Some Helminths from Elephants in Malaya

By Agnes Fernando
Department of Parasitology, University of Malaya
and
C. H. Fernando
Department of Zoology, University of Malaya, Singapore
(Received January, 1961)

Introduction

A collection of helminth parasites from elephants in Malaya was made available to us through the kindness of Professor A. A. Sandosham, formerly Professor of Parasitology, University of Malaya, Singapore. Although the helminth parasites of the African and Indian elephant have been extensively studied since Cobbold's monograph of 1882, no records are so far available for Malaya.

The data available as regards the elephants from which the present material was collected is incomplete. One elephant is mentioned as being of "Indian origin" and the others as "Elephant in Malaya". It is probable that the latter records are for the Malayan elephant *Elephas maximus indicus* Cuv.

Sutherland, O'Sullivan and Ohman (1950) recorded the results of a post-mortem on an "Indian Elephant" imported to Australia from Singapore. It is possible that this elephant was of Malayan origin.

In the present paper we have recorded five species of Nematodes namely *Murshida murshida* Lane, *M. falcifera* (Cobbold), *Quilonia renniei* (Railliet and Henry), *Equinurbia sipunculiformis* (Baird) and *Choniangium epistomum* (Piana and Stazzi) and one species of amphistome trematode *Pfenderius papillatus* (Cobbold). Brief descriptions are given for each species with notes of interest in the material under study.

Description

Murshida murshida Lane. Plate 1, Figs. 1A, 1B & 1D.

2 females 1 male, "stomach", Negri Sembilan, Malaya.

6 females 2 males, "stomach", Malaya 1937.

The male measures 18.2[1]–18.8 in length and has a maximum thickness of 0.64–0.8. The buccal capsule measures 0.08 in diameter. The Oesophagus is 0.51 long and the nerve ring is situated 0.4 from the anterior end. The spicules are equal, each measuring 1.39 and their tips are bent dorsally with a posteriorly directed spur at the angle.

The female measures 21.8–25.0 in length and 0.72–0.96 in thickness. The tail is 1.86 long and the vulva is 2.27 anterior to its tip. The eggs are oval and measure 0.0468 × 0.0216.

The genus *Murshida* was first described by Lane (1914) with *Murshida murshida* from the caecum of an Indian Elephant as the type species. Our specimens however are reported to have been collected from the "stomach".

1. All measurements are in millimeters.

This species is characterised, as Lane mentions, by the swollen bases of the lateral rays and the ruggedness of the dorsal rays, especially the externo-dorsal, of the bursa. The spur at the terminal bend of each spicule is another characteristic feature of this species. This was described as a "beak" by Lane (1914) and a "spur" at the angle of the bend of the spicule by Baylis (1936). The head end is as shown in Fig. 1a and is characteristic of the genus *Murshida*. It has a mouth collar and an external leaf crown which is shorter anteriorly and posteriorly than laterally. The mouth thus appears dorso-ventrally slit.

Murshida falcifera (Cobbold). Plate 1, Fig. 1C.

13 females 3 males, "stomach", Malaya 1937.

The male measures 21.0–23.9 in length and its maximum thickness is 0.83–1.04. The buccal capsule measures 0.16 in diameter and the length of the oesophagus averages 0.93. The nerve ring is 0.45 from the anterior end. The spicules are equal and measure 2.0 in length.

The female is 23.0–28.0 long and 0.83–1.06 in average maximum thickness. The vulva is situated at 2.72 from the tip of the tail which is 2.05 long.

This species unlike *Murshida murshida* does not have the bases of its lateral bursal rays swollen. The tips of the spicules resemble that of a golf stick as described by Baylis (1936) and it does not have the spur of *M. murshida*. The lip covering the vulva is inconspicuous.

The most characteristic distinguishing features between *M. murshida* and *M. falcifera* are the posterior spur of the spicule present in the former absent in the latter and the relative length of the oesophagus—it is about twice as long in the latter as in the former. Both species however, look very much alike on external examination.

Quiloina renniei (Raillet and Henry). Plate 1, Figs. 2A & 2B.

18 females 1 male, "stomach".

Negri Sembilan, Malaya 29.3.48.

The single male is 18.9 long and 0.7 in maximum thickness. The oesophagus measure 0.8 in length and the nerve ring is situated 0.36 from the anterior end. The buccal capsule is 0.144 wide and the elements of the external leaf crown counted without the aid of an "en face" mount approximated to eighteen. The spicules are fine, and equal in length each measuring 1.1. The bursa is as shown in Fig. 2b the dorsal ray being 0.36 long.

The females average 23.84 in length and 1.12 in maximum thickness. The vulva is situated at a distance of 7.0 from the tip of the tail which is 2.8 long. The eggs are oval in shape measuring 0.05 × 0.26.

The external measurements of our specimens vary somewhat from those given by Lane (1914) and quoted by Baylis (1936). Their male measured only 15.0 in length and 0.5 in maximum thickness. The measurements of internal structures such as the oesophagus and buccal capsule however agree. The discrepancies in the total length and thickness of the worms may be due to differences in preservation and also normal variation within the species.

The genus *Quilonia* is characterised by the few long elements of the external leaf crown and the wide separation, as seen in Fig. 2a, between the wall of the buccal cavity and the lining of the mouth capsule. *Quilonia renniei* differs from the other species parasitic in the Indian Elephant, *Q. travancara*, in having 18 elements to the external leaf crown and a short dorsal ray of the bursa, measuring 0.35, Lane (1914).

Equinurbia sipunculiformis (Baird). Plate 1, Fig. 3.

1 female, "stomach", Malaya 1937.

This specimen is 20.7 long and 1.6 thick at the widest portion. Its buccal capsule is 0.32 wide at its anteriormost end and the oesophagus 2.16 long. The vulva is situated on a cuticular prominence 0.56 from the tip of the tail which is 0.48 long. The eggs are oval measuring 0.064–0.032.

This specimen was identified as *Equinurbia sipunculiformis* by the characteristic head end and by the cuticular prominence on which the vulva is situated. It has a "subglobular" buccal capsule without teeth in its depth and tilted slightly dorsally, so that the mouth opens antero-dorsally. The external leaf crown is very characteristic projecting above the anterior end of the worm and having two short elements between two long elements as shown in Fig. 3.

Choniamgium epistomum (Piana and Stazzi).

1 female 3 males from elephant faeces. Kedah, Malaya, 18.9.47.

The elephant was of Indian origin.

The males are 21.0–22.0 long and 0.56–0.61 in maximum thickness. Its elongated buccal capsule is 0.4 wide, just below the origin of the external leaf crown and 0.64 long, gradually tapering towards the oesophagus to about a quarter of its original width. The spicules measure 2.0, are equal, and taper finely to their curved points. The externo-lateral ray gives off a branch dorsally and the dorsal bifurcates half way down its length.

The single female specimen is 21.7 long and 0.72 thick. The tail is missing together with the anal opening and the vulva opens 0.32 from this severed end.

The very long buccal capsule with a dorsally tilted mouth surrounded by a converging external leaf crown made up of very fine elements and the branching of the externo-lateral ray of the bursa are very characteristic of *Choniangium*.

Pfenderius papillatus (Cobbold). Plate 1, Fig. 4.

106 specimens, small intestine.

Negri Sembilan, Malaya, 29.3.48.

The specimens were much contracted and therefore unsuitable for detailed study. They measure 2.2 in length and 1.9 in breadth. In structure they conform to the genus *Pfenderius*. The characteristic large cirrus, measuring 0.5, posterior evagination of the oral sucker and wavy caecae are well marked. In size it resembles *Pfenderius birmanicus* Bhalerao but the shape of the caecae distinguishes it easily from this species. It agrees with the detailed description of *Pfenderius papillatus* given by Fukui (1929). All the specimens are immature in that no eggs were present. Bhalerao (1933), recorded *Pfenderius papillatus* which measured 2.1 long and 1.85 broad which, like our specimens, were immature.

Summary

Five species of bursate nematodes and an amphistomous trematode from Elephants in Malaya are described briefly.

Interesting features in the material under study are discussed.

References

BAYLIS, H. A., 1936. Fauna of British India, Nematoda, Vol. 1, London.

BHALERAO, G. D., 1933. The trematode parasites of the Indian elephant *Elephas indicus*. *Ind. J. vet. Sci.* **3**, 103–115.

COBBOLD, T. S., 1882. The parasites of elephants, *Trans. Linn. Soc. Lond.* (Zool), **2**, 223–258.

FUKUI, T., 1929. Studies on Japanese amphistomous parasites, with revision of the group. *Jap. J. Zool.*, **2**, 219–357.

LANE, C., 1914. Bursate nematodes from the Indian Elephant. *Ind. J. med. Res.*, **2**, 380–398.

SUTHERLAND, A. K., P. J. O'SULLIVAN, & A. F. S. OHMAN, 1950. Helminthiasis in an elephant. *Aust. vet. J.*, **26**, 88–90.

Explanation of Plate 1

1A. *Murshida murshida*, ventral view of head.

1B. *M. murshida*, lateral view of bursa.

1C. *M. falcifera*, lateral view of spicules and gubernaculum.

1D. *M. murshida*, ventral view of spicules.

2A. *Quilonia renniei*, lateral view of head.

2B. *Q. renniei*, lateral view of bursa.

3. *Equinurbia sipunculiformis*, ventral view of head.

4. *Pfenderius papillatus*, immature specimen.