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"NEMATODE WORM-BURDEN OF CATTLE IN EGYPT"

BY

*M.S. ABDEL-RAHMAN,**M.A. HASSANIAN,
*M.M. FAHMY, AND **OMNIA M. TAWFIK

* Dept. of Parasitology Fac. Vet. Med., Cairo Univ.
** Dept. of Parasitology and Animal Diseases,National Research Center, Dokki-Tahrir St.

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INTRODUCTION

The pathology caused by gastro-intestinal parasites is varied. Thus infection with Ostertagia spp is associated with morphological and functional destruction of the gastric glands of the abomasum. The primary pathology caused by *Haemonchus contortus* and *Mecistocirrus digitatus* is marked haemorrhage through wounds in the abomasal mucosa. Infections such as Trichostrongylus spp and Nematodirus spp cause villous atrophy and adults of Oesophagostomum spp and *chabertia ovina* in the large intestine cause ulceration and haemorrhage. These lesions have been described previously by Symons and Steel (1979) , Dargie (1981) as well as Soulsby (1982).

In Egypt Ezzat (1984) reported 6 species of nematode parasites in the alimentary tract of some calves and identified them as *O.circumcincta, H.contortus, C. onchophora, C. punctata, Oesophagostomum, Venulosum* and *B.phlebotomum.*

Deleon and Juplo (1966) examined the guts of 60 buffaloes for the helminth parasites in philippines. They stated that 68% of the animals were infested

by *M.digitatus, Ostertagia* sp . *Oesophagostomum radiatum* and *H. palonlae,* which were recorded for the first time in philippines.

In a survey on the helminth parasites in 46 buffalo-calves in 1971, Bhopale, et al. recovered 116 nematode species of which Oesophagostomum sp. were the most prevalent one with an infestation rate of 56.1%.

Tongson and Caspe (1975) and Tongson, et al., (1976) found that the most common species of nematodes among cattle in two localities in philippine were; Cooperia, Bunostomum, Mecistocirrus, Oesophagostomum, Trichostrongylus, Haemonchus and Strongyloides. In 1978,Horak as well as Horak and Louw observed that Haemonchus spp, were the most abundant nematodes among the South African cattle.

Bejsovac and Doriat (1982) found that only 96 from 950 examined cattle were infested with Trichocephalus (3.9%), Cooperia (2.4%), Ostertagia (0.6%) , Chabertia (0.4%), Nematodirus (0.3%), Capillaria (0.2%), Oesophagostomum (0.2%), Bunostomum (0.1%) and Trichostrongylus (0.1%).

Moharam (1987) in Kalubia and Sharkia found that the nematodes were *O. ostertagi, O. trifurcata* (17.9%), *T. axei* (10.4%), *Marshallagia marshalli* (3.0%) , *Toxocara. vitulorum* (22.4%), *T. colubriformis* (18.4%), *C. mecmasteri* (20%), *B. phlebotomum* (2.3%) and *Oesophagostomum venulosum* (7.7%).

The aim of the present task is to spot-light on the intensity of infection with the different nematode species could be encountered from the alimentary tract of Egyptian cattle.

MATERIALS AND METHODS

Collection of worms from the abomasum:-

A total number of 154 cattle abomasi were collected from the slaughter houses distributed in Gharbia, Sharkia, Giza and Assiut provinces. Each abomasum was ligated from both ends and removed from the animal immediately after slaughtering. The abomasi were transfered to the laboratory in an ice box after recording the age of animal and the site and date of collection. In the laboratory each abomasum was opened and its contents were evacuated in a wide jar, mixed with water and poured into a wire mesh seive with an aperature of 0.15 mm. and the different helminth parasites were collected as mentioned by Dineen et al., (1965).

Collection of worms from the small and large intestine:

A total number of 105 cattle small intestine (the first two feets of the small intestine from pyloric sphincter)as wells as 103 coeci were collected from salughter houses at the abovementioned provinces. Each intestinal segment was ligated from both ends, removed from the animal and transfered to laboratory. In laboratory the steps were done as mentioned before for the abomasum.

Permanent preperation of worms:

The collected, abomasal and intestinal nematode worms were mounted in permanent specimens using Kruse & Pritchard (1982) technique. The total number of each worm species was calculated and the worm burdens were determined. Identification of adult worms was carried out according to the key mentioned by Morgan and Howkins (1951), Yamagoti (1961), Soulsby (1982) as well as Lynda and Khalil (1982).

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RESULTS

Examination of 154 cattle abomasi revealed taht 21 were infested with stomach worms constituting an infestation rate of 13.6%. The collected worms were *H. contortus, H. placei, O. ostertagi, O. circumcincta, B. trigonocephalum, M. digitatus, Capillaria bovis* and *Histostrongylus coronatus.*

Concerning the number of the collected worm species, it was found that, 228 Haemonchus worms (90 ♂♂ and 70 ♀♀ *H. contortus* as wells as 33 ♂♂ and 35 ♀♀ *H. placei*) were collected during the period of study which extended from January to December 1988.

The second stomach worms found in this investigation was Ostertagia worms. From this worm species 206 worms were collected (63 ♂♂ and 50 ♀♀ *O.oestertagi* as well as 80 ♂♂ and 13 ♀♀ *O. circumcincta).*

It was worth to mention that, some well known intestinal worms could be collected from the examined abomasi of the different localities. Among these worms, *B. trigonocephalum* which was found and represented by 21 ♂♂ and 4 ♀♀ worms, *M. digitatus* which was represented by only one male worm and *Capillaria bovis* worms which were found in a total number 2 ♀♀ worms.

The obtained results showed an interresting observation and this was the presence of 5 ♀♀ Histostrongylus worms which could considered to be a first detection of this parasite species in this animal species.

The post mortem examination of 105 small intestine of cattle revealed that 26 of them (25.7%) were infested with *T. vitulorum* (114) worms), *T. axei* (372 ♂♂ & 341 ♀♀), *T. colubriformis* (71 ♂♂ & 170 ♀♀), *C. punctata* (830 ♂♂ & 639 ♀♀), *C.pectinata* (268 ♂♂ & 158 ♀♀); *C.curticei* (93 ♂♂ & 63 ♀♀)and *N.fillicollis* (11 ♂♂ & 5 ♀♀).

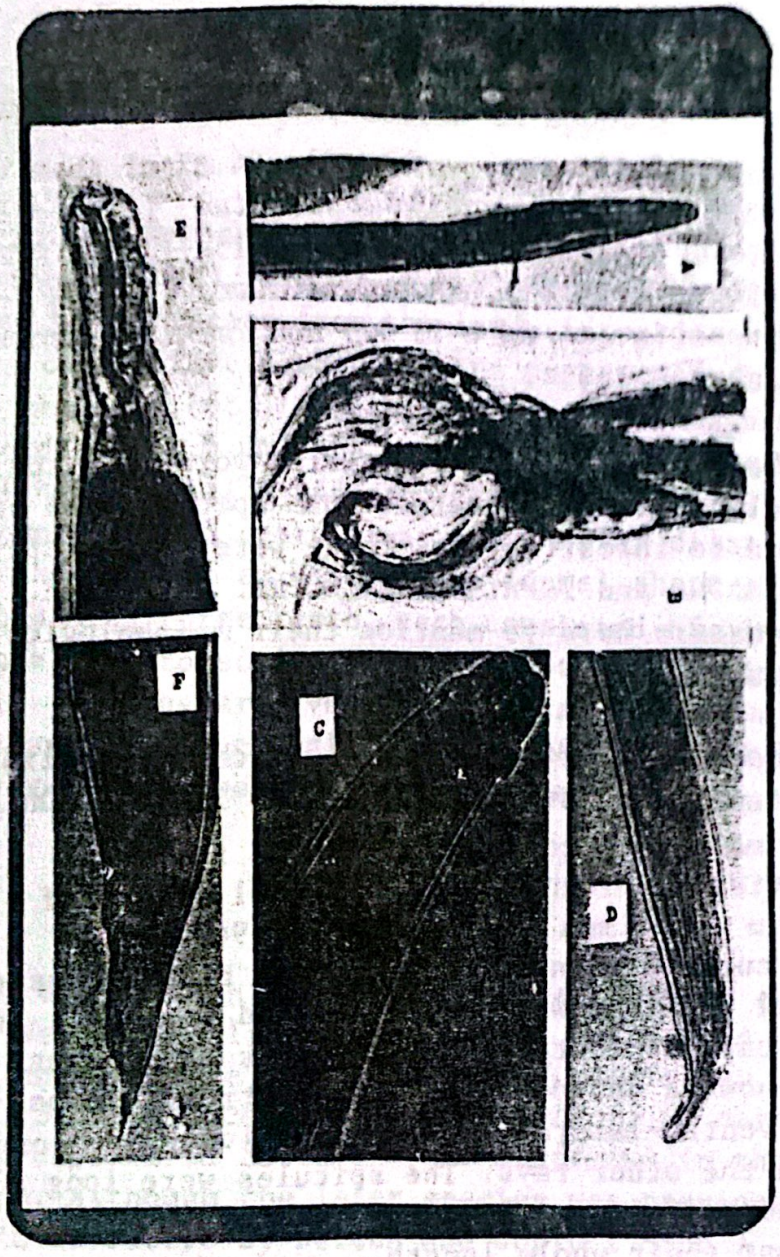

Fig. 1: Mecistocirrus digitatus A. Ant. end B,Bursa(♂)

Fig. 2: Histostrongylus coronatus C, Ant. end D,Post. end (♀)

Fig. 3: Ternidens deminutus E.Ant.end.F.Post.end.(♀).

On autopsy of 103 coecl of cattle 24.3% of them were infested with *Oesophagostmum radiatum* (183 ♂♂ & 256 ♀♀), *O. columbianum* (105 ♂♂ & 115 ♀♀), *O. venulosum* (56 ♂♂ & 69 ♀♀), *Chabertia ovina* (4 ♂♂ & 2♀♀), *Trichuris ovis* (4 ♂♂ & 13 ♀♀) and *Ternidens deminutus* (only one female).

From the fore-mentioend identified worms, it could be concluded that 3 Nematode worm species were newly recorded to infest cattle. These were *M. digitatus* *H. Coronatus* and *Ternidens deminutus*. Therefore, it was necessary here to mention their morphological characters.

1) *Mecistocirrus digitatus:* (F. Trichostrongylidae, subfamily Mecistocirrinae), Fig. 1 A & B. Only one male worm could be collected from this species and found to have a total length of 15 mm , maximum breadth of 2.94 mm. The cuticle born 30 longitudinal ridges. The cervical papillae were prominent and the small buccal capsule contained a lancet as Haemonchus. The male bursa showed a small, symmetrical dorsal lobe; the ventro-lateral ray was conspicuously longer than the other rays. The spicules were long and slender (2.5 mm.) long, and united together to almost their whole length.

2) *Histostrongylus coronatus:* (F. Trichostrongylidae, subfamily Spirostrongylinae) Fig. 2, C & D. Only female worm was colected. Morphologically it showed a delicate anterior extremity with umbellated membrane which provided with large spines towards the internal margin, the buccal cavity was small and triangular. This detected female measured a total length of 25 mm and a maximum breadth of 1.47 mm. The posterior extermity was provided with three strong spines, one dorsal and two subventral. The value was situated at 17.64 mm. from the porterior end.

3) *Ternidens deminutus:* (F. strongylidae, subfamily Strongyloidea), **Fig. 3, E & F.** A female worm could be detected from the large intestine of the cattle investigated in the present study. It showed a total length of 20 mm. and maximum breadth of 2.5 mm. The mouth opening directed slightly dorsally and provided with two leaf crowns. Buccal capsule was subglobular dilated in the form of an oesophageal funnel shape and containing three teeth, each consisted of two lambellae projecting into the depth of the capsule. A transverse ventral cervical groove was present, while cephalic vescile was very slight. The vulva was near the anus (0.8 mm).

DISCUSSION

Through examination of the slaughtered animals at the different localities in Egypt it was proved that bovine animals were infested with *H. contortus, H. placei, B. trigonocephalum, O. ostertagi, O. circumcincta, capillaria bovis* and *M. digitatus* in their abomasum. Although the later species was previously recorded in cattle by Deleon and Juplo (1966) , Tongson and Caspe (1975) and Tongson et al. (1971), it could be concluded to be the first record among cattle in Egypt. Similarly, *Histostrongylus, coronatus,* a natural parasite of Chiroptera was detected for the frist time from cattle in this study and considered to be also a new record in Egyptian cattle.

Inaddition, *T. axei, T. colubriformis, Cooperia punctata C. pectinata, C. curticei ., N. fillicollis* and *Toxocara vitulorum* could be also collected from the small intestine of the ivestigated bovine animals.

Concerning the worm burdens collected from the bovine large intestine, *O. venulosum*, *O. columbinaum*, *O. radiatum* were collected. On the contrary, Ezzat, (1984), Moharam (1987) found only one species of Oesophagostomum worms namely *O. venulosum*. In addition *Trichuris ovis*, *Chabertia ovina* and *Ternidens deminutus* worms were also collected. The presence of the later species (the natural parasite of Primates) was considered as a new nematode record for the Egyptain cattle, therefore further studies are needed to know how these species were transmitted to cattle in Egypt.

SUMMARY

A total number of 154 abomasi, 105 small intestine and 103 coeci of cattle collected from different slaughter houses in Egypt. The collected organs were examined for the occurrence of nematode-worm-burden. The study revealed the infestation with; *Haemonchus contortus*, *H. placei*, *Ostertagia. ostertagi*, *O. circumcincta*, *Bunostomum trigonocephalum*, *Mecistocirrus digitatus*, *Capillaria bovis*, *Histostrongylus coronatus*, *Toxocara vitulorum*, *Trichostrongylus axei*, *T. colubriformis*, *Cooperia punctata*, *C. pectinata*, *C. curticei*, *Nematodirus filicollis*, *Oesophagostomum radiatum*, *O. columbianum*, *O. venulosum*, *Chabertia ovina*, *Trichuris ovis* and *Ternidens deminutus*.

The three nematode worm *Mecistocirrus digitatus*, *Histostrongylus coronatus* and *Ternidens deminutus* were recorded as new record in Egyptian cattle and were completely described.

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