GASTEROINTESTINAL NEMATODES OF EQUINES IN SOUTHERN DARFUR REGION OF THE SUDAN.

BY

Salah M. Kheir and H.S.M. Kheir.
Veterinary Research Administeration, Khartoum, Sudan.

Introduction

Available data on helminth parasites of equines in the Sudan were compiled by Eisa etal (1979). In these records only two helminth parasites **(Oxyuris equi & Setria equina)** were recorded from Darfur region. Since this region is comparatively, the most populated region with equines in the Sudan, the present study was undertaken to provide further information on the subject as parasites constitute a potential hazard to animal health.

Materials and Methods

Rectal feacal samples were collected at random from 215 donkeys and 175 horses kept in and around Nyala town, and from 120 donkeys and 65 horses kept in the nomadic areas of Bahr El Arab. All feacal samples were examined for the presence of helminth eggs both by direct smear and floatation methods. The number of helminth eggs per gram of feaces was determined. All animals examined were within the range of 4-10 years of age.

Results

The results obtained are summerised in tables I,II and III.

At Nyala town: Out of 215 feacal samples from donkeys, 121 showed helminth eggs, (56. 2%) and out of 175 feacal samples from horses, 106 showed helminth eggs (60.6%). The overall precentage in both horses and donkeys was (58%).

In Bahr El Arab area: Out of 120 donkeys, 29 showed helminth eggs in feaces. The percentage incidence in donkeys was (24%). Helminth eggs were found in feaces of 12 out of 65 feacal samples examined from horses. The percentage incidence of helminth in horses was (18. 5%). The overall percentage incidence of helminth parasites among both horses and donkeys in that area was (22%).

In both horses and donkeys (at Nyala town and Bahr El Arab area) the percentage incidence of each of the nematode species examined was as follows:-

Strongylus sp (43.6% and 29%); **Oxyuris** sp (10.5% and 19. 5%); **Parascaris** sp (4.4% and 4.6%); **Strongyloides** sp (3.9% and 4. 9%); **Trichuris** sp. (0.9% and 7.3%).

The percentage incidence of multiple infection with two nematode in both hosts kept in and around Nyala town was as follows:-

Strongylus sp./ **Strongyloides** sp. (II.8%) followed by **Strongylus** sp. / **Oxyuris** sp. (II.4%); **Strongylus** sp./ **Parascaris** sp. (3.9%); **Strongyliodes** sp. (3.5%)and **Strongyloides** sp./ Parascaris sp. (0.4%)

At the nomadic areas of Bahr El Arab the highest incidence of multiple infection with two nematode parasites was shown by **Strongylus** sp./ **Oxyuris** sp. (12 . 4%) followed by **Strongylus** sp./ **Strongyliodes** sp. (2.4%) and **Strongyloides** sp./ **Parascaris** sp. (2.4%).

At Nyala town the highest incidence of multiple infection with three nematode parasites in both hosts was that of **Strongylus** sp./ **Strongyloides** sp./ **Oxyuris** sp. (3.5%). Followed by **Strongylus** sp. **Oxyuris** sp. **Parascaris** sp. (0.8%) and then followed by **Strongylus** sp./ **Strongylodies** sp./ **Oxyuris** sp. (2.4%).

Table III shows that approximately 75% of infected hosts have single infections with one nematode parasite, about (20%) have multiple infections with two nematode parasites and about (5%) have multiple infections with three nematode parasites.

Discussion

From the results obtained, it was interesting to note that both hosts examined showed a similar rates of infection in closely related areas (60.6% and 56.4% at Nyala, 18.5% and 24.2% at Bahr El Arab areas). Although nematode species encountered in both hosts, whether kept in town or in nomadic area were the same, yet the incidence of infection was found to differ from one area to another. It was lower in animals kept in the nomadic areas (22%). This difference may be due to the type of animal husbandry practiced in each area. Town animals are usually kept indoors and they graze in a limited area causing overstocking in pastures around the towns. and thus their chances of contamination with nematode eggs and larvae are greater; where as animals kept in the nomadic areas, graze freely in open range pastures and thus their chances of acquiring the infection are decreased.

It was interesting to note theat the incidence of infection with single nematode species (74.9 %) was higher than with multiple infection involving either two nematode species (19.8 %) or with three nematode sppecies (4.8 %).

This phenomenon could be due to some sort of site competition that takes place inside the environment of the host between different species of parasites. This was clearly shown by the low egg output in the case of multiple infections compared with cases of single infection. This comparison was seen in the case of **Strongylus** sp. and **Oxyuris** sp. infection in donkeys; where the number of eggs encountered in feaces were 688 and 707 in cases of single infetion and 538 and 528 in case if multiple infection with two nematode species. This lowered egg production was further seen in case of multiple infection with three parasitic species **Strongylus** sp. **strongyloides** sp. and **Parascaris** sp. in the donkey where the egg counts fell to 100,200 and 300 eggs per gram of feaces respectively as compared with the corresponding counts 688, 520 and 700 eggs per gram of feaces in case of single infection.

Although most of egg counts recorded in this study were more than 300 eggs per gram of feaces for mixed infections, yet no clinical signs were noticed in these animals. This may be due to the fact that all animals examined were old (4 - 10 years) and so they might have acquired old age resistance against helminth parasites (Lapage 1968). The period of this study (August 1980 to May 1981) covered nearly all seasons of the year. The infection with helminth parasite was noticed to be higher at the beginning of the rainy season (July - August); this time of the year provides the suitable warmth and moisture required by helminth larvae for better survival.

Summary

In a field survey, rectal feacal samples from horses and donkeys in Nyala town and in the nomadic areas of Darfur region, were examined for the presence of helminth eggs. Five nematode species were encountered in donkeys and horses: **Strongylus** sp. **Oxyuris** sp. **Strongyloides** sp. **Paracaris** sp., and **Trichuris** sp. The incidence of infection with one species (74.9 %) was found higher than that of two (19.8 %) or three species (4.8 %). The overall incidence of infection with nematode parasites was found higher in town animals (58. %) than in animals kept in nomadic areas (22 %).

References

Amin M. Eisa, El Khawad S. El Badawi. M.B.A. Saad, Abu Bakr M. Ibrahim and Ali Y. El Gezuli (1979): The Sudan.Journal of Veterinary Research I (55 - 63).

Geofforey Lapage (1968); Veterinary Parasitology Ed. by Olver and Boyd. Edinburgh.

Table I

Incidence of helminths of horses and donkeys in single and multiple infections at Nyala town.

Total number of animals examined = 390 (175 horses & 215 donkeys)
Total number of animals infected = 227 (106 horses & 121 donkeys)
Total percentage infected horses and donkeys = 58 %
Percentage infected horses = 60.6 %
Percentage infected donkeys = 56.4 %

Type of infection	Parasite (genus	Total +ve (H&D)	Total %infected	Horses No. inf.	Horses % inf.	Horses Average (e.p.g.)	Donkeys No. inf.	Donkeys % inf.	Donkeys Average (e.p.g.)
Single Inf. (One Parasite Genus)	St.	99	43.6	49	46.2	600	50	41.3	688
	Ox.	24	10.5	10	9.4	450	14	11.5	707
	Stoi.	9	3.9	4	3.7	625	5	4.1	520
	Para.	10	4.4	2	1.8	850	8	6.6	700
	Tri.	2	0.9	1	0.9	590	1	0.8	300
Multip. inf. (two parasite genus)	St. + Stoi.	27	11.8	16	15	437 581	11	9	800 536
	St. + Ox.	26	11.4	8	7.5	650 625	18	14.8	583 528
	St. + Para.	9	3.9	6	5.6	616 650	3	2.4	600 789
Stoi.	Stoi. + Ox.	8	3.5	3	2.8	633 500	5	4.1	500 560
	Stoi. + Para.	1	0.4				1	0.8	500 500
Multip. inf. (three Parasite genus)	St. + stoi + Ox.	8	3.5	6	5.6	700 400 475	2	1.6	500 450 600
	St. + Stoi. + Para.	1	0.4				1	0.8	100 200 300
	St. + Ox. + Para.	2	0.8	1	0.9	700 800 800	1	0.8	100 500 500

St. = Strongylus
Stoi. = Strongyloides
Ox. = Oxyuris
Para. = Parascaris
Tri. = Trichuris
H & D = Horse and donkey

Table II

Incidence of helminths of horses and donkeys in single and multiple infection at Bahr El Arab.

Total number of animals examined = 185 (65 horses and 120 donkeys).
Total number of infected animals = 41 (12 horses and 29 donkeys).
Total percentage infected horses and donkeys = 22%
Total percentage infected horses = 18.5%
Percentage infected donkeys = 24.2%

Type of infection	Parasite (genus)	Total +ve (H&D)	Total % inf.	Horses No. inf.	Horses % inf.	Donkeys No. inf.	Donkeys % inf.
Single Infection (one parasite genus)	Strongylus	12	29	3	25	9	31
	Oxyuris	8	19.5	3	25	5	17.2
	Strongyloides	2	4.8			2	6.8
	Parascaris	2	4.9			2	6.8
	Trichuris	3	7.3			3	10.3
Multiple infection (two parasite genera)	Strongylus + Oxyuris	5	12	3	25	2	6.8
	Strongylus + Strongyloides	1	2.4			1	3.4
	Strongyloides + Parascaris	1	2.4			1	3.4
Multiple infection (three parasite genera)	Strongylus + Strongyloides + Oxyuris	1	2.4			1	3.4

Table III

Incidence of different types of infection among horses and donkeys at Nyala town.

Total number of infected animals = 227(106 horses and 121 donkeys).			
Type of infection	Total % infected (Horses & Donkeys)	% infected Horses	Donkeys
Single (one parasite genus)	74.9	69.8	79.3
Multiple (two parasites genera)	19.8	23.6	19.5
Multiple (three parasites genera)	4.8	6.6	3.3