westeri* 5.43% ونوع واحد من الشريطيات *Anoplocephala* 4.35%، ونوع واحد من الأميرية *leukarti* 3.26%. لم تظهر الدراسة فروق معنوية في معدل الإصابة بين الجنسين، وكان معدل الانتشار أعلى في حيوانات التي يقل عمرها عن 5 سنوات 84% من التي عمرها أكثر من 5 سنوات 61.1%. أظهرت العلامات السريرية للخيول المصابة بنوعين *S.vulgaris* و *Parascaris equorum* الهزال، خشونة الجلد، الجفاف، فقر الدم، حكة الشرج والألم مثل المغص.

## Introduction

Among the parasites infecting horses maintained in pastures, Ascarids, Strongyles, Oxyurids, and cestoda are frequently detected, whereas protozoa or trematoda are rarely found in the feces of these animals (1, 2). The worms of different families Ascarididae, Strongylidae, and Oxyuridae can affected all types of equines, whether stabled or on grass. A high density of horses per paddock increases infection incidence and intensity overgrazing forces horses to graze rough patches of grass growing around droppings. Inevitably, increasing 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). Problems associated with parasite infection include diarrhea, colic, weight loss, poor growth, emaciation, 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.

## Material and Methods

A total of 92 fecal samples were collected from horses (42 male and 50 female), directly from rectum or recently defected from the ground, during period from March-September 2012, from four privates stabled horses namely (Barzan, Sallahadin, Qushtapa, Khabat) districts Erbil, province. North Iraq. 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).

## Result

Out of 92 horses examined 65 (70.65%) were infected with internal parasites. Six species of parasites were recorded in this survey. These including 4 nematodes species, the high prevalence 27 (29.35%) was Strongylus (*Strongylus vulgaris*), then *Parascaris equorum* 18 (19.56%), *Oxyuris equi* 8 (8.7%), *Strongylus wsteri* 5 (5.43%), also one

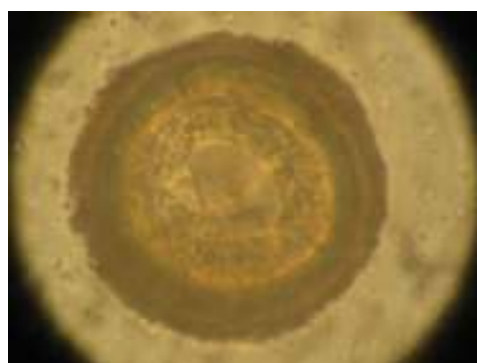
species of cestoda *Anaplocephala spp* 4 (4.35%) and one species intestinal protozoa *Eimeria leukarti* 3 (3.26%). Table 1. (Plate of figures A, B, C, D, E, F).

**Table (1) Prevalence rate of species of intestinal parasite in 92 examined horses**

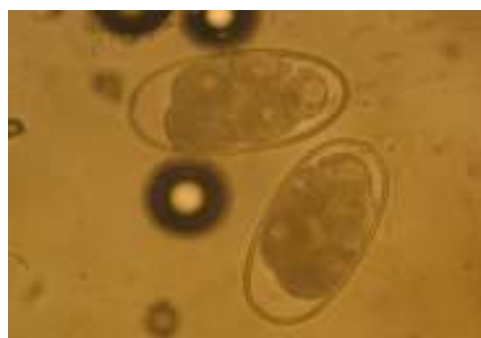
Species	Number of infected	Percentage of infection
<i>Strongylus vulgaris</i>	27	29.35
<i>Parascaris equorum</i>	18	19.56
<i>Oxyuris equi</i>	8	8.7
<i>Strongylus westri</i>	5	5.43
<i>Anaplocephala spp</i>	4	4.35
<i>Eimeria leukarti</i>	3	3.26
Total	65	70.65



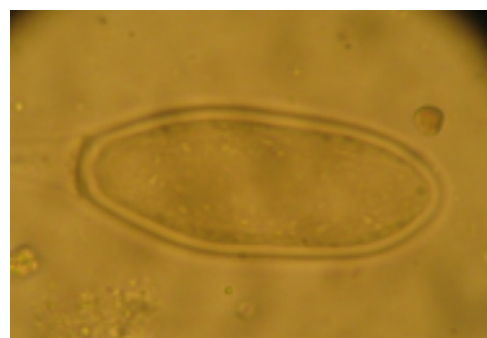
**A: Egg of *Strongylus Westri* X40.**



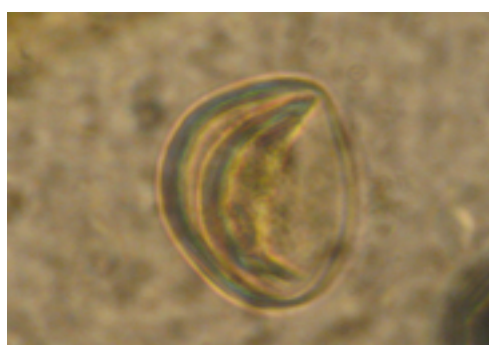
**B: Egg of *Parascaris equorum* X40.**



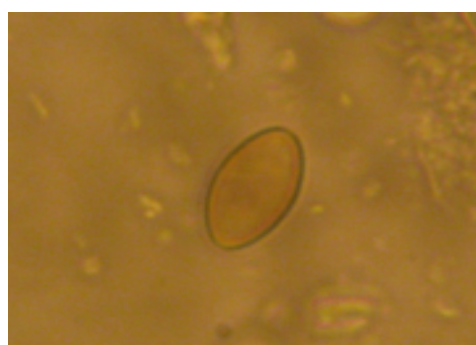
**C: Egg of *Strongylus vulgaris* X40.**



**D: Egg of *Oxyuris equi* X40.**



**E: Egg of *Anaplocephala spp* X40.**



**F: Egg of *Eimeria leukarti* X40.**

Out the 65 infected horses, 41 (63.08%) at least with single type of infection and 24 (36.92%) with mixed species. Table 2.

**Table (2) Type of infection with intestinal parasite**

Type of infection	Number	Percentage%
Single	41	63.08
Mixed	24	36.92
Total	65	100

The prevalence rates according to sex are presented in Table 3. There was no significant difference in infected rate between male 28 (66.7%) and female 37 (74%).

**Table (3) Prevalence rate in both sexes**

Sex	Number of animals	Infected number	Percentage%
Male	42	28	66.7
Female	50	37	74
Total	92	65	70.6

In this study the overall prevalent rate was significantly higher in younger age less than 5 years 32 (84%) than age more than 5 years 33(61.1%). Table 4.

**Table (4) Prevalence of internal parasites according to age**

Age	Number of animal	Infected number	Percentage%
< 5yaer	38	32	84.1
> 5 year	54	33	61.1
Total	92	65	70.6

Most infected horses were suffered from different clinical signs (Table 5). Fourteen horse (21.54%) had emaciation, 17 (26.5%) rough coat and dehydration, 8 (12.31%) felt tail rubbing and perianal scratching, 9 (13.85%) showed pica (coprophagia), 12 (18.40%) with pale mucosa membrane (anemia) and 5 (7.69%) had colic like pain.

**Table (5) Clinical signs of intestinal parasite**

Signs	Number of infected	Percentage%
Emaciation	14	21.54
Rough coat & dehydration	17	26.15
Tail rubbing & perianal scratching	8	12.31
Pica	9	13.85
Pale mucosa membrane	12	18.41
Colic	5	7.69
Total	65	100

## Discussion

In this study a survey was conducted as preliminary attempt to demonstrated prevalence of intestinal parasites in 92 horses in Erbil province north 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 (29.35%) was *Strongylus vulgaris* and the lowest prevalent was the protozoa *Eimeria leukarti* (3.26%), (63.08%) of horses at least infected with a single type of infection and (36.92%) 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 *Parascaris 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 de worms and pasture hygiene leading to high infection of parasites (14). In present study the prevalence rate of infection was high in young horses less than 5 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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