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EPIDEMIOLOGICAL STUDIES ON PARASITIC INFESTATIONS IN CAMELS (*CAMELUS DROMEDARIES*) IN EGYPT

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ABSTRACT

The prevalence of parasitic infestations was studied in camels. A total of 460 camels of different age, sex and localities were examined. Collected fecal samples were subjected to sedimentation and floatation techniques and then examined for detection parasitic eggs. Fecal examination revealed that 26.9% of the camels parasitic eggs in their feces. Different types of parasites eggs prevalence were Strongylus sp. 8.2%, Trichostrongylus sp. 6.7%, Trichuris sp. 4.7%, and mixed infections with parasites were recorded in 7.1 %. In these results recorded hard ticks infestation in camels 28.6%. *Sarcoptics cabeivarcameli* (mange-mite) infested camels are 12.1%. Moreover, blood smears from jugular vein revealed that camels are infestation by blood parasites as *Trypanosoma evansi* is 9.5%.The prevalence of parasitic infestation as internal and external observed in the present study was suggests that parasites are more common in the farms or herds camels that examined and may be leads to economic camel production losses, so the treatment of infested camels with a specific and effective drugs as the following ivermectin for external and internal parasites and cymelarsan against trypanosomiasis, are needed to control spreading of parasitic infestation and also prevent the losses of camels.

Keywords: Epidemiology, Camels, Parasitic infestation, Diagnosis, Treatment.

INTRODUCTION

A camel plays an important economic role in the arid and semi-arid areas where most of the resource poor farmers in Africa live**.** Camels have been reported to form an integral part of the cultural life and system of pastoral communities and they are the major source of food meat and milk [1]**.**

Camels are commonly infected by *Haemoncus longistipes*, Trichuris sp., *Camelostrongylus mentulatus*, Trichostrongylus sp. and *Parabronemas krjabini* [2]. Hussain et al [3] investigated blood parasites of native camels in several localities. They diagnose *Trypanosoma evansi* in camels. Concerning infection by external parasites, Chhabra and Khurana [4] mentioned that Sarcoptic mange (*Sarcoptes scabiei var. cameli*) and hard ticks infection as (*Hyalomma dromedarii*) are the most common of external parasite in camels.

The parasitic diseases play an important role in livestock production**.** Losses are due to mortality, lowering of reproductive and growth rate, weight loss andincreased cost of control and treatment.

No enough published data and research concerning the incidence of different parasite in camel. For this reason, the present study was done to give a design of strategic parasitic control program.

MATERIALS & METHODS

The study was undertaken during the period from October 2009 to september 2010, at Assiut, El-Wadi Elgaded Governorate.

The study population consisted of all age and sex of camel (one hump camel) reared under extensive husbandry which allows free grazing. Field investigation was conducted including the clinical signs, body condition and tick infestation.

Fecal samples

Fecal samples were collected directly from the rectum using plastic gloves, and put into fecal pots, labeled and kept cool before transportation to the localveterinary Investigation laboratory where they were immediately examined for parasitology.

The sedimentation and floatation technique was used to detect the presence of gastro-intestinal eggs in the fecal samples. Concentration flotation technique using concentrated salt solution was adopted for diagnosis of different eggs and oocysts, according to Cebra [5].

Blood samples

Whole blood samples were collected from each examined camel through jugular vein by vacutainer tubes and then thin fixed, Geimsa stained blood films were prepared from each samples for diagnosis of Trypanosomiasis according to Solusby [6].

Skin samples

Skin scraping from hairless area or alopecia present in the examined camels and put on to microscope slide, then subjected to potassium hydroxide 10% and fine heating for digestion of keratin and examine under microscope to detect mange mites infestation in examined camels.

RESULTS

The results of clinical manifestation of infested camel with internal and external parasites showing as, loss of body weight, emaciation, thin of the hump and drop in the one side as in fig. 1, and the result was confirmed by blood smear examination and detection the parasite as in the fig. 6, also clinical examination recorded the hairless area and alopecia in case of mange as in fig. 2, paleness of mucous membranes, softness of fecal matter and ill-thriftiness.

In this study prevalence and types of different parasites infecting camel were investigated. Prevalence of parasite eggs: A total of 460 camels were examined, of which 124 (26.9%) were diagnosed as presented in (table 1) and (figures 3, 4, 5) Stronglylus sp. was (8.2%), Trichostrongylus sp. (6.7%), Trichuris sp. (4.7%) and mixed infestation was (7.1%).

The results of skin scraping was recorded as present in the fig. 7, but clinical examination of camels were revealed that the presence of ticks on external of skin as present in fig. 8.

Factors influencing the prevalence of GIT parasite eggs infection: Significant factors influencing prevalence of GIT parasites infection are shown in Table 1. Host age was found to be a significant factor with respect to the prevalence of GIT parasite infection, with eggs been detected more frequently in age categories (>3-10) than (<3 years) and (>10 years) camels. The likelihood that camel was positive for GIT parasite eggs varied significantly with geographic location. Camels located in districts had high prevalence of helminthes eggs infection. Female camels were more likely to harbor GIT parasites eggs than males. Health status, source and body score were associated with prevalence of parasite infection. Camels reported to have been treated against helminthes in the last one year prior to the present study survey were significantly associated with lower prevalence of GIT parasite infection.

Table 1. Fecal examination of parasitic infestation

parasites	Total no.	Positive no	% of infestation
Strongylus spp.	460	38	8.2
Trichostrongylus spp.	460	31	6.7
Trichuris spp.	460	22	4.7
Mixed infestation	460	33	7.1
Total	460	124	26.9

Fig. 1. camel showing severe emaciation and drop of the hump in one side due to Trypanosomiasis

Fig. 2. camel showing hairless area in the head and neck due to mange

Fig. 3. Fecal examination revealed that Strongyloides egg

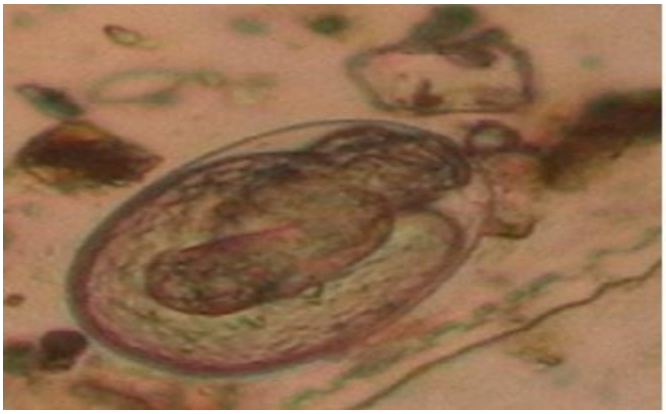

Fig. 4. fecal examination revealed that Trichuris species egg

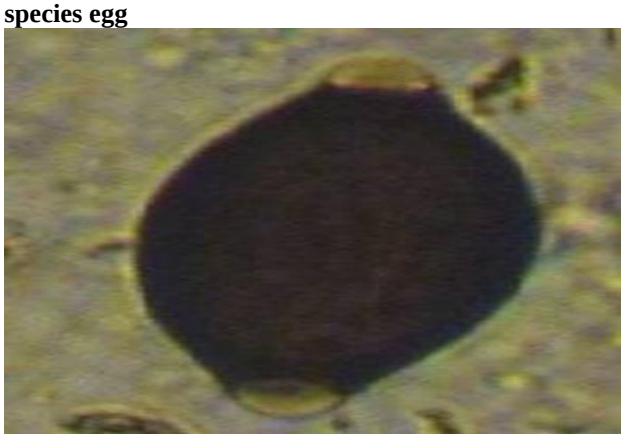

Fig. 5. Fecal examination revealed that Trichostrongylus egg

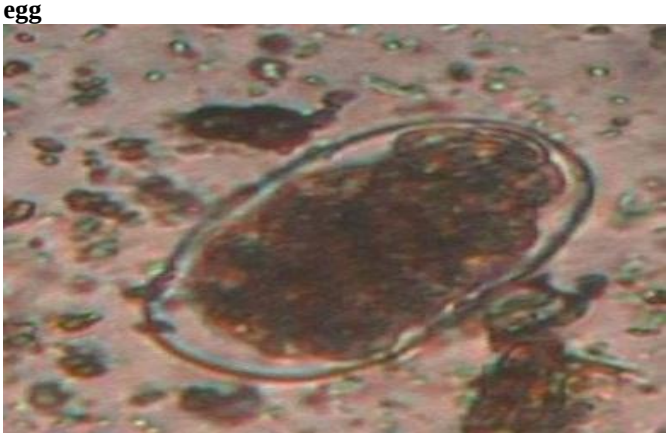

Fig. 6. Thin Giemsa stained blood film showing *Trypanosomaevansi*

Fig. 7. Skin scrapting showing Sarcoptes mange mites

Fig. 8. Adult *Hyalomadromedari* Full blood tick from dorsal view

DISCUSSION

Sarcoptic mange infection in camels caused by *Sarcoptes scabii var. cameli* is often regarded as the second most important disease of dromedary camels, after trypanosomosis. It is a highly contagious chronic debilitating condition with high degree of morbidity. Infected camels may stop grazing and milk production may show a rapid fall. In the present study Sarcoptic mange infection was recorded in the examined animals. The results were agreed with Chhabra and Khurana [4], Parmar et al [7].

The microscopic fecal examination showed that helminthosis was an important health disease in the study area. This finding is in agreement with the results of other researchers that helminthosis is one of the main problems in camels worldwide [8].

The overall prevalence of 62.7% of GIT parasite eggs/oocyst in the camels in this study shows that there were frequent infections of the camels with different species of helminthes and protozoan. Eleven different species of gastrointestinal tract worms and protozoan were identified in camels [9].

The relatively high level of parasitism recorded in this study is probably related to the number of adult parasites established in the GIT, level of host immunity, stage of parasite infection, lack of improvement in the animal health management programs or non-adoption of the modern animal health care programs by camel owners [10].

Mixed parasitism (35.5%) involving two or more helminthes genera was common in the present study and is in agreements with the results of other researchers [11]**.** Strongylus and Trichostrongylus sp. were the most incriminated helminthes in camels. Other helminthes/oocyst genera detected, though at a low frequencies included Strongyloides sp., Gastrodiscus sp. and Eimeria sp. This is the first time that the camel GIT helminths and protozoan has been reported in northern Tanzania. The prevalence of 89.2% of Strongylus in this study is comparable to the prevalence of 100% reported in Kenya but higher than the prevalence of 41% obtained in Ethiopia [12], and 75% obtained in Sudan. The higher prevalence obtained in this result than those obtained in Ethiopia and other relevant areas similar to those found in Tanzania could be due to the long pre-patent period of Strongylus eggs, nature of the agro-ecological environment, poor levels of hygiene and the lack of veterinary attention in many marginalized pastoral areas. Eimeria sp. with prevalence of 9.9% was low compared with prevalence of 25% was recorded in Pakistan**.** Heavy protozoan infection may cause significant impact in young camels resulting into high morbidity and mortality rates [13]. These results not agreement with my results. Most of the camels examined appeared to be in fairly health condition but yielded different types of helminthes eggs during examinations despite high level of deworming intervention made by camel owners. Drenched camels prior to the current study were associated with low level of helminthes excretion. A good number of camel owners/ keepers in the study area perceive helminthes infection as a pre-determined coincidental manifestation which nobody could do anything to prevent.

The sex of the hosts was an important factor influencing the prevalence of GIT infection in this study. Female camels were more infected with helminthes parasites than their male counterparts. This may be due to the physiological peculiarities of the female camels which usually constitute stress factors thus reducing their immunity to infections [14].

The study further revealed that body conditions of the animal did not show significant association with the prevalence of the parasites. The absence of association between body condition and prevalence disagrees with previous reports in other livestock species. This could be explained by the fact that loss of body condition in the study animals could be due to other factors, such as seasonal change of forgeable feed staff and the presence of other concurrent disease conditions, mainly high prevalence of trypanosomosis in some of the lowland districts [15].

In this study, detailed investigations such as fecal culture for larvae recovery and species identification to establish the helminthes parasites present in the study area was not made. This information would have been valuable for developing helminthes control strategies. Resources constraints affecting logistics and laboratory capacity were the main reason.

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