Onderstepoort J. Vet. Res. (1963), 30 (2), 127–132
Printed by the Government Printer, Pretoria

PSEUDANDRYA MKUZII sp. nov, (CESTODA: HYMENOLEPIDIDAE) FROM *ICHNEUMIA ALBICAUDA*

R. J. ORTLEPP, Veterinary Research Institute, Onderstepoort

Four specimens, two complete with their scolices, were collected from the stomach of a white-tailed mongoose. The length varies from 150 to 180 mm with a maximum breadth of 1·55 mm. The anterior segments are much broader than long; posteriorly the segments increase in length so that the last ones are almost square. Segmentation is distinct as from behind the neck, the posterior rim of mature and ripe segments overhanging the following segment.

The rostella are retracted in both heads (Fig. 1A). They are somewhat conical in shape, measuring 0·13 and 0·17 mm across the suckers. The unarmed suckers are round to very slightly oval, measuring 0·078 mm across by 0·078 to 0·08 mm long. The neck is about 0·5 mm long and 0·07 and 0·11 mm broad

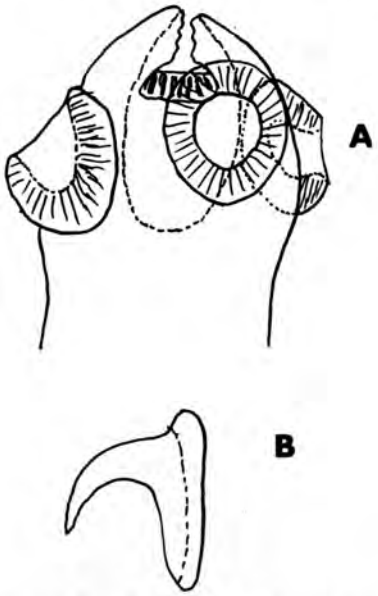

FIG. 1.—*Pseudandrya mkuzii* sp. n. A=Scolex. B=Rostellar hook.

behind the head. The retracted rostella of the two heads measure 0·036 and 0·039 mm at the level of the rostellar hooks. Prominent rostellar sacs are present; these are oval in shape and extend backwards as far as the posterior level of the

Received for publication on 19 December, 1962.—Editor

suckers. Each rostellum carries 14 rose-thorn shaped hooks arranged in a single circle (Fig. 1B). Each hook has a base 0·018 mm long and 0·05 mm thick; the vertical distance from the tip of each blade to its insertion on the base is 0·08 mm, and from the tip to the bottom edge of the base is 0·013 mm; its length from the tip of the blade to the end of the handle is 0·018 mm; the guard is 0·01 mm long and the handle only 0·003 mm.

The unilateral genital pores vary in position from near the anterior edge in immature segments to just behind the middle of the lateral margin in ripe segments; externally their location is very indistinctly marked.

Transverse sections show the longitudinal muscles to consist of scattered bundles of muscle fibres forming a single layer, the bundles being of various sizes, the smallest consisting of only two or three fibres each, whereas the largest carry 15 fibres; where the bundles are small two or three bundles are placed one above the other. Circular and transverse muscles appear to be very poorly developed; no trace of them can be seen in sections.

The usual two pairs of longitudinal excretory vessels are present, the ventral pair large and reaching a diameter of 0·1 mm or more, the dorsal pair very much smaller with a diameter of 0·015 mm at most. The genital ducts pass dorsally over the excretory canals and the nerve cord. The male genital organs consist of about ten rounded testes located mostly lateral to the ovary, two or three poral in position and the rest aporal; generally one or two testes are present behind the ovary (Fig. 2A). The muscular cirrus sac encloses an unarmed cirrus and an internal vesicula seminalis; in mature segments the sac is 0·2 to 0·22 mm long, the internal vesicula seminalis occupying about half of the inner portion (Fig. 2B); in these segments the vesicula is from 0·1 to 0·13 mm long and 0·075 to 0·09 mm

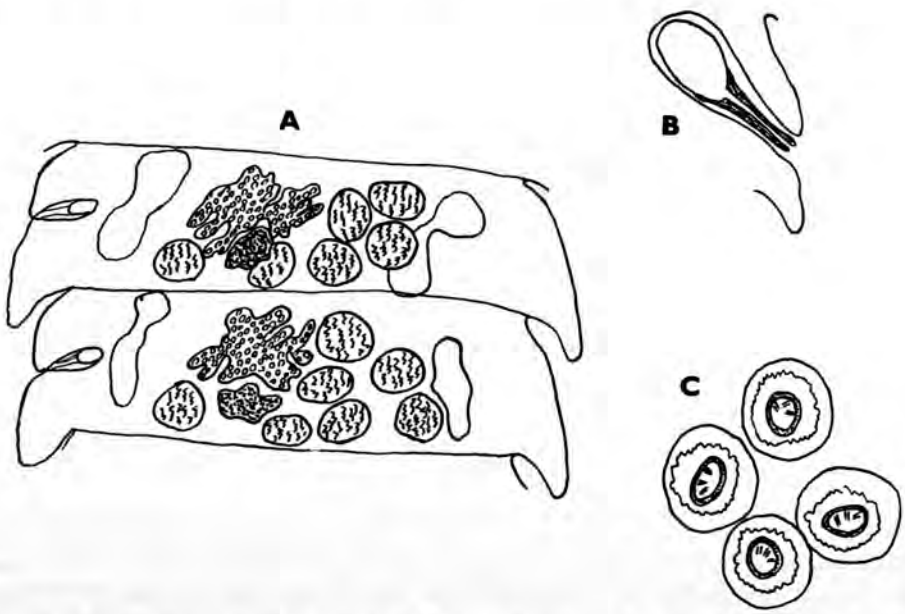

FIG. 2.—*Pseudandrya mkuzii* sp. n. A = Horizontal section of mature segments. B = Cirrus sac. C = Eggs.

broad; in ripe segments it is very much smaller and can only be seen in sections. In some segments the vas deferens, just before its entrance into the cirrus sac, shows a small swelling which can be interpreted as an external vesicular seminalis; however, such an organ as a definite structure is not present.

The inconspicuous vagina, 0·09 to 0·1 mm long, opens into the small genital sinus, ventral and just posterior to the opening of the cirrus sac; inwards it joins a very large, somewhat coiled receptaculum seminis extending beyond the centre of each segment; it reaches a length of nearly 0·5 mm with a diameter of up to 0·15 mm. The large, lobed ovary is placed slightly aporally. The large vitelline gland lies in a postero-ventral indentation of the ovary; in some segments it is 0·1 mm broad and 0·075 mm long; its outer surface may be either smooth or slightly lobulated. The uterus, a traverse reticular sac fills the entire segment in ripe proglottids passing dorsally over the excretory canals; in the ripe segments the pressure exerted by the numerous eggs causes the uterus to lose its reticulate nature and to become saccular. The eggs are generally circular and covered by three distinct envelopes (Fig. 2C); the innermost envelope with a diameter of 0·036 to 0·041 mm, the middle envelope 0·052 to 0·057 mm and the outermost 0·065 to 0·075 mm. The onchosphere diameter varies from 0·021 to 0·026 mm.

Affinities

Two species of this genus have been described thus far, viz. *P. monardi* Fuhrmann, 1943 from the small carnivore *Paracynictus selousi*, Angola, and *P. straeleni* Baer & Fain, 1955 from the rodent, *Tatera* sp., Congo. Baer and Fain raised the question whether a rodent was not the normal host of this group of cestodes; they suggested that the presence of Fuhrmann's species in a carnivore could be accounted for in that an infected rodent had probably been eaten by the carnivore. Unfortunately Fuhrmann does not give the location of the parasite in the host; weight, however, is given to Baer's and Fain's surmise by the fact that *P. straeleni* is from a rodent and that *P. mkuzii* is from the stomach of a carnivore (the two missing scolices having possibly been digested?).

The general morphology of the three species shows them to be closely related. The examination of further material may even show them to be co-specific, the differences being only individual variations. However, until further studies have been carried out and to avoid confusion, it is deemed advisable to treat the three as representing separate species.

P. mkuzii differs from the other two in having a very much smaller head*, the suckers and rostellum, and the rostellar hooks are also smaller; in addition an external vesicular seminalis appears to be absent. In *P. monardi* the eggs are larger, being 0·088 to 0·1 mm in diameter and in *P. straeleni* they are smaller, the external diameter being 0·056 to 0·066 mm, as against 0·065 to 0·075 in *P. mkuzii*.

Specific Diagnosis

Hymenolepididae, up to 180 mm long. Rostellum armed with a single row of 14 rose-thorn shaped hooks. Suckers, unarmed, subcircular 0·078 by 0·08 mm. Genital pores unilateral. About 10 testes present, six to seven aporal in position. Internal vesicula seminalis large, external vesicula seminalis apparently absent.

* In Fuhrmann's species the head is 0·24 mm thick; Baer and Fain do not give the size in their species but the fact that its suckers are more than twice the size of those of Fuhrmann's species suggests that the head also is much larger.

Ovary large and lobed, slightly poral in position. Vitelline gland large with smooth to slightly lobulated border. Receptaculum seminis very large. Uterus reticulate. Eggs round, 0·065 to 0·075 mm in diameter.

Host: Ichneumia albicauda (Cuvier)

Location: Stomach

Locality: Mkuzi Game Reserve, Zululand

Types in Onderstepoort Helminthological Collection

Discussion

In 1938 the writer described *Hymenolepis suricattae* from a suricat—*Suricata s. suricatta* (Carnivora: Viverridae) from the Orange Free State. This species carries 14 to 17 rostellar hooks very similar to those of *Pseudandrya mkuzii;* morphologically this species from the suricat is a typical hymenolepid cestode having two layers of longitudinal muscles, three testes arranged in a somewhat flat triangle with the outer aporal testis obliquely anterior of the median testis; unilateral genital pores and well developed vesicula seminali. The ovary and vitelline gland lie between the median and poral testes. A re-examination of horizontal sections of ripe segments shows that its uterus is not a sacculated bag as mentioned in the writer's description, but a transverse reticular sac; further it was observed that a pair of small dorsal excretory canals is present. The morphology of *P. mkuzii* is very similar to that of *H. suricattae* except for its greater number of testes and apparent absence of an external seminal vesicle. In *P. straeleni* this organ is very small and is only visible in sections, whereas in *P. monardi* it is large. In all these species of *Pseudandrya* the longitudinal muscles are poorly developed and in general form only a single layer, whereas in *H. suricattae* they are better developed and are arranged in two sheets. Despite these differences the writer feels that all these helminths should be grouped in the same family, namely Hymenolepididae. Spassky (1960) is of the same opinion; in this Russian publication, he considers these worms as hymenolepids because they all possess seminal vesicles, unilateral genital pores, reduced number of testes, single crown of rostellar hooks, rostellar sacs and a reticulated uterus. A reticulated uterus is also present in several species of the genus *Hymenolepis*, e.g. in the type species *H. diminuta*. The general morphology of *H. suricattae*, which is now known to have a reticulated uterus, lends further support to Spassky's view. The genus *Pseudandrya* is excluded from the Dilepididae because in this family seminal vesicles are absent, their function being taken over by an extensive system of convolutions of the vas deferens.

According to the above publication, Spassky had made *H. suricattae* a synonym of *H. globirostris* Baer, 1925, from a rat, Congo. While all the known species of *Pseudandrya* are probably normal parasites of rodents, as is *H. globirostris*, and only pseudoparasites of carnivores, it would appear that *H. suricattae* is a normal parasite of carnivores. Since the description of this species appeared the writer has obtained it from the same host species on ten different occasions; the host which furnished the original specimens came from the vicinity of Faure-smith, whereas the others were from areas in the vicinity of Dealesville, Ficksburg and Hoopstad, all located within a radius of about 50 miles. The specimens from Ficksburg consisted of seven collections and were obtained from the same farm on three consecutive days. If these cestodes are normal parasites of rodents it would be a remarkable coincidence that these suricats had been captured and

examined soon after they had eaten infected rodents; against this coincidence is the fact that all the cestodes were collected from the small intestine and not the stomach as was the case with *P. mkuzii*. However, the final decision whether carnivores or rodents are the definitive hosts can only be taken after a survey of the cestode parasites of rodents from the areas from which these helminths were collected has been made.

A comparison of the description of *H. globirostris* with the species *H. suricattae* shows that they cannot be co-specific. Apart from the hosts being from different orders of mammals, Baer's species has a larger head (0·48 mm), longer suckers (0·2 mm), its cirrus sacs are smaller and reach or just cross the excretory canals, its three testes are situated in a transverse row along the posterior border of the segment and its ovary is anterior of the testes and does not divide these into a poral and an aporal group.

Acknowledgements

The writer wishes to express his thanks to Mr. J. Dixon, Chief Conservator, Mkuzi Game Reserve, Zululand, for collecting and placing these specimens at his disposal; also his sincere thanks are due to Dr. G. van Son, Entomologist, Transvaal Museum for translating Spassky's article.

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