Prevalence of gastrointestinal parasites in young camels in Bahrain

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Key words

Camelus dromedarius - Nematoda - Cestoda - Protoza - Infestation - Bahrain.

Summary

The prevalence of gastrointestinal parasites in young camels in Bahrain is reported for the first time. Six genera of parasites were found. The nematodes observed were *Haemonchus contortus* (36.47%), *Nematodirus spathiger* (30.59%) and *Trichuris* sp. (10.6%); the only cestode recorded was *Moniezia expansa* (2.4%). The incidence of *Eimeria dromedarii* was 20%. Single, double, triple and quadruple parasitic infestation occurred in 41.2, 33.5, 19.4 and 5.9% of the infected animals, respectively. *Balantidium coli*, a protozoan parasite, was occasionally seen in young camels suffering from diarrhea at the time of sampling.

■ INTRODUCTION

Camels are known to be susceptible to a wide variety of gastrointestinal helminths (1, 3, 5). Many authors reported in different parts of the world the prevalence in camels of various helminths (2, 3, 4, 7, 12, 13, 14, 15), of *Moniezia expansa* in particular (2, 3, 4, 7, 10, 14) and of *Eimeria dromedarii* (8, 9, 11, 16). To our knowledge, information specific to gastrointestinal parasites in young camels is scarce. This study is the first report of gastrointestinal parasites in young camels in Bahrain.

■ MATERIALS AND METHODS

Between January 1989 and December 1998, a total of 223 fecal samples collected from camel calves 1-18 months old and young camels 2-2,5 years old were examined. Fecal samples were randomly collected from 17 camel centers.

The fecal samples were directly collected from the rectum and examined using the ovassay technique for the presence of helminths and protozoan parasites. Approximately, two grams of feces were mixed with sodium nitrate solution using a stirring rod. Additional sodium nitrate solution was added until a convex meniscus was formed in the device. A 22 mm^2 cover slip was left to float on the meniscus at least for 15 min. The cover slip was then lifted, placed on a microscope slide and systematically examined for the presence of parasitic eggs.

The number of eggs per gram (EPG) was calculated and the infection was graded as mild (50-400 EPG), moderate (400-1000 EPG) or heavy (1000-5000 EPG).

■ RESULTS

The prevalence of gastrointestinal parasites was high. Out of 223 fecal samples, 170 (76.2%) showed the presence of helminths and/or protozoan parasites. The prevalence rate of the helminth parasites *Haemonchus contortus*, *Nematodirus spathiger*, *Trichuris* sp. and *Moniezia expansa* was 36.5, 30.6, 10.6 and 2.4%, respectively, and that of *Eimeria dromedarii* was 20% (table I).

The infection was graded as mild in 52.4%, moderate in 27.7% and heavy in 20% of the infected camels (table II). Infections with one, two and three parasites (figures 1-7) were observed in 41.2, 33.5 and 19.4%, respectively, of the infected camels, while infection with four parasites was encountered in 5.9% of them. Table III shows different combinations of parasites. *Balantidium coli* was detected only in camels suffering from diarrhea at the time of sampling, but its rate was insignificant.

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Table I

Prevalence of gastrointestinal parasites in young camels according to their sex and age during 1989-1998

Parasite	Male camel		Female camel		Total	%
	1-18 months	2-2,5 years	1-18 months	2-2,5 years		
Haemonchus contortus	7	8	7	40	62	36.5
Nematodirus spathiger	10	3	3	36	52	30.6
Eimeria dromedarii	6	5	4	19	34	20
Trichuris sp.	2	3	1	12	18	10.6
Moniezia expansa	0	1	1	2	4	2.4

Table II

Degree of internal parasitic infestation in young camels during 1989-1998

Parasite	Mild infestation		Moderate infestation		Heavy infestation		Total	
	Num.	%	Num.	%	Num.	%	Num.	%
Haemonchus contortus	26	15.3	19	11.8	17	10	62	36.5
Nematodirus spathiger	24	14.1	16	9.4	12	7.1	52	30.6
Eimeria dromedarii	21	12.4	9	9.3	4	2.4	34	20
Trichuris sp.	17	10.0	1.0	0.6	0	0	18	10.6
Moniezia expansa	1.0	0.6	20	1.2	1.0	0.6	4	2.4
Total	89	52.4	47	27.7	30	20	170	100

Table III

Prevalence of different combinations of gastrointestinal parasites in young camels during 1989-1998

Type of infection	Parasite	Num. of cases	%	Total %
Single	*Haemonchus contortus*	32	18.80	41.20
	Nematodirus spathiger	20	11.80	
	Eimeria dromedarii	15	8.80	
	Trichuris sp.	1	0.60	
	Moniezia expansa	2	1.20	
Double	*Nematodirus spathiger* + *Eimeria dromedarii*	8	4.70	33.50
	Haemonchus contortus + *Eimeria dromedarii*	8	4.70	
	Haemonchus contortus + *Nematodirus spathiger*	2.5	14.70	
	Haemonchus contortus + *Trichuris* sp.	4	2.40	
	Haemonchus contortus + *Moniezia expansa*	4	2.40	
	Eimeria dromedarii + *Trichuris* sp.	4	2.40	
	Nematodirus spathiger + *Trichuris* sp.	2	1.10	
	Nematodirus spathiger + *Moniezia expansa*	2	1.10	
Triple	*Haemonchus contortus* + *Nematodirus spathiger* + *Eimeria dromedarii*	9	5.30	19.40
	Haemonchus contortus + *Trichuris* sp. + *Eimeria dromedarii*	9	5.30	
	Haemonchus contortus + *Nematodirus spathiger* + *Trichuris* sp.	15	8.80	
Quadruple	*Haemonchus contortus* + *Nematodirus spathiger* + *Trichuris* sp. + *Eimeria dromedarii*	10	5.90	5.90
Total		170	100	100

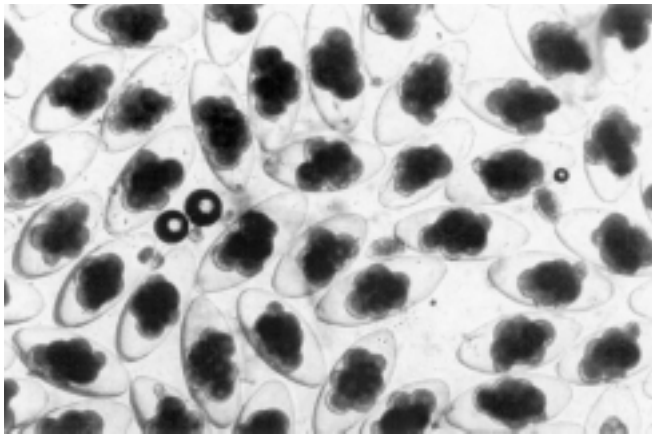

Figure 1: Nematodirus spathiger - *heavy infection (x 100).*

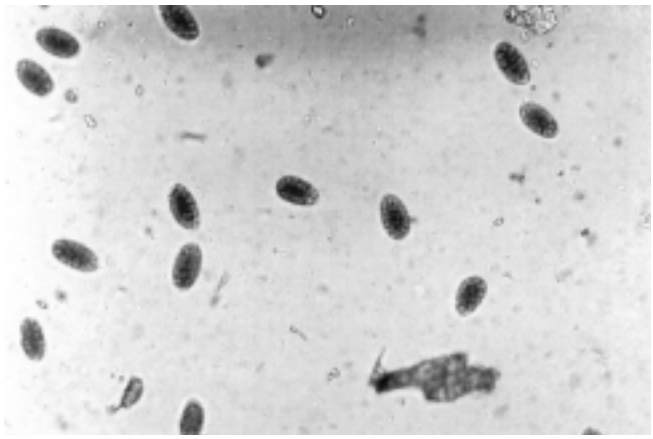

Figure 2: Haemonchus contortus - *moderate infection (x 100).*

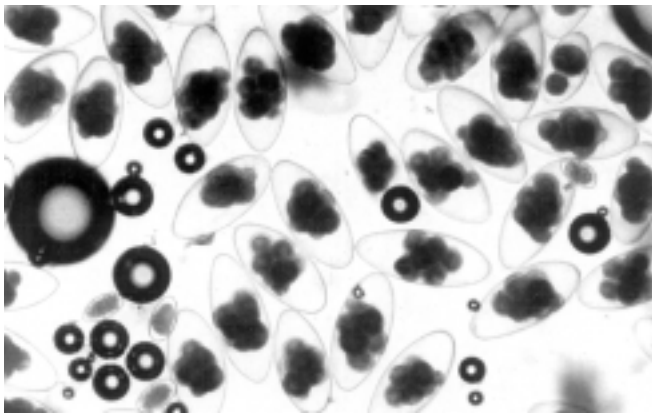

Figure 3: Haemonchus contortus *and* Nematodirus spathiger - *mixed infection (x 100).*

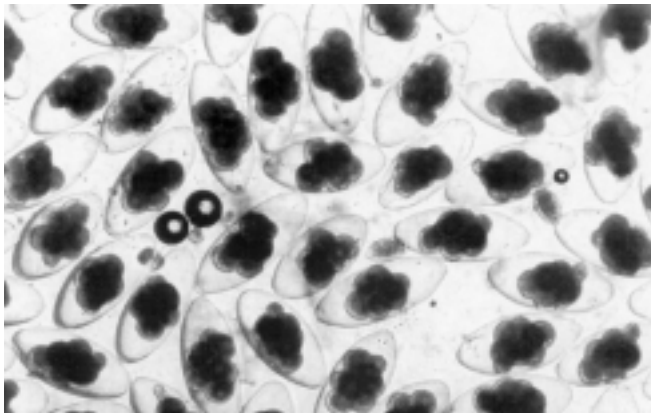

Figure 4: Moniezia expansa - *heavy infection (x 100).*

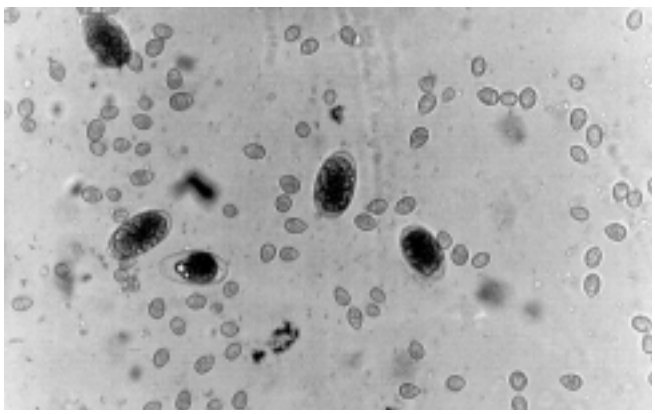

Figure 5: Haemonchus contortus *and* Eimeria dromedarii - *mixed infection (x 100).*

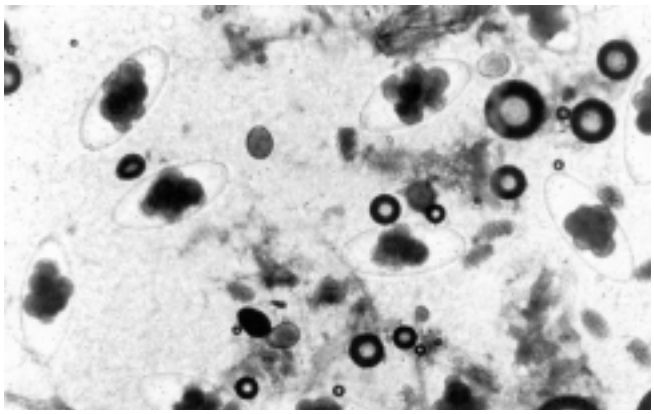

Figure 6: Haemonchus contortus, Nematodirus spathiger *and* Eimeria dromedarii - *mixed infection (x 100).*

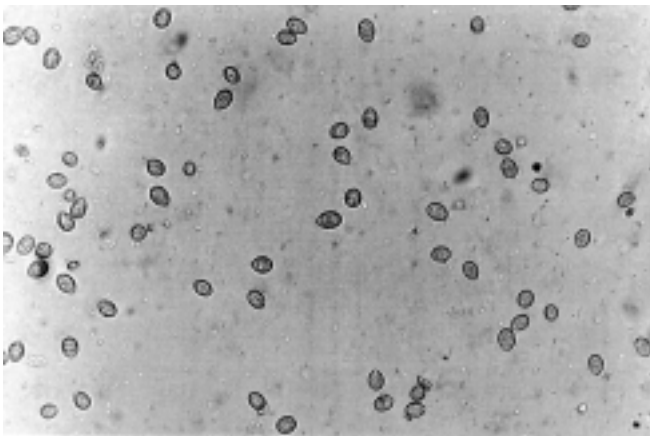

Figure 7: Eimeria dromedarii - *heavy infection (x 100).*

■ DISCUSSION

This study showed that young camels in Bahrain were highly infested with gastrointestinal parasites (76.2%). This is in agreement with the findings of Hayat *et al.* in Pakistan (7) and Sharrif *et al.* in Jordan (14) who reported incidence rates of 90 and 98% for gastrointestinal helminths in camels, respectively. The incidence rates of 41.2% in single infections and 33.5% in double infections were similar to those of 40-58.3% and 36.1-60% reported by Sharrif *et al.* for single and mixed infections, respectively (14). The prevalence of *Moniezia expansa* (2.4%) agrees with that recorded by Hayat *et al.* (3.3%) (7), and the prevalence of *Eimeria dromedarii* (20%) is close to those reported by Grill (24%) (6) and Kinne and Wernery (25%) (9). This result is a bit higher than that reported by Yagoub (17.4%) (16).

■ CONCLUSION

The ovassay floatation technique was found to be highly adapted to the detection of gastrointestinal and protozoan parasites in animal fecal samples. The high prevalence of gastrointestinal parasites in young camels in Bahrain can probably be attributed to the favorable warm and humid climate, and the use of infected animal manure as soil fertilizer. Regular drenching of camels with a broad-spectrum anthelmintic is recommended.

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REFERENCES

1. AL-ANI F.K., AI-ABASSIY S.N., AL-RUBBAY A., 1990. The camel, its management and disease. Iraq, Higher Education Press. Cited by Sharif *et al.*, ref. 14, below.

2. ANWAR M., 1987. A Study on the prevalence of gastrointestinal parasites of one-humped camels (*Camelus dromedarius*). MSc Thesis, University of Agriculture, Faisalabad, Pakistan.

3. EL-BAHARI S., 1985. Helminths of camel : a review. *Br. vet. J.*, **141**: 315-326.

4. EL-BAHARI S., KAWASMEH Z.A., 1980. Occurrence and seasonal variation of some gastrointestinal helminths of dromedary in Saudi Arabia. In: Proc. 4th Conference of Saudi Biological Society, Riyadh, Saudi Arabia, p. 297-304. Cited by Sharif *et al.*, ref. 14, below.

5. EL-BAHARI S., KAWASMEH Z.A., ASHOUR N.A., EL-NAIEM A.H., 1984. Experimental infection of sheep by the camel stomach worm *Haemonchus longistipes. Vet. Parasitol.*, **15**: 257-262.

6 GRILL H.S., 1976. Incidence of *Eimeria* and *Infundibulorium* in camel. *India vet. J.*, **53**: 897-898.

7. HAYAT C.S., HAYAT B., MAGBOOL A., BADAR N., HASHMI H.A., HUSANI I., 1998. Common gastrointestinal helminths of camel of Pakistan. *J. Camel Pract. Res.*, **5**: 251-254.

8. HUSSEIN H.S., KASIM A.A., AI-SHAWA Y.R., 1987. The prevalence of *Eimeria* infection in camels in Saudi Arabia. *J. comp. Pathol.*, **97**: 293-297.

9. KINNE J., WERNERY U., 1997. Severe outbreak of camel coccidiosis in the United Arab Emirates. *J. Camel Pract. Res.*, **4**: 261-265.

10. LODHA K.R., 1977. Study on the helminth parasites in camel in Rajasthan. ICAR Scheme 1973-1977. Final Report. Bikaner, India, College of Veterinary and Animal Sciences.

11. MAHMOUD O.M., HAROUN E.M., MAGZOUB M., OMER O.H., SULMAN A., 1998. Coccidial infection in camels of Gassim region, Central Saudi Arabia. *J. Camel Pract. Res.*, **5**: 257-260.

12. PARTANI A.K., KUMAR D., MANOHAR G.S., SHAN A.K., 1998. Clinical manifestation of natural infection with gastrointestinal nematodes in camel. *J. Camel Pract. Res.*, **5**: 255-256.

13. RICHARD D., 1989. L'hæmonchose du dromadaire. *Revue Elev. Méd. vét. Pays trop.*, **42** : 45-52.

14. SHARRIF., AI-QUDAH K.M., AI-ANI F.K., 1997. Prevalence of gastrointestinal helminths in one-humped camels (*Camelus dromedarius*) in Jordan. *J. Camel Pract. Res.*, **4**: 67-69.

15. TEMBELY S., DIARRA P.A., WAIGALSO Y., KOUMARE A., VASSILIADES G., 1992. Preliminary observations of the helminth parasites population of *dromedarii* in northern Mali. *J. vet. Parasitol.*, **44**: 339-342.

16. YAGOUB I.A., 1989. Coccidiosis in Sudanese camels (*Camelus dromedarius*). 1 - First record and description of *Eimeria* spp. harboured by camels in the eastern region of Sudan. *J. Protozool.*, **36**: 422-423.

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Résumé

Abubakr M.I., Nayel M.N., Fadlalla M.E., Abdelrahman A.O., Abuobeida S.A., Elgabara Y.M. Prévalence de parasites gastro-intestinaux chez le chamelon au Bahreïn

La prévalence de parasites gastro-intestinaux chez le chamelon est reportée pour la première fois au Bahreïn. La présence de six genres de parasites a pu être établie. Parmi eux se trouvaient les nématodes *Haemonchus contortus* (36,47 p. 100), *Nematodirus spathiger* (30,59 p. 100) et *Trichuris* sp. (10,6 p. 100) et un seul cestode, *Moniezia expansa* (2,4 p. 100). *Eimeria dromedarii* a également été observée avec une prévalence de 20 p. 100. Chez 41,2, 33,5, 19,4 et 5,9 p. 100 des animaux infestés respectivement un, deux, trois et quatre genres de parasites ont été trouvés. Le protozoaire *Balantidium coli* a occasionnellement été observé chez les chamelons affectés de diarrhées au moment du prélèvement.

Mots-clés : *Camelus dromedarius* - Nematoda - Cestoda - Protoza - Infestation - Bahreïn.

Resumen

Abubakr M.I., Nayel M.N., Fadlalla M.E., Abdelrahman A.O., Abuobeida S.A., Elgabara Y.M. Prevalencia de parásitos gastrointestinales en camellos jóvenes en Bahrein

Se reporta, por la primera vez, la prevalencia de parásitos gastrointestinales en camellos jóvenes en Bahrein. Los nemátodos observados fueron *Haemonchus contortus* (36,47 %), *Nematodirus spathiger* (30,59 %) y *Trichuris* sp. (10,6 %); el único cestodo encontrado fue *Moniezia expansa* (2,4 %). La incidencia de *Eimeria dromedarii* fue de 20 %. Se encontraron infestaciones parasitaria únicas, dobles, triples y cuádruples en 41,2, 33,5, 19,4 y 5,9 % de los animales infectados, respectivamente. El parásito protozoario, *Balantidium coli*, se observó ocasionalmente en los camellos jóvenes afectados de diarrea en el momento de la toma de muestras.

Palabras clave: *Camelus dromedarius* - Nematoda - Cestoda - Protoza - Infestación - Bahrein.