Dept. of Pathology. & Parasitology.
Fac. of Vet. Med., Alex. University,
Head of Dept. Prof. Dr. K.I. Ashmawy.

ON Anchitrema sanguineum (SONSINO, 1894); A TREMATDOE PARASITE FROM THE INTESTINE OF THE CLIMBING RAT (Rattus rattus)

(With One Table and 5 Figures)

By

M.Y. EL SOKKARY

(Received at 2/12/1990)

عن الإنكيتريما سانجوينيم (سونسينو ـ ١٨٩٤)
إحدى الديدان المفلطحة الموجودة في أمعاء الفأر المتسلق (راتس ـ راتس)

محمد السكرى

تم تجميع طفيل من الديدان المفلطحة ينتمي لجنس الانكيتريما (لووس ـ ١٨٩٩) وذلك لأول مرة من الأمعاء الدقيقة للفئران المتسلقة(راتس ـ راتس) والتي تم إصطيادها من منطقة ادفينا محافظة البحيرة ـ مصر . وقد وجد أن نسبة الأصابة بهذا الطفيل تصل الى ٧,٥٪ وتم عمل وصف تفصيلي لهذه الديدان مع رسومات توضيحية وصور ميكروسكوبية فوتوغرافية. بالرغم من أن هذه العينات وجد بينها إختلاف مع أنكيتريما سانجوينيم التي تم وصفها سابقا من ثدييات أخرى ـ وخصوصا في أطوال الطفيل وأطوال البويضات ـ فان هذه الأختلافات أعتبرت غير مهمة في تصنيف هذا النوع . لذلك فقد تم اعتبار هذه العينات مطابقة للأنكيتريما سانجوينيم.

SUMMARY

A trematode parasite belonging to genus Anchitrema (LOOSS, 1899); was collected for the first time from the small intestine of the climbing rats (Rattus rattus) that were trapped from Edfina, Behera Province, Egypt. The general prevalence of infection with that parasite was about 7.5%. Full description of that fluke was given together with illustrated camera lucida drawings and microphotos. Although, the present material slightly differed from Anchitrema sanguineum described from other mammals particularly in the body length and egg sizes; yet these differences were considered of little taxonomic importance. Therefore, the present species could be identified as Anchitrema sanguineum (SONSINO, 1894).

INTRODUCTION

During a survey on various rodents trapped from Behera Province, Egypt, some trematodes were obtained. After careful washing and prepartion they were found to be related to genus Anchitrema. On reviewing the literature, it was found to be the first time to record Anchitrema species infecting rodents. Therefore, it was found necessary to give a complete description for that trematode parasite.

MATERIAL and METHODS

The present study included the dissection and parasitological examination of the intestinal tract of 40 climbing rats (Rattus rattus); trapped from Edfina, Behera, Egypt. Mature as well as immature trematodes were collected from the small intestine. These were still living when collected under the sterio bi-nocular microscope with the help of fine pippet. After careful washing the parasites were very gently pressed between a glass slide and a cover slip. Then, they were fixed in 10% formalin and stained in acetic acid alum carmine. Mounting was done in canada balsam after the usual methods of dehydration and clearance. Camera lucida drawings as well as photo micrographs were also prepared from the stained specimens.

RESULTS

The present trematodes were recovered from the small intestine of three out of 40(7.5%) climbing rats; dissected during winter months of the year 1989. The three infected hosts were trapped from the area of Edfina, Behera Governorte, Egypt. In one rat 8 mature worms were collected while the other two rats each harboured 4 mature worms. Moreover, a number of immature worms was collected from the three infected rats.

Description of the mature specimens :

Examination of the mounted mature specimens showed that it was elongated with lancet shaped appearance. Its both ends were rounded. The total length was 1.03-1.37 mm while the maximum breadth near the middle of the body was 0.35-0.46 mm. The cuticle was very fine and easily ruptured in the process of compression and preparation. The entire body surface was covered with transverse rows of backwardly directed spines.

The oral sucker was subterminal, transversly elongte and measured 0.14-0.15 X 0.15-0.16 mm. The ventral sucker was nearly circular in outline and situated in the middle third of the body nearly in a median position. It was smaller than the oral sucker; measuring 0.11-0.12 mm in diameter. The distance between the oral opening and the anterior border of the ventral sucker was 0.58-0.62 mm. There was no prepharynx but the muscular pharynx was 0.036-0.042 X 0.040-0.048 mm. The oesophagus was very short and indistinct. The latter gave rise to an elongate intestinal caecum on each side. They extended posteriorly to terminate a short distance before the distal end of the body. The viteilaria were formed of two lateral sets of closely packed follicles. They were extracaecal extending from immediately posterior to the testes to a position near the posterior end of the intestinal caeca.

The two testes were nearly of equal size, oval with smooth outline and measured 0.132-0.140 X 0.096-0.1 mm. They were located extracaecal; one on either side of the body and directly posterior to the vental sucker. The right testis was a little anteriorly situated than the left one. The ovary was spherical in shape with entire margin. It was located intracaecal; just posterior to the testes in a median position.

It was 0.056-0.062 mm in diameter. The eirrus sac was subglobular and situated anterior to the ventral sucker. It contained a small seminal vesicle and a short aspinose cirrus. The uterus showed long conveluted course and occupied the posterior part of the body; in the intra-caecal post testicular space. It contained fairly numerous eggs. The latter were operculated, yellowish brown and measured 0.020-0.023 X 0.008-0.010 mm.

Description of the immature worms :

It was about 0.602-0.622 mm in length and 0.168-0.172 mm in the maximum breadth at the level of the ventral sucker. Measurements of the oral sucker were 0.058-0.068 X 0.066-0.072 mm. The ventral sucker was nearly circular in outline, median in position and measured 0.032-0.036 mm in diameter. Three dark staining masses could be seen in the middle third of the body representing the future gonads of the parasite. Their location was nearly as that described from the mature flukes.

DISCUSSION

According to YAMAGUTI (1958), the present specimens, which were collected from the small intestine of the climbing rats (Rattus rattus); were included in genus Anchitrema. This genus was well represented in reptiles. However, a few species had been recorded in mammals. The occurance of a member of this genus in rats was recorded for the first time.

The mammalian species of Anchitrema reported till now were; A.sanguineum (SONSINO, 1895); A.philippinorum (TUBANGUI, 1928); A.congolense (SANDGROUND, 1937) and another species described by FAHMY et al. (1967) and was not given a species name. These were differentiated from one another on the basis of their morphological and biological characterestics. These were the shape of the body; the shape and position of the gonads; the present or absence of cuticular spines and its distribution; the presence or absence of prepharynx and oesophagus; the shape and termination of the intestinal caeca and the shape and extent of the vitellaria.

When the present material was compared with the previously reported Anchitrema species; it showed the greatest similarity to A.sanguineum. The trematodes had similar gonads arrangment with the ovary situated just posterior to the testes in the intracaecal space; similar vitellaria extent; also similar cuticular spines distribution and similar shape and termination of the intestinal caeca. Although, there were variations in the body lengths and the egg sizes among the specimens of A.sanguineum described by EL NAFAR et al. (1978) from the bat (Vespertilio innes) caught from Assiut. Egypt and the present species; the overall morphology was identical. The body length varied from 1.03-1.37 mm and the egg were 0.020-0.023 X 0.008-0.010 mm in the present material while in the descriptions of EL NAFFAR et al. (1978); the body length was 2.3-4.2 mm, and the egg sizes were 0.017-0.020 and 0.009-0.012 mm. These differences were considered to be of little taxonomic importance and might be attributed to the presence of the parasite in different final hosts. Therefore,

the present species could be identified as Anchitrema sanguineum with a new host record. Table (1) showed the comparison between the present species of Anchitrema and the previously reported ones fromEgyptian hosts.

The result obtained in the present study concerning the presence of a trematode parasite of bats in the small intestine of rats was also recorded by other authors. Reviewing the literature showed that evidences of shared helminthic parasites between bats and rats was noted by MACY (1940). The latter cited three cases of closely related species of trematodes in bats and rats. HYNEMAN and MACY (1962) added the fact that normal bat trematodes might become adapted to mammals feeding on infected insect larvae and other infected intermediate hosts.

REFERENCES

El Naffar, M.K.; Omran, L. and Mandour, A.M. (1978): Acanthatrium (A) assiuti; sp.n; and other trematodes recovered from the bat (Vespertilio innesi) collectedfrom Assiut. J. Egypt. Soc. Parasit., 8(1): 53-60.

Fahmy, M.A.M.; Mikhail, J.W. and Mcconnell, E. (1967): Studies on some trematodes and cestodes investigated among Egyptian small mammals. J.Vet.Sci. U.A.R., 4(2): 143-152.

Hyneman, D. and Macy, R.W. (1962): Helminths reported from bats (Chiroptera) in Egypt with an illustrated key to the common flukes. J. Egypt. Pub. Hlth. Assoc., XXXVII(4): 109-139.

Looss, A. (1899): Weolere Beitrage Zur Kenntniss der trematoden fauna Aegyptens, zugleich versuch einer naturidichen Gleiderung des genus Distomum. Retzius Zool. Jahrb. Jena, Syst. I, Abt. 12: 521-783.

Macy, R.W. (1940): Description of three new trematodes with notes on the species of Acanthatrium and a key to the genus. J. Parasitology, 26: 279-286.

Sandground, J.H. (1937): Three new Dicrocoeliidae from African Chiroptera. Rabot. Gelmint. Skrjabin: 581-583.

Skrjabin, K.I. (1948): trematodes of Man and Animals. 1st Ed. Vol. II. 600PP. Moscow (Russian Text).

Sonsino, P. (1894): Forme nuove o poco conosciute in parte indeterminate, di entozoi racolti o osservati in Egtto. Cent. Bl.Bak., I, Abt. 22: 437-449.

Tubangui, A. (1928): Trematode parasites of Philippine vertebrates. Philippine J. Sci., 36: 251-271.

Yamaguti, S. (1958): Systema Helminthum. Vol. I.: The Digenetic Trematodes of vertebrates. Intersci. Pub., N.Y. 1st. Ed.

Anchitrema sanguineum OF RAT

Table (I):Revision to Anchitrema species recovered from the Egyptian Hosts.

Criteria	A.species; Fahmy et.al.,1967	A.sanguineum; Sonsino,1894	Present Material
	Fahmy et.al.(1967)	El Narfar et.al.(1978)	
Body shape	Lanceolate	Longer than Broad	Lanceolate
Total length	0.98-1.3mm	2.32-4.29mm	1.03-1.37mm
Max.width	0.22-0.30	0.79-0.39	0.35-0.46mm
Cuticle	Aspinose	Spinosed	Spinosed
Oral Sucker	Subterminal Broader than long 0.08-0.12X 0.09-0.13mm	Subterminal Circular 0.22-0.42 "	Subterminal slightly boader than long;0.140-0.152 X 0.148 - 0.160m
Ventral S.	Circular 0.07-0.08mm	Circular 0.22-0.36	Circular 0.112 - 0.120mm
Prepharynx	Present 0.020-0.026mm	Absent	Absent
Pharynx	Broader than long 0.037-0.04IX 0.052	Broader than long 0.129-0.165X 0.136-0.165mm	Broader than long 0.036 -6- 0.046X 0.040 - 0.048m
Oesophagus	Obvious 0.03-0.05mm.	Absent	Absent
Vitellaria	Extracaecal; Follicular; From post.end of testes till end of Int.Caeca	As before	As before
Testes Shape	Extracaecal; Ovoid;Symm.; One on either side &Post.to Vent.Suck.	As before	As before
Dimen ions	0.15-0.18X 0.11-0.12mm	0.56-0.65X 0.32-0.40mm	0.132 - 0.140 X 0.096 - 0.100 mm
Ovary	Oval , intracaecal post.testicular; 0.08-0.1 X 0.06-0.08mm	Circular;intracaecal Post.testicular 0.18-0.28mm	As before 0.065-0.082mm
Location& Locality	Small Intestine Egypt	Small Intestine Assiut;Egypt.	Small Intestine Behera;Egypt.
Host	Crocidura oliveri	Vespertilio innesi	Rattus rattus

Plate (I) :Anchitrema sanguineum;recovered from Rattus rattus:

Figs. : I - 3 .

Fig.I : Mature worm.

Fig.2 : Immature worm.

Fig.3 : Eggs.

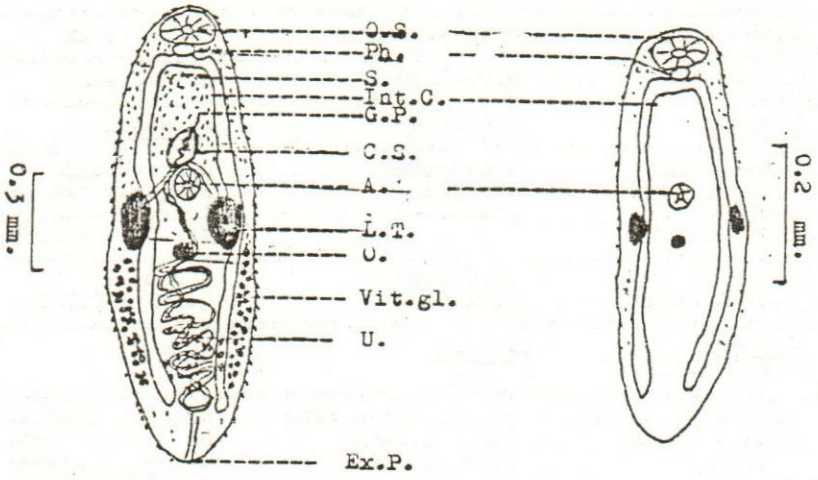


Fig.(I)

Fig.(2)

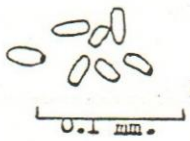
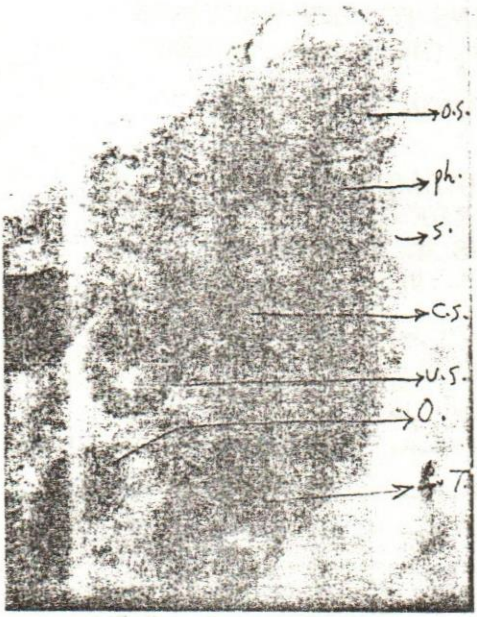


Fig.(3)

Abbreviations to Plate (I):

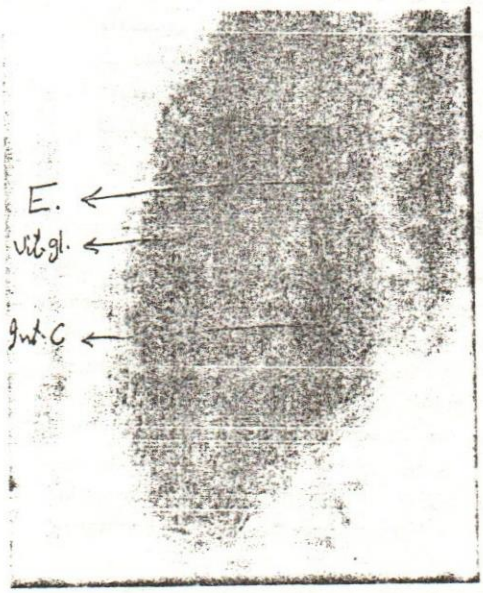
A. Acetabulum ; C.S. Cirrus Sac ; E. Eggs ; Ex.P. Excretory pore ; G.P. Genital Pore ; L.T. Left Testis ; O. Ovary ; O.S. Oral Sucker Ph. Pharynx ; R.T. Right Testis ; S. Spines ; U. Uterus ; Vit. gl Vitelline glands .

Anchitrema sanguineum OF RAT



Microphoto(I):
==========

Anchitrema sanguineum;recovered from the climbing rat(Rattus rattus); anterior region.



Microphoto(2):
==========

Anchitrema sanguineum,recovered from the climbing rat(Rattus rattus); posterior region.