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INCIDENCE AND EFFECT OF SOME GASTRO'INTESTINAL PARASITIC INFESTATIONON ON CAMELS AT NORTH OF SINAI

(With 4 Tables & 1 Figure)

By

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دراسات عن نسب ومدى تأثير الإصابة بطفيليات الجهاز الهضمي على صحة الجمال في محافظة شمال سيناء

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درست نسب الإصابة والأغراض الإكلينيكية وصورة الدم لطفيليات الجهاز الهضمي في الجمال التي ترعى في خمس مناطق من شمال سيناء . وقد أظهرت الدراسة أن نسب الإصابة بطفيليات الجهاز الهضمي ٨٢ر٧٪ مع تفاوت النسبة في المناطق المختلفة للدراسة ما بين ٨٠ - ٨٦ر٤٪ وقد سجلت الإصابة بالديدان الكبدية في ١ر٣٪ من الحيوانات التي فحصت . وتميزت الأمراض الاكلينيكية بالهزال والأنيميا والإسهال وإنخفاض قدرة الحيوان على العمل . وأثبتت الفحوص المعملية إنخفاض العد الكلي للكريات الدموية الحمراء والهيموجلوبين ونسبة الخلايا المصمتة كما لوحظ إنخفاض تركيز البروتينات والألبيومين والسكر في مصل دم الجمال المصابة بالديدان .

SUMMARY

Clinical and laboratory investigations were carried out on grazing camels (C.dromedari) in 5 areas situated at the North of Sinai governorate. These investigations revealed that, 82.7% of the investigated camels were infested by gastro-intestinal parasites. The percentages of infestation at different areas ranged from 80.0-86.4%. The degree of infestation among positive one was recorded. Emaciation, anaemia, diarrhoea and decreased performance were predominant among camels infested by different species of gastro-intestinal parasites. Fasciola eggs were also detected (1.3%). Decreased erythrocytic counts, haemoglobin and haematocrit were the most prominant haematological findings.

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Hypoproteinaemia, hypoalbuminaemia and hypoglycaemia were also the prominant biochemical variations in infested camels in comparison to the non-infested ones reared under the same ecosystem.

INTRODUCTION

Camels are present in Egypt in two main areas, Nile valley and the Egyptian desert in East and West. However, east desert had relatively little attention than west due to political events in the past. Moreover, this area was under the occupation of Israel for several years and there were no real veterinary services in this region. This situation did affect the activity of animal scientists and resulted in too scanty reports describing animal diseases. One of these is the parasitic infestation which constitute an important factor decreasing camel production (EL-MOLLA et al., 1981). The dangerous groups of camel parasites which received attention are gastrointestinal parasites, mites, trypanosma and Hydated cyst (BANSEL et al., 1971; SELIM & RAHMAN, 1972 and Karram et al., 1986). The condition of the affected individuals were described by SOLIMAN (1962); JUBB & KENNEDY (1970); KARRAM et al. (1986) and BLOOD et al. (1986).

The aim of this study is a trial to investigate the incidence and clinical signs of parasitic infested camels together with monitoring some haematological and biochemic parameters under nomadic and seminomadic camels at north of Sinai.

MATERIALS and METHODS

1- Material:

The areas of investigation located at North of Sinai governorate. These areas were Bear El Abd, El-Hassana, El-Gorah, Nekhl and Wady El-Arish (Fig. 1).

A total number of 150 grzing male camel (C.dromadarius) aged between 2-7 years were examined during the period from July to August 1991. Complete clinical examination was performed according to KELLY (1984).

Rectal faecal samples were taken from all examined animals and transmitted in ice bags to the laboratories of the Faculty of Vet. Med., Suez Canal Univ. Ismailia. two blood samples were collected from each animal, the first non coagulated used for haematological examination and the second for obtaining serum.

2- Methods:

Faecal examination was done by gross inspection of the faecal samples using magnifying lens to detect any adult, mature or gravid segment of the parasite. Micro-

scopical examination including direct smear, floatation and sedimenttion techniques. Egg and oocyst count as well as faecal culture were performed according to BÜRGER and STOYE (1968) and SOULSBY (1982).

Haematological examination was carried out according to JAIN (1986). Serum biochemical analysis of total protein, albumin, glucose and total lipids were determined colorimetrically using test kits* WEISCHSELBAUM (1946); DRUPT (1974); SIEST et al. (1981) and CHABROL & CHARONAT (1937). Serum globulin and A/G ratio were calculated after JAIN (1986).

The obtained data were statistically analysed using T-test after SNEDECOR and COCHRAN (1976).

RESULTS

Incidence of gastro-intestinal parasites at different localities is presented in table (1). The parasite species identified among infested camels (n=124) are represented in table (2). Mean values of haematological and biochemical findings on (100) of infested camels are presented in tables (3 and 4). Tables (3 and 4) include also the mean values of clinically healthy camels proved to be parasitic free (n=26), however, the biochemical analysis were conducted only on 17 out of 26 camels. The rest of serum samples were excluded due to haemolysis.

Diarrhoea sometimes soft feces, emociation and palevens of 120 euperficial mucous membranes have noticed in most cases. Desert camels were observed to be smaller in size in comparison to the valley camels at the same age group.

DISCUSSION

The incidence of gastro-intestinal parasites (Table 1) at North of Sinai governorate was 82.7% from the total examined animals. The percentage of the infestation at different areas was approximately similar and ranged from 80% to 86.4%. The intensity of the infestation between the different examined animals was recorded to be mild (38.5%) Moderate (18.0%) and severe (43.4%) of the total infested camels.

The prevalence rates may vary widely from region to another as well as from season to season within the same area (HIGGINS, 1986). A prevalence of 60% was recorded by EL BIHARI and KAWASMEH (1980) in Saudi Arabia, while a higher prevalence was reported (89%) for Sudaneese camels (ARZOUN et al., 1984).

Nematodes constituted the most highest prevalence in comparison to the other gastro-intestinal parasites which include cestodes and trematodes. The percentages

were 81.3%, 13.3% and 1.3% for Nematode, cestodes and trematodes (Table 1) respectively. Similar figures were recorded by SELIM and RAHMAN (1972); EL-MAGAWRY (1980) and KARRAM et al. (1986) in valley area. The peak of Nematodes infestation could be probably due to their adaptation and to the high resistance of its larvae to the hot dry conditions (ANDERSON & LEVINE, 1968 and ABDUL-SALAM & FARAH, 1988).

Faciola eggs were detected in 1.3% of animals and to our knowledge this is the first time to diagnose such affection in camels in Egypt. However, affected camels did not show any clinical manifestations.

Table (1) revealed that the tape worm eggs representing the highest flat worm eggs detected among camels where it reached (13.3%). These observations were similar to those obtained by ABDUL-SALAM & FARAH (1988) as they observed that Stielezia reached a high peak from September to April (Grazing season). Increasing the infectivity with tape worm than flukes may associated with increased number and activity of oribatid mite vectors in the desert (ABDEL-SALAM & FARAH, 1988). Faecal culture revealed that Trichostrongylus species constituted the highest percentage of the identified Nematode species, Table (2). This may be due to the ability of Trichostrongylus larvae to survive in hot dry climates. This explanation was offered in similar cases by LEVINE (1963) and ANDERSON & LEVINE (1968).

Regarding the intestinal protozoa faecal examination revealed a percentage of 5.33%. This was lower than those recorded by GILL (1976) who recorded 24% in indian camels. However, the percentage of Emeria species amounted 14% in Saudia Arabia (KAWASMEH AND EL BIHARI, 1983). The low incidence of Eimeria infection in the present study could be due to either the advanced age of the examined animals or low humidity (PELLERDY, 1974 and SAKR, 1988).

The related haematological picture revealed that a highly significant decrease in TRBCs, Hb and PCV in camels infested by Nematode, Trematode and Cestode species. The same was recorded in Proteozoa infested camels except PCV recorded no significant changes. MCV achieved a highly significant increase in heavy and moderate infestation by Nematode, Trematode and Cestodes. MCH recorded only a highly significant increase in case of heavy infestation. MCHC recorded a highly significant increase in heavy and moderate infested camels and a significant increase in Trematode, Cestode and Protozoa infested camels. No significant variations were achieved by T.L.C. except in case of mild Nematode infestation and protozoa, where a highly significant decrease was observed.

These haematological values simulate those obtained by other investigators in different localities of Egypt and also in the desert of Saudi Arabia (EL-MAGZOUB and KASIM, 1978; EL-MAGAWRY, 1980 and 1983; LAILLA et al., 1986 and MANNAA, 1990).

The associated anaemia under such findings is attributed to the known effect of the parasite on the haemopoietic system either through shortening of the life span of erythrocytes, impaired erythropioesis, reduction of amino acids, haemorrhage or ingestion of blood (DOXY, 1971 and HOMES et al., 1968).

The biochemical analysis revealed that total protein, albumin and glucose showed highly significant decreased, while no significant variations were recorded in Globulin fraction and the total lipids.

Lower levels of total proteins and albumin may be attributed to the state of anorexia and the gastro-enteritis caused by the presence of the parasites which interfere with the protein intake and absorption EL-MAGAWRY (1983) reported that serum proteins of camels infested by Trichostrongylidae were more lower than in camels suffered from dietetic enteritis. Hypoglycaemia was commonly observed in camels infested with gastro intestinal and blood parasites (EL MAGAWRY, 1983 and MANNAA, 1990).

It could be concluded that camels in the examined areas of Sinai are generally in poor condition due to parasitic infestation causing variety of disease problems and decreased productivity. Animals in Sinai peninsula need continuous investigations to put a map for further epidemiological studies.

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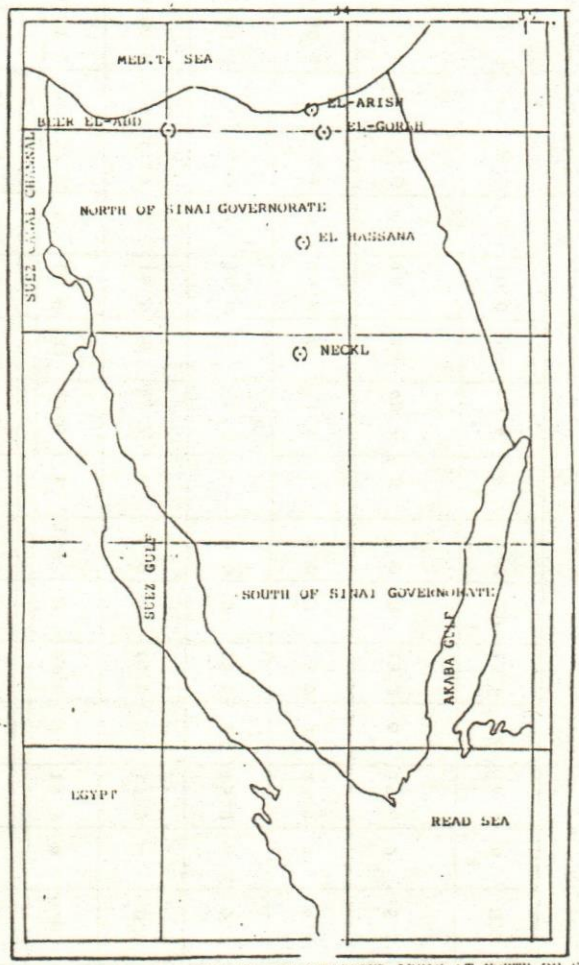

FIG (1): MAP FOR DIFFERENT INVESTIGATED AREAS AT NORTH OF SINAI.

(·) INVESTIGATED AREAS

Table (1) Incidence and (egg & oocyst) count of G.I Parasites infesting camels in different localities at north of Sinai.

Locality	Total exam. Nr.	Nematode egg								Flat worm egg						Protozoa	
		infested		severity						Trematode (1-50) e/g		Cestode (50-500) e/g		Total Nr.		Intestinal (0-13900)	
				mild. e/g (0-299)		Mod. e/g (300-600)		sev. e/g (650-9200)									
		Nr.	%	Nr.	%	Nr.	%	Nr.	%	Nr.	%	Nr.	%	Nr.	%	Nr.	%
Beer El Abd	59	48	81.4	18	37.5	9	18.8	21	43.8	1	1.7	8	13.6	9	15.3	4	6.8
El-Hassana	15	12	80.0	5	41.7	2	16.6	5	41.7	-	0.0	2	13.3	2	13.3	-	0.0
El-Gorah	15	12	80.0	5	41.7	2	16.6	5	41.7	-	0.0	2	13.3	2	13.3	1	6.7
Nekhl	23	19	86.4	8	42.1	3	15.8	8	42.1	-	0.0	3	13.0	3	13.0	1	4.4
Wadi El-Arish	38	31	81.6	11	35.5	6	18.8	14	43.7	1	2.6	5	13.2	6	15.8	2	5.3
Total	150	122	81.3	47	38.5	22	18.0	53	43.4	2*	1.3	20	13.3	22	14.7	8*	5.3

Nr : Number of Examined Animals.
* One was pure infestation.

Table (2) G.I. Parasite species identified detected among infested camels from different localities at North of Sinai.

Locality	Inf. Nr.		Nematode						Trematode	Cestode	Protozoa	
			Strongylid Type Spp.					Trichuris spp. egg	Fasciola egg	Moniezia egg	Eimeria spp.	Balantidium spp.
			Trichost	Cooperia	Haemonch	Ostertagia	Oesophago					
Beer El-Abd	48	N	25	15	10	6	4	3	1	8	3	1
		%	(51.0)	(30.6)	(20.4)	(12.3)	(8.2)	(6.1)	(12.0)	(16.3)	(6.1)	(2.9)
El-Hassana	12	N	5	4	3	2	1	1	-	2	-	-
		%	(41.7)	(33.3)	(25.0)	(16.7)	(8.3)	(8.3)		(16.7)		
El-Gorah	12	N	3	5	4	1	-	2	-	2	1	-
		%	(25.0)	(41.7)	(33.3)	(8.3)		(16.7)		(16.7)	(8.3)	
Nekhl	19	N	10	8	5	2	1	2	-	3	1	-
		%	(52.6)	(42.1)	(10.2)	(4.1)	(2.0)	(4.1)		(6.1)	(2.0)	
Wadi El-Arish	31	N	15	10	7	6	1	2	1	5	1	1
		%	(46.9)	(31.3)	(21.9)	(18.8)	(3.1)	(6.3)	(3.1)	(15.6)	(3.1)	(3.1)

Table (3) Mean values of the haematological findings of the investigated camels.

Parameters	Healthy (control gr)	Nematode infested			Trematode infested	Cestode infested	Intestinal protozoa
		Heavy + (650-9200)	Moderate (300-600)	Mild (0-250)			
TRBCs (T/L)	9.97± 0.3	5.8±0.13 **	7.1 ± 0.24 **	8.7 ± 0.2 **	6.5 ± 0.5 **	7.9 ± 0.4 **	8.7 ± 0.4 *
Hb (gm/di)	13.1 ± 0.38	8.83±0.15 **	10.63± 0.23 **	11.48± 0.2 **	8.0 ± 0.3 *	10.4 ± 0.2 **	11.3 ± 0.5 **
PCV (%)	30.3 ± 0.57	22.0±0.63 **	25.6 ± 0.48 **	26.8 ± 0.3 **	27.0 ± 1.0 **	26.2 ± 0.5 **	29.0 ± 0.92 **
MCV	30.7 ± 0.84	39.9±0.91 **	36.4 ± 0.48	31.2 ± 0.63	41.9 ± 1.2	34.2 ± 0.5	33.4 ± 1.6
MCH	13.3 ± 0.35	15.5±0.2 **	14.8 ± 1.1 **	13.3 ± 0.3 **	12.4 ± 0.3	13.5 ± 1.8 *	12.95± 0.96 *
MCHC	34.5 ± 0.95	38.9±0.45	41.6 ± 0.9	42.9 ± 0.65 *	33.9 ± 0.7	38.8 ± 1.3	38.9 ± 1.8 **
TLC	9.3 ± 1.1	8.7±0.75	9.5 ± 1.7	6.7 ± 0.62	9.5 ± 0.5	9.9 ± 1.4	5.6 ± 0.93

Egg count / bm Faeces.
Significant (p ‹ 5%).
* Highly Significant (P ‹ 1%).

Table (4) Mean values of the biochemical findings of investigated camels.

Parameters	Healthy [control] N = 17	Nematode N = 81	Trematode N = 2	Cestode N = 13	Protozoa N = 4
Total protein (gm%)	7.8 ± 0.2	6.2± 0.4**	6.2± 0.3**	6.3± 0.3**	7.2± 0.4**
Albumin (gm%)	4.3 ± 0.18	2.8± 0.3	2.9± 0.2*	3.0± 0.1**	3.5± 0.15
Globulin (gm%)	3.5 ± 0.06	3.4± 0.8	3.3± 0.8	3.3± 0.2**	3.2± 0.02
A / G (gm%)	1.06± 0.03	0.85± 0.04**	0.98± 0.04**	0.9± 0.02**	1.0± 0.4**
Glucose (mg%)	112.0 ± 0.9	85.6± 0.8	98.6±0.6	100.0± 0.8	104.0± 0.6
Total lipids (gm/l)	5.4 ± 0.56	4.9± 0.91	5.2± 0.4	5.1± 0.6	5.4± 0.3