Research and Reviews in Parasitology, 60 (3-4): 137-138 (2000)

Published by A.P.E.
Printed in Barcelona, Spain

FIRST REPORT OF *TRICHOSTRONGYLUS PROBOLURUS* (RAILLIET, 1896) LOOSS, 1905 (NEMATODA: TRICHOSTRONGYLOIDEA) IN SPAIN

J.M. ORTIZ, M.R. RUIZ DE YBAÑEZ & M. GOYENA

Parasitología y Enfermedades Parasitarias, Departamento de Patología Animal, Facultad de Veterinaria, Universidad de Murcia, 30100 Espinardo, Murcia, Spain

Received 4 December 1999; accepted 8 February 2000

REFERENCE: ORTIZ (J.M.), RUIZ DE YBAÑEZ (M.R.) & GOYENA (M.), 2000.– First report of *Trichistrongylus probolurus* (Railliet, 1896) Looss, 1905 (Nematoda: Trichostrongyloidea) in Spain. *Research and Reviews in Parasitology*, 60 (3-4): 137-138.

ABSTRACT: The gastrointestinal nematode *Trichostrongylus probolurus* has been identified in gazelles (*Gazella dorcas* and *G. dama mhorr*) in the Estación Experimental de Zonas Aridas (C.S.I.C., Almería). This is the first report of the presence of the parasite both in *G. dama mhorr* and in Spain.

KEY WORDS: Nematodes, Trichostrongyloidea, *Trichostrongylus probolurus, Gazella dama, Gazella dorcas*, Spain.

Since 1971 the Estación Experimental de Zonas Aridas (E.E.Z.A., C.S.I.C., Almería) has kept in captivity three different species of African gazelles (*Gazella dama mhorr, G. dorcas* and *G. cuvieri*) for reproductive purposes. During the study of the parasitefauna of these wild ruminants, several specimens of *Trichostrongylus probolurus* (Railliet, 1896) Looss, 1905 were collected from the small intestine of both *G. dorcas* and *G. dama mhorr*.

Thirty gazelles that died between 1996 and 1998 owing to different reasons were necropsied and examined to determine nematode species and parasitic load. Necropsies were carried out in the laboratory and gastrointestinal tracts were carefully separated and processed as abomasum, small intestine and large intestine. The content of each part was analysed under a stereomicroscope. Preparations of the isolated male nematode specimens were made with lactophenol. Parasites were identified according to the descriptions of SKRJABIN, SHIKHOBALOVA & SHUL'TS (1954), DURETTE-DESSET (1983) and SOULSBY (1987).

It was shown that 3 gazelles (10% of the analysed animals: 1 *G. dama mhorr* and 2 *G. dorcas*) harboured *T. probolurus* adults, with parasitic load ranging from 3 to 30 ($\bar{x}$ = 14,33). Also, *Camelostrongylus mentulatus, Ostertagia ostertagi, Trichostrongylus vitrinus, Nematodirus spathiger* and *Nematodirus filicollis* were found (ORTIZ *et al.*, 1998).

Males of *T. probolurus* were small and slender with the following characteristic measures (in mm): body length 5,57 (5,10-6,05), minimum width 0,013 (0,010-0,016), and maximum width 0,096 (0,086-0,102). The bursa has large lateral lobes and a hardly appreciable dorsal lobe (Fig. 1). The structure of the bursal rays is characteristic of the genus: the posterolateral rib is thicker than the others, the posterolateral and externodorsal ribs are short and close to each other, and the dorsal rib is short and branched at the end (SKRJABIN, SHIKHOBALOVA & SHUL'TS, 1954). The spicula are dark brown, nearly of identical length [0,148 (0,138-0,156) and 0,141(0,136-0,146)] and wider than in other species (0,029) (Fig. 2). The gubernaculum measures 0,069 (0,068-0,070) x 0,013 (0,012-0,014). Most of the present measures were slightly higher than those reported by SKRJABIN, SHIKHOBALOVA & SHUL'TS (1954) and SOULSBY (1987) (Table 1).

This parasite has been previously described in sheep (*Ovis aries*), goats (*Capra hircus*), camels (*Camelus dromedarius* and *C. bactrianus*), gazelles (*Gazella dorcas*), bezoar goats (*Capra aegagrus*), Armenian mouflons (*Ovis ophion armeniana*), gophers (*Citellus pygmaeus*), tolai hares (*Lepus tolai*) (SKRJABIN, SHIKHOBALOVA & SHUL'TS, 1954), and occasionally in man (SKRJABIN, SHIKHOBALOVA & SHUL'TS, 1954; GAHDIRIAN & ARFAA, 1975). However, this is the first report of *T. probolurus* in *G. dama mhorr*. The parasite is usually located in the small intestine (SOULSBY, 1987), although it has also been isolated from abomasum (SKRJABIN, SHIKHOBALOVA & SHUL'TS, 1954). Both locations were recorded in the present study. In spite of its wide geographical distribution (North America, Asia, Africa, western Europe and the former U.S.S.R.), this nematode has not been previously reported in Spain (see CORDERO, CASTAÑON & REGUERA, 1994).

The absence of *T. probolurus* in other native domestic or wild ruminants, and the African origin of these gazelles suggest that this parasite constitutes a part of the original helminthfauna of these hosts, and reached our

	Present work	SKRJABIN, SHIKHOBALOVA & SHUL'TS (1954)	SOULSBY (1987)
Total length	5,09-6,05	4,3-5,55	–
Maximum width	0,085-0,101	0,078-0,087	–
Length of spicula	0,136-0,156	0,125-0,134	0,126-0,134
Length of gubernaculum	0,068-0,070	0,072-0,080	–

Table 1.– Measures (in mm) recorded for *Trichostrongylus probolurus*.

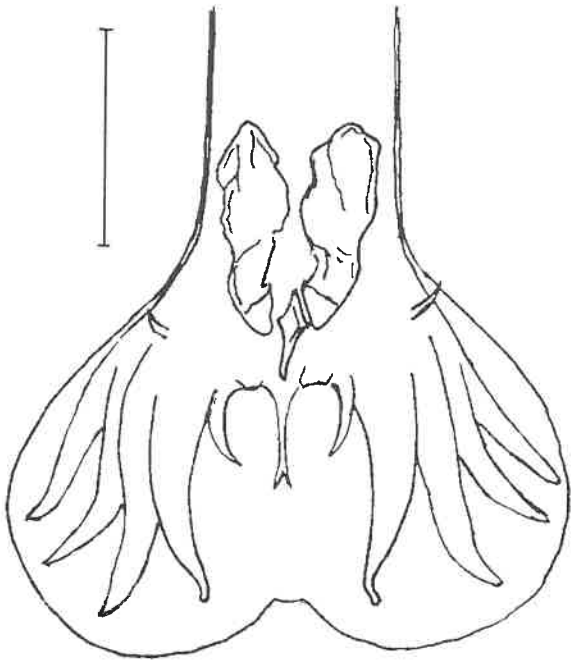


Fig. 1.– *Trichostrongylus probolurus*: male bursa in ventral view. Scale bar = 0,1 mm.

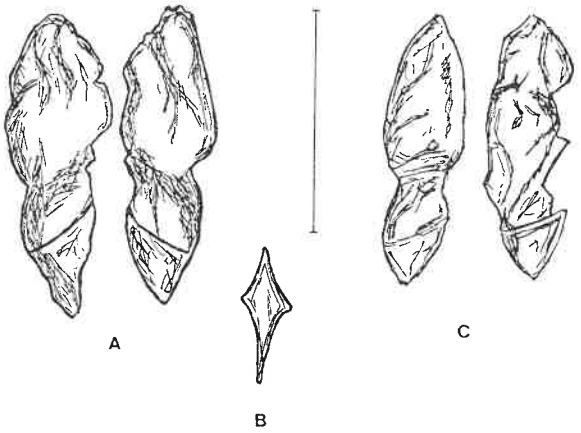


Fig. 2.– *Trichostrongylus probolurus*: A) spicules, ventral view; B) gubernaculum; C) spicules, lateral view. Scale bar = 0,1 mm.

country with the arrival of the ruminants. Previous studies (PRESTON *et al.*, 1979) described the cross-transmission of *T. probolurus* between Merino sheep (*Ovis aries*) and Thomson's gazelles (*Gazella thomsonii*). A similar behaviour could be expected in our case. This hypothesis should be taken into account, since herds of sheep and goats could graze near E.E.Z.A. limits, and gazelles would be a reservoir for infection to domestic ruminants. Special control measures should be adopted to prevent the cross infection of other animals and the spread of this parasite to domestic herds.

Numerous studies dealing with the pathogenesis of Trichostrongylidea in domestic ruminants, reviewed by HOLMES (1985), concluded that the initial signs of infection are low appetite and loss of protein in the gastrointestinal tract, and subsequently a decrease in all the productivity rates. *Trichostrongylus* spp. are often considered less pathogenic than other trichostrongylids (i.e. *Haemonchus contortus, Ostertagia* spp., etc). Unfortunately, no studies regarding this problem have been conducted on *T. probolurus*. However, several authors reported weight loss and poor body condition at least partially due to such infections in domestic and wild ruminants (GHADIRIAN & ARFAA, 1975; BARUS *et al.*, 1976; BEVERIDGE & FORD, 1982; ABDUL-SALAM & FARAH, 1988; ONWULIRI *et al.*, 1993).

ACKNOWLEDGEMENTS

We are grateful to Mr. Joaquín Abellán Catalán for assisting with the designs.

REFERENCES

ABDUL-SALAM (J.M.) & FARAH (M.A.), 1988.– Seasonal fluctuations of gastrointestinal helminths of camels in Kuwait. *Veterinary Parasitology*, 28: 93-102.

BARUS (V.), ANIM (A.), BLAZEK (K.) & MORAVEC (F.), 1976.– Nematodes parasitizing domestic ruminants in Afghanistan. *Folia Parasitologica*, 23: 207-216.

BEVERIDGE (I.) & FORD (G.E.), 1982.– The trichostrongyloid parasites of sheep in South Australia and their regional distribution. *Australian Veterinary Journal*, 59: 177-179.

CORDERO (M.), CASTAÑON (L.) & REGUERA (A.), 1994.– *Indice-Catálogo de Zooparásitos Ibéricos*. Secretariado de Publicaciones de la Universidad de Léon, León, 650 pp.

DURETTE-DESSET (M.C.), 1983.– Keys to genera of the Superfamily Trichostrongyloidea. In: *CIH Keys to the Nematode Parasites of Vertebrates* (R.C. Anderson & A.G. Chabaud edit.), Commonwealth Agricultural Bureaux, Farnham Royal, Bucks, England, No. 10.

GHADIRIAN (E.) & ARFAA (F.), 1975.– Present status of trichostrongyliasis in Iran. *American Journal of Tropical Medicine and Hygiene*, 24: 935-941.

HOLMES (P.H.), 1985.– Pathogenesis of trichostrongylosis. *Veterinary Parasitology*, 18: 89-101.

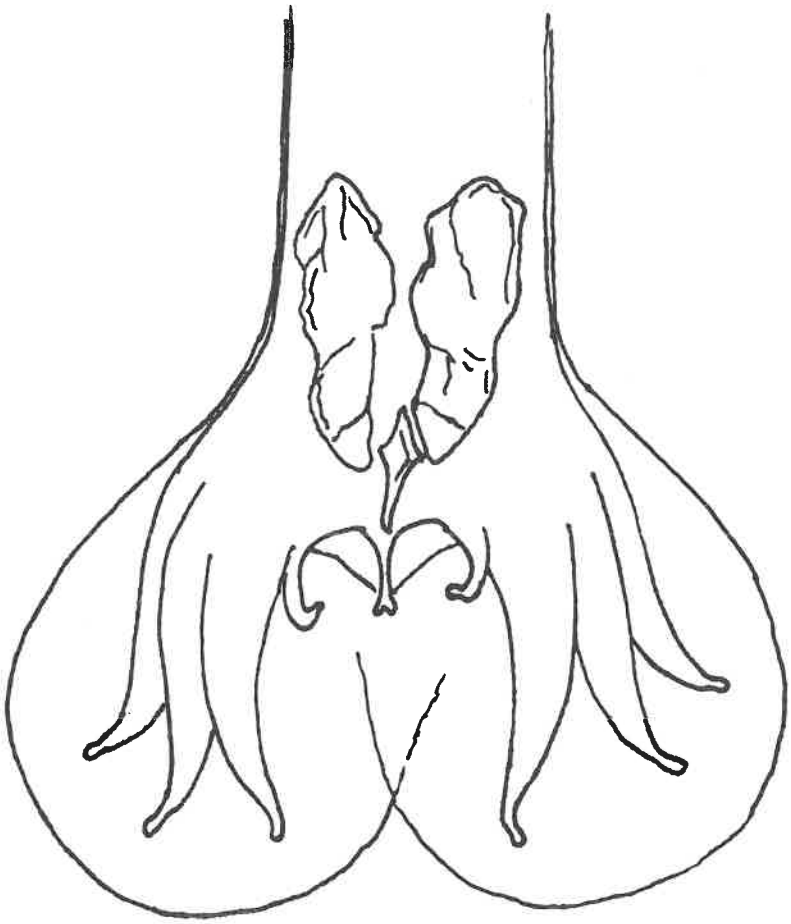
ONWULIRI (C.O.), ANOSIKE (J.C.), NKEM (C.N.) & PAYNE (V.K.), 1993.– The ecology of animal parasitic nematodes in endemic areas of Jos, Nigeria. *Applied Parasitology*, 34: 131-137.

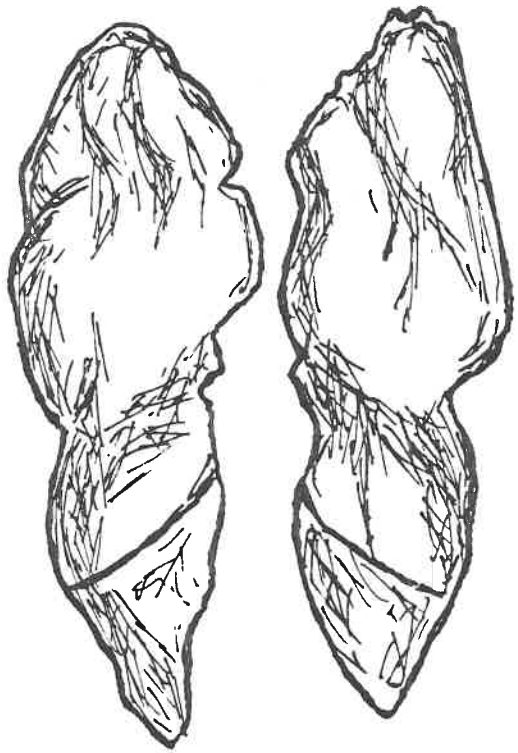
ORTIZ (J.M.), RUIZ DE YBAÑEZ (M.R.), ESPESO (G.), GOYENA (M.), VICENTE (J.) & CANO (M.), 1998.– Abomasal and small intestinal nematodes in three species of captive gazelles. In: *Euro-American Mammal Congress (Santiago de Compostela), Abstracts* (S. Reig edit.), Universidad de Santiago de Compostela: 209.

PRESTON (J.M.), KARSTAD (L.), WOODFORD (M.H.) & ALLONBY (E.W.), 1979.– Experimental transmission of gastro-intestinal nematodes between sheep (*Ovis aries*) and Thomson's gazelles (*Gazella thomsonii*). *Journal of Wildlife Diseases*, 15: 399-404.

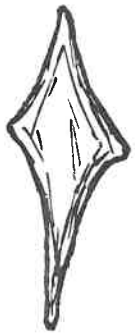
SKRJABIN (K.I.), SHIKHOBALOVA (N.P.) & SHUL'TS (R.S.) 1954.– Trichostrongylids of animals and man. In: *Essentials of Nematodology*, Vol 3 (K.I. Skrjabin edit.), Izdatel'stvo Akedemii Nauk SSSR, Moskva, 704 pp.

SOULSBY (E.J.L.), 1987.– *Parasitología y enfermedades parasitarias en los animales domésticos*. Edit. Interamericana, México D.F., 823 pp.

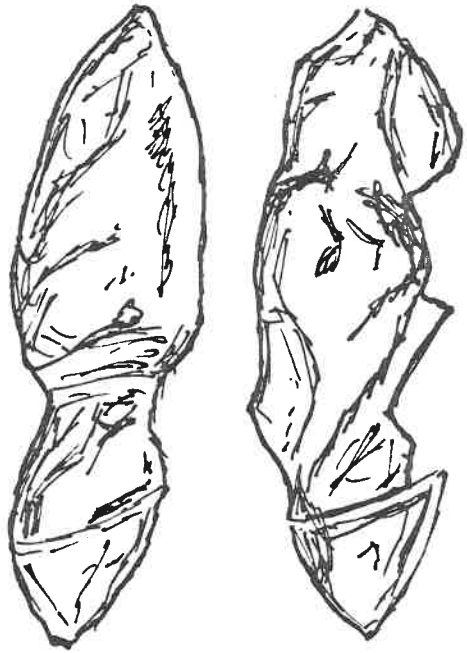




A



B



C