PREVALENCE OF GASTROINTESTINAL PARASITES IN DRAFTING HORSES AT KAFR EL-SHEIKH PROVINCE WITH SPECIAL REFERENCE TO CLINICAL SIGNS AND TREATMENT EFFICIENCY

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ABSTRACT

Gastrointestinal parasites in horses and their control measures remain problematical. One hundred drafting horses were investigated by faecal examination and faecal culture to determine the pattern of infection and egg shedding. The results indicated to remarkably high (80 %) infection rate. Small strongyles were the most common parasites (67.5 %) while *S. edentatus* was 48.75 %, *Parascaris equorum* 27.5 %, *S. vulgaris* 22.5 %, *Strongyloides westeri* 17.5 %, *Oxyuris equi* 11.25 %, *Gastrodiscus aegyptiacus* 13.75 %, and *Fasciola* sp. was 6.25 %. The clinical signs of the infected animals in relation to species of parasite, infection rate and age of the animal were recorded. Collectively, the infected animals appeared rough coats with poor condition. Inappetence accompanied with pale mucous membrane was frequently recorded. Of note, all the infected animals showed normal body temperature. Deworming of infected animals by ivermectin oral paste improved these signs. Although the absolute efficiency of the used drug against all nematode infections, it did not prove any effect against *Fasciola* sp. and *Gastrodiscus aegyptiacus* infections.

INTRODUCTION

Drafting horses have a great economic importance, especially in developing countries, as a source of income (**Krecek *et al.*, 1994**).

Gastrointestinal parasites in horses show a great diversity and wide distribution. The parasitic infection in horses has a great deleterious effect on the host health, productivity, performance and may eventually lead to death (**Zinsstag *et al.*, 1998**), resulting in great economic loss for the owners and community (**Krecek and Guthrie, 1999**).

Although the eradication of gastrointestinal parasites in horses seems far of reach, continuous efforts are made to control them. Chemotherapy beside improvement of sanitary conditions of the animals as well as hygienic elimination of manure are the most candidate factors (**Reinemeyer and Aguilar, 1999**)

Prevalence data on endoparasites of equine, particularly those reflect the impact of chemotherapy on the parasite population are difficult to obtain (**Lyons *et al.*, 2000**). Reports on occurrence of intestinal parasites vary from animals administrated with parasitcide, for treatment or prophylactic regimes, around the time of examination to those with no parasite control measures (**Ihler, 1995**).

As the drafting horses round up quickly, they play an important role in dispersing the infection to new milieus. So, the present study was delineated to determine the prevalence and different populations of gastrointestinal parasites by faecal examination and faecal culture. Each case was evaluated clinically in relation to infection type, rate and age. Susceptibility of the detected parasites to ivermectin oral paste was studied under the field conditions.

MATERIAL AND METHODS

Animals:

A total of 100 drafting horses were investigated during this study, 50 of them were come to the Veterinary clinic, Faculty of Veterinary Medicine, Kafr El Sheikh, Tanta University, with gastrointestinal problems, the others were selected randomly from different areas at Kafr El Sheikh province without any gastrointestinal problems. Each horse was subjected to complete clinical and parasitological investigation. The animals under study were not administrated any anthelmintics for 3-6 months prior to examination, otherwise excluded.

Collection of samples:

Individual identified faecal samples were collected at the time of examination in plastic gloves and transported to investigation laboratory. Anal scraping was made searching for *Oxyuris equi* eggs.

Egg count, larval culture and identification:

Egg per gram faecal matter (EpG) was determined using McMaster technique according to **Urquhart *et al.*, (1996)**.

Faecal culture was done by mixing of 4 gram faecal matter with rough saw dust in glass beakers, damped with dechlorinated water and cultured in humid chambers at 22° C. for one week (**Bowman, 1995**). Larvae were harvested by Baermann technique, fixed in prewarmed (70° C.) 70% alcohol, cleared in lactophenol and mounted by gelatin-glycerol (**Drury *et al.*, 1976**). Larval identification was performed according to the key of **Burger and Stoye, (1968)**.

Anthelmentic:

10 horses proved to be infected with major parasites were chosen for treatment. A single dose (200 µg/ kg body weight) of ivermectin oral paste (EQVALAN ®, Merck Sharp & Dohme B. V. Haarlem - Netherlands) was administrated to each animal. Efficiency of the drug was evaluated by faecal analysis of all animals 14 days after drug administration (**Monahan *et al.*, 1995 and Eysker and Klei, 1999**). Drug efficacy was evaluated by the faecal egg count reduction test (**Young *et al.*, 1999**) according to the following equation

$$\frac{\text{[Pre-treatment mean EPG- Post-treatment mean EPG]} \times 100}{\text{Pre-treatment mean EPG}}$$

RESULTS

The results of the present study as in Table (1) indicated to high percentage of infection (80 %) of one parasite or another. Of all infected animals, only 17.5 % showed single infection while those with mixed infection were up to 82.5 %. In spite the infection was being single or mixed, nematodes were the common feature of the parasitism in the infected animals (96.25 %) while trematodes were 15 %.

Parasitological identification of the mounted specimens revealed that the small strongyles (cyathostomes) were 67.5 %, *Strongylus (S.). edentatus* was 48.75 %, *Parascaris (P.) equorum* 27.5 %, *Strongylus (S.). vulgaris* 22.5 %, *Strongyloides westeri* 17.5 %, *Oxyuris (O.) equi* 11.25 %, *Gastrodiscus aegyptiacus* 13.75 %, and *Fasciola* sp. was 6.25 % (Table 2).

Concerning the susceptibility of the animals in relation to their age (Table 3), young horses (up to 3 years) appeared to be more susceptible (93 %), followed by those of age 4-6 years (80 %), lastly animals aged more than 6 years (60 %). Nevertheless, mean faecal egg count (EPG) of young horses was higher than those of older ones.

Clinical signs:

Clinical signs were commonly seen in young animals rather than old ones with severity associated with the degree of infection. The common clinical signs recorded in the present study were inappetence in most cases, rough coat, emaciation and weakness. Animals undergo heavy infection (EPG > 600) usually suffer from diarrhea. Normal temperature and pale mucous membrane were a common feature. Moreover, *P. equorum* heavy infected foals showed cough and constipation. *Oxyuris equi* infected horses showed itching in the anal region manifested by rubbing against fixed objects and fall down of the hair at the base of the tail with dirty gray scales was found on the inner surface of the tail. Animals with cyathostomes and *S. vulgaris* showed signs of intermittent colic (Table 4). Deworming of infected animals by Ivermectin oral paste improved these signs.

The use of Ivermectin oral paste induced 100% efficacy against all nematode infections. On the other side it did not prove any effect against *Fasciola* sp. and *Gastrodiscus aegyptiacus* infections.

DISCUSSION

Parasitic infection in horses represents a major problem. The present study revealed a high infection rate. Small strongyles, *S. edentatus*, *Parascaris equorum*, *S. vulgaris*, *Strongyloides westeri*, *Oxyuris equi*, *Gastrodiscus aegyptiacus*, and *Fasciola* sp. were the detected parasites. In agreement with results of **Gawoi, (1995) and Hoglund *et al.*, (1997)** recorded high prevalence rate of such infections.

Cyathostomes appeared to be the most common parasites to be detected. This result comes in accordance with the results of **Silva *et al.*, (1999) and Young *et al.*, (1999)**.

This high rate of infection may be due to inefficient treatment, where with extensive use of parasitcide, drug resistance may develop (**Kelly *et al.*, 1981 and Lyons *et al.*, 1999**). Moreover most commonly used drugs may not able to eliminate mucosal stages of small strongyles or migratory stages of large strongyles (**Krecek and Guthrie, 1999 and Sangster, 1999**). Being as stressed animals, due to hard work, drafting horses may be more susceptible to parasitic infection.

Concerning age susceptibility, young horses appeared to be more susceptible to infection. Similar results were reported by **Lyons *et al.*, (1999)** who reported high incidence in young horses with presence of large number of worms than old ones which may indicate that at least some immunity results from previous exposure.

Parascaris equorum, *Strongyloides westeri*, *Oxyuris equi*, Small strongyles, were most prevalent in young horses. This comes in agreement with that reported by **Hungerford, (1990) and Radostits *et al.*, (1994)**.

Clinical signs were obvious in young horses than olders. In agreement with the results of **Love *et al.*, (1999)** that the old horses may harbour high worm burden with no detectable illness. As recorded in the present study, intermittent colic was recorded in cyathostomes and *S. vulgaris* infected horses (**Uhlinger, 1990**). Collectively, the clinical signs were not characteristic for a particular infection but considered as a guide for diagnosis need further confirmation via faecal examination.

In the present study, ivermectin oral paste showed absolute efficiency against all types of nematode infection, with no apparent effect on flat worm. These results agree with that recorded by **Costa *et al.*, (1998) and Young *et al.*, (1999)**. This high efficacy of the used drug may be due to the little or no resistance to the drug. This can be predicted due to the high price of the drug, financial constraints of the owners and lack of its availability which lead to uncommon use and subsequently limit developing the drug resistance.

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Table (1): Prevalence Of gastrointestinal parasites in drafting horses.

Status	No. examined animals	No. of infected animals								Infection Rate
		Single		Mixed		Nematode		Trematode		
		No.	%	No.	%	No.	%	No.	%	
Horses with GIT problems	50	9	19.5	37	80.43	44	95.65	4	8.7	92
Horses without GIT problems	50	5	14.7	29	85.29	33	97.06	8	23.53	68
Total	100	14	17.5	66	82.5	77	96.25	12	15	80

Table (2): The detected parasites and their occurrence in the examined horses.

Parasite	No. + ve cases	No. - ve cases	% to the total examined	% to the total infected
Cyathostomes	54	46	54	67.5
S. edentatus	39	61	39	48.75
Parascaris equorum	22	78	22	27.5
S. vulgaris	18	82	18	22.5
Strongyloides westeri	14	86	14	17.5
Oxyuris equi	9	91	9	11.25
Gastrodiscus aegyptiacus	11	89	11	13.75
Fasciola sp.	5	95	5	6.25

Table (3): Effect of age on prevalence of infection.

Age	No. of examined animals	No. of infected animals	%
3 months - 3 years	30	28	93.33
4 – 6 years	50	40	80
7 – 10 years	20	12	60

Table (4): Clinical signs in parasitized animals.

Signs	No. of infected animals	%	Remarks
General signs:			
Normal temperature	80	100	-
Pale mucus membrane	60	75	-
Inappetence	50	62.5	-
good appetite	30	37.5	-
Rough coat	50	62.5	-
Emaciation	47	58.5	-
Weakness	40	50	-
Diarrhoea	30	37.5	-
Specific signs:			
Cough	7	8.75	-2 horses infected with *P. equorum* -2 horse infected with *P. equorum* + Cyathostomes -3 horses infected with *P. equorum* + *Strongyloides westeri*
Constipation	3	3.75	-3 horses infected with *P. equorum*
Itching	2	2.5	-2 horses infected with *O. equi*
Colic	11	13.75	-2 horses infected with *S. vulgaris* -2 horse infected with Cyathostomes -7 horses infected with *S. vulgaris* and Cyathostomes

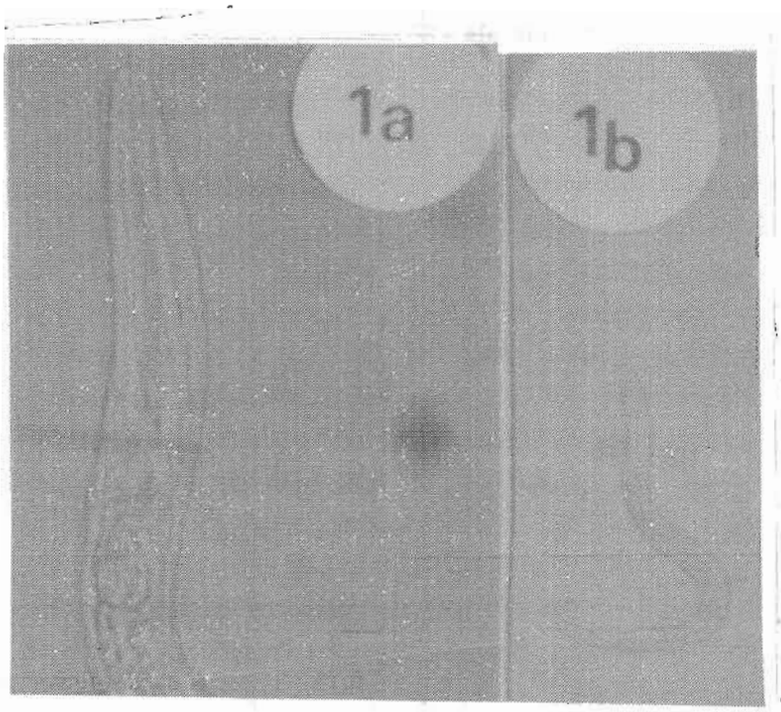

Fig (1): *Strongyloides westeri* third stage larva; 1a (X40) 1b (X10)

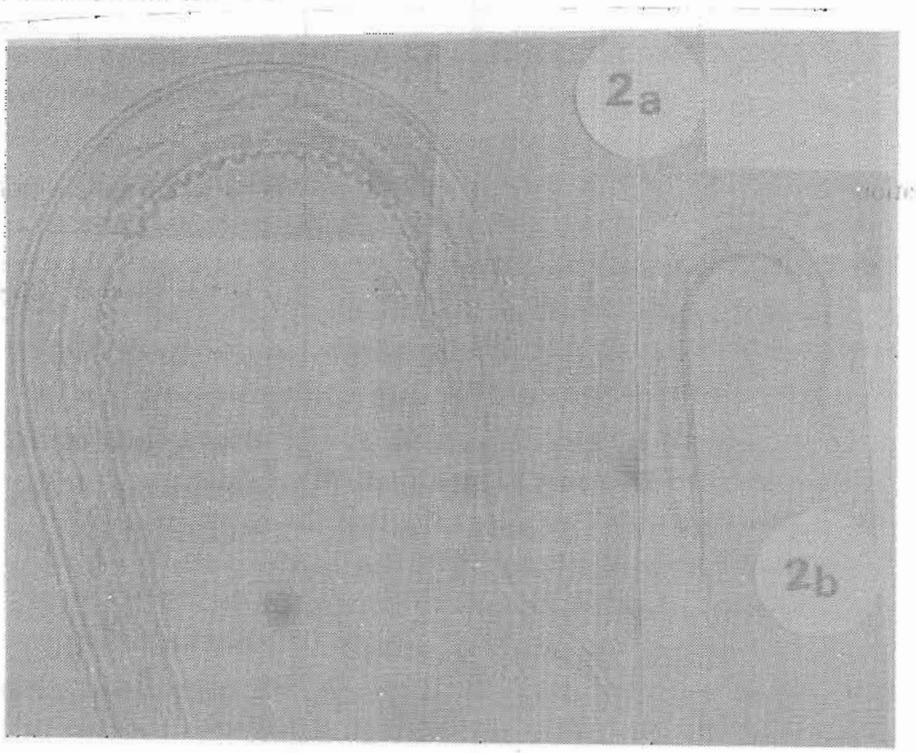

Fig (2): *Cyathostome* third stage larva; 2a (X40) 2b (X10)

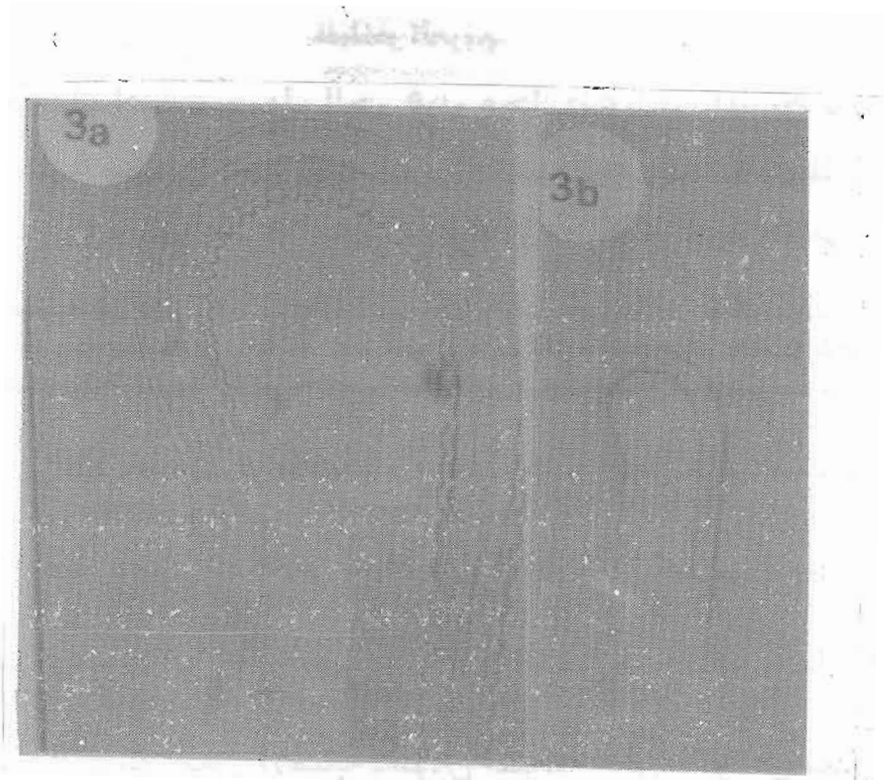

Fig. (3): ***Strongylus edentatus*** third stage larva; 3a (X40) 3b (X10)

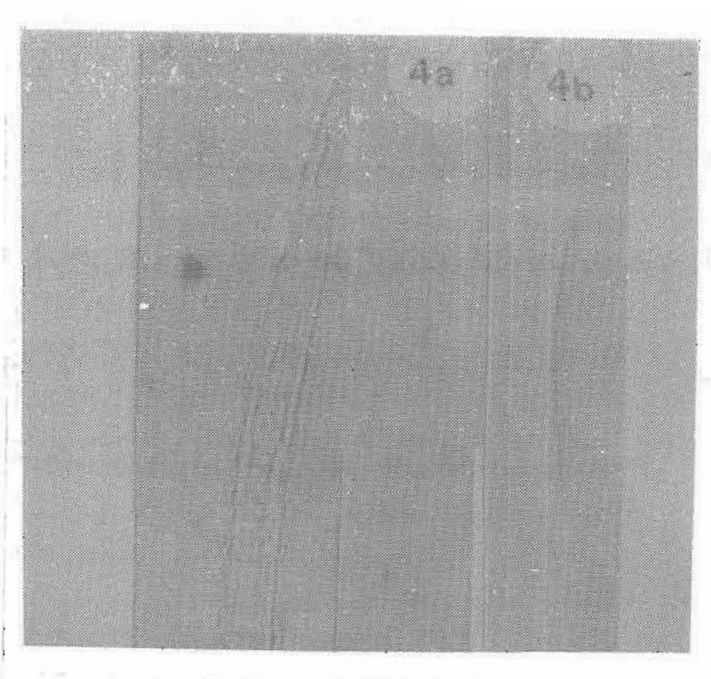

Fig. (4): ***Strongylus vulgaris*** third stage larva; 4a (X40) 4b (X10)

الملخص العربي

استبيان معدل إصابة خيول الجر في محافظة كفر الشيخ بالديدان الداخلية مشارا إلى الأعراض الإكلينيكية وكفاءة العلاج

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تم فحص ١٠٠ حصان جر إكلينيكيا و معمليا للكشف عن مدى أصابتها بالديدان الداخلية و كذلك معدل انتشار كل طفيلي نسبة إلى الطفيليات الأخرى. أظهرت الدراسة نسبة إصابة عالية وصلت إلى ٨٠% منها ١٧,٥ % بصورة فردية و منها ٨٢,٥ % بصورة مختلطة. كذلك كان معدل الإصابة بالديدان الخيطية أعلى بكثير عن معدل الإصابة بالديدان المفلطحة .الديدان التي تم الكشف عنها كانت كالتالي: السيازوستوم (٦٧.٥ %) ثم الاسترونجيلس ايدينتاتس(٤٨.٧٥ %) ثم ديدان الإسكارس (٢٧.٥ %) ثم الاسترونجيلس فولجارز (٢٢.٥ %) ثم الاسترونجيلويدس ويستيرى (١٧.٢٥ %) ثم الديدان الدبوسية (١١.٢٥%) ثم الجاستروديسكس ايجيبتياكس (١٣.٧٥ %) و أخيرا الديدان الكبدية (٦.٢٥%). تفاوتت الأعراض الإكلينيكية حسب عمر الحيوان و نوع الطفيلي و كذلك درجة الإصابة . اظهر عقار الافرمكتين كفاءة عالية في علاج مختلف أنواع الديدان الخيطية بينما لم يكن له آدني تأثير على الديدان المفلطحة.