BENI SUEF VETERINARY MEDICAL RESEARCHES

VOLUME 4 NUMBER 2/2
YEAR
1994
JULY

Beni-Suef, Vet. Med. Res. Vol. IV, No. 2/2, July, 1994.

LECITHOBOTRYS IMAMI, A NEW TREMATODE FROM MULLET OF LAKE QARUN IN EGYPT

BY

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SUMMARY

Lecithobotrys imami, n.sp. is described from Mugil cephalus caught from lake Qarun in Egypt. It differs from all species of the genus by having well developed excretory system, few number of vitelline follicles, short prepharynx, elongate pharynx and the shape of the body. A comparison was made with the other related species of the genus. A key is presented to distinguish between the species known so far from the genus.

INTRODUCTION

Lake Qaroun, is an inland closed basin of about 40 km long and 5.7 km width, with an average depth of 4.2 m(Morcos and Meshal,1984). It lies in an arid region occupying the deepest part of Fayoum depression in the western desert. The lake receives only brackish water annually estimated to be as much as 390 million cubic meter which conveys about 430000 tons of salts to the lake each year (Meshal,1973). A volume of water nearly equal to that of drainage influx is lost through evaporation and as a result the salinity of the water increases continuously as time passes.

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Rekharani and Madhavi (1985) described L.mugilis from Mugil cephalus, Liza macrolepis and valamugil cunnesius from brackish water at Visakhapatnam, India, Ramadan et al.(1988) described cephalus and Mugil capito caught from lake Qarun in Egypt.

MATERIAL AND METHODS

Fresh fishes were collected from lake Qarun and identified by using four standard references Boulenger (1907) ; Sandon (1950); Latif (1974) and Boraey (1974). The fishes were dissected and examined for helminth parasites. The parasites were fixed in 70% alcohol after relaxation. They were stained using Gower's carmine (Johri and Smyth,1956). Drawing were made to scale using a camera lucida. All measurements in millimeters unless stated otherwise . During the present investigation, the author recorded trematodes belonging to the genus Lectithobotrys Looss,1902 from Mugil cephalus caught from lake Qarun in Egypt.

RESULTS

The following description is based on four specimens collected from Mugil cephalus locally called "Bouri" caught from lake Qarun in December , 1992. Lecithobotrys (Lecithobotrys) imami n.sp.(Fig.1) is named in the honour of the distinguished Egyptian parasitologist the late Prof.E.A.Imam.(All measurements in median size of four specimens)

Morphological features :

The body is oval elongate,tappering anteriorly, 1.34 long and 0.6 wide. Body surface spinds, each spine 4 u in length, but these spines are easily shed. The length to width ratio is 2.23 : 1. The oral sucker is subterminal relatively larger than the ventral sucker 0.12 long and 0.15 wide. The ventral sucker

Losses(1902) established the genus Lecithobotrys for those Haploporid trematodes having short and wide caeca , extending back beyond the ventral sucker to the posterior border of the testis. Bifurcation of the intestine dorsal to the ventral sucker. Genital pore infront of the intestinal bifurcation.Testis median, not far behind the ventral sucker, between the caeca. Ovary median, infront of the testis. Vitellaria formed of seven spherical follicles in each side lateral to the middle of the caeca. Uterus with descending and ascending limbs, much folded in the posterior region behind the caeca and the gonads. Eggs very numerous, each containing a miracidium with eye-spots. L.putrescens Looss,1902 from Mugil auratus collected from triest was designated as the type species of the genus.

In (1970) L.vitellosus was added by Sharma and Cupta from Mugil parasia in India. Yamaguti (1971) outlined the generic diagnosis of Lecithobotrys Looss,1902 and he suggested a key to subgenera of Lecithobotrys as follows:-

1- Vitelline follicles massed together, forming symmetrical bunches,caeca usually short----------(Lecithobotrys) Looss,1902.

2- Vitelline follicles rather scattered; caeca long --(Paralecithobotrys) Freitas,1948.

He also listed L.putrescens Looss,1902 (Type species) under the subgenus Lecithobotrys Looss,1902, Martin (1973) added L.sprenti from Lisa argentea and Mugil cephalus from Australia. He agreed with Overstreet's opinion (Overstreet,1971) and transferred Saccocoelioides magniovatus ,Szidat,(1954) from Lecithobotrys Looss,(1902). He also transferred S.elongatus ,Szidat , (1954) to the genus Lecithobotrys , Looss(1902), Nasir and Gomez (1977) included S.magnus , Szidat (1954) in the genus Lecithobotrys and S.octavus , Szidat,(1954) may also belong to this genus.

is preequatorial 0.09 long and 0.12 wide. The ratio between the oral sucker/ ventral sucker diameters is 1.3 : 1.

The pharynx is large, elongate in shape , 0.10 long and 0.07 wide. The prepharynx is short 0.02 in length. The oesophagus is moderately long 0.19 in length. The intestinal caeca are short, tubular in shape and extending back far beyond the ventral sucker to the posterior end of testis. The bifurcation of the intestine occurs dorsal to the ventral sucker the caeca are 0.18 long and 0.04 wide. The testis is median, it is located not far behind the ventral sucker, between the caeca. The testis is 0.22 long and 0.20 wide. The hermaphroditic pouch is egg-shaped, 0.15 long and 0.12 wide. It includes an oval elongate internal seminal vesicle 0.09 in length; prostate duct, prostate bulb and a hermaphroditic duct. The metraterm and prostatic duct join together to form a hermaphroditic duct which opens by the genital pore. The external seminal vesicle is elongate 0.06 in length. The genital pore lies preacetabularly infront of the bifurcation of the intestine.

The ovary is median, egg-shaped, lies on the dorsal side of testis. The ovary is 0.07 long and 0.13 wide. The vitelline glands are formed of three irregular shaped follicles in each side lateral to teh middle of the caeca. The uterus has descending and ascending limbs occupying the middle third of the body. The eggs are numerous, each egg 40 u long and 19 u wide.

The excretory system consists of : flame cells, fine tubules, two pairs of accessory excretory pores, excretory vesicle and main excretory pore. The flame cells lead to fine branched tubules which are opened dorsolateral by one pair of accessory excretory pores on each side of the last third of the body. Moreover, the fine tubules are opened also in the excretory vesicle. The excretory vesicle is small saccular opened by the main excretory pore. The main

excretory pore is subterminal , it lies in a large depression in posterior extremity.

DISCUSSION

L. (Lecithobotrys) imami n.sp. can be easily distinguished from all the otehr known species of the genus Lecithobotrys mainly by the size and number of vitelline follicles, the excretory system , the length of the prepharynx, the size and shape of the pharynx and the body shape.

L.(Lecithobotrys) imami n.sp. is closely related to L.(Lecithobotrys) putrescens Looss,(1902) (the geno type) but differs from it by certain characters are shown in (Table 1) and summarized as follows :

1- The prepharynx is very short, but in Looss's specimens was long.

2- The size of the spharynx is very small,but in Looss's specimens was large.

3- The excretory system include fine tubules and two pairs of accessory excretory pores, but in Looss's specimens the accessory excretory pores were absent.

4- The excretory vesicle is small, but in Looss's specimens was very large.

5- The number of vitelline follicles are three, but in Looss's specimens were seven in number.

6- The caeca are short ending at the level of the postreior edge of testis, but in Looss's specimens were long ending posterior to testis.

The present author beleive that all the above differences are sufficient to designate L.(Lecithobotrys) imami as a new species.

Host : Mugil cephalus

Location : Intestine.

Locality : lake Qaroun.

Types : Holotype and paratype deposited in the Department of Biology, Faculty of Education, Cairo University, Fayoum, Egypt.

The following key is suggested to distinguish between the spec ies known so far from the genus Lecithobotrys Looss, 1902.

* Vitelline follicles massed together, forming symmetrical bunches, and caeca short.....(a)
* Vitelline follicles rather scattered and caeca long ..... (b)

a. Bifurcation if two caeca preacetabular, vitelline follicles divided into two symmetrical groups, each composed of a follicles enclosed a circle, uterus occupying all hindbody .....L.vitellosus Sharma & Cupta, (1970).

* Bifurcation of two caeca postacetabular, vitelline follicles divided into two symmertical compact groups not enclosing a circle, uterus leaving free space at posterior extermily..... (1)

1- Caeca short tubular, vitellaria 7 follicles in each side of caeca.... ....L.putrescens Looss, (1902).

* Caeca short tubular, vitellaria 3 follicles in each side of..... ... L.imami n.sp.
* Caeca short saccular, vitellaria more than 6 follicles in each side of caeca..... (2)

2- Prepharynx short, vitellaria 8 follicles in ecan side of caeca, and body oval-shaped.....L.magniovatus (Szidat, 1954), Martin, (1973).

* Prepharynx long, body elongate..... (3)

3- Vitellaria 6-8 follicles scattered in ovarioacetabular zone..... L.mugilis Rekharani and Madhavi (1985).

- Vitellaria 15-25 follicles in each side of caeca .....L.helmymohamedi Ramadan et al.(1988).
- Vitellaria 7-10 follicles in each side of caeca.....L.Sprenti Martin , (1973).

b. Vitellaria 7 follicles and prepharynx absent.....L.brasiliensis Freitas (1948).

- Vitellaria 11 follicles and prepharynx long.....L.africanus Manter and Pritchard,(1964).

REFERENCES

Boraey,F A.(1974) : Biological study of the family Mugilidae (grey mullets) in Lake Qarun,Ph.D.Thesis.Fac.of Science.Ain-Shams Univ.

Boulenger,C.A.(1907) : The fishes of the Nile.Hugh.Rees.Ltd,London.

Freitas,J.F.T.(1948) : Novo genero de Haploporinae (Haploporoidea).Mem.Inst. Osw.Cr.45 (3) : 587-589.

Johri,L.M. and Smyth,J.D.(1956) : A histochemical approach to the study of helminth morphology, parasitology, 46:107-116.

Latif.A.F.A.(1974) : Fisheries of Lake Nasser,Aswan Regional Planning, Lake Nasser, Devel,Cent.,16-106.

Looss,A.(1902) : Die distomen unterfamilie der Haploporinae.Arch.parasit.6 : 129-143.

Manter,H.W. and Pritchard,M.H.(1964) : Vermes Trematoda.Ann.Mus.Roy.Afr. Centr. in 8, Zool.(132) : 75-101.

Martin,W.E.(1973) : Life history of Saccocoelioides pearsoni n.sp.(Trematoda; Haploporidae). Trans.Amer.Soc.,92,80-95.

Meshal,A.H.(1973) : Water and salt budget of Lake Qarun,Fayoum,Egypt.Ph. D.Thesis.Alex. Univ.

Morcos, F. and Meshal, A.H.(1984) : Evaporation from Lake Qarun and its water budget. J.Cons.Int.Explor.Mer., 41 : 140-144.

Nasir and Gomez (1977) : Carassotrema tilapiae n.sp.(Haploporidae Nicoll,1914) from the fresh water fish, Tilapia mossambica (Peters), in Venezuela , Rivi.Parasit.,37,207-228.

Overstreet,R.M.(1971) : Some adult digenetic trematodes in striped mullet from the Northern Gulf of Mexico.J.Parasit.,27: 967-974.

Ramadan,M.M.; Saoud,M.F.A.; Ashour,A.A. and Mansour,D.A.(1988) : A review of the trematode genus Lecithobotrys (Haploporidae), with redescription of Lecithobotrys putrescens Looss,1902 and Lecithobotrys Helmymohamedi n.sp. from some Egyptian Lake Qarun fishes.J.Egypt.Vet.Med. Ass.,48,3,437-451.

Rekharani and Madhavi,R.(1985) : Digenetic trematodes from mullets of Visakhapatnam (India).J.of Natural History, 19, 929-951.

Sandon,H.(1950) : Illustrated guide to the freshwater fishes of Sudan.Khartoum pp.66.

Sharma,P.N. and Cupta,A.N.(1970) : Lecithobotrys vitellosus n.sp.(Haploporidae : trematodal) from India.Riv.Parasit.,31, 175-178.

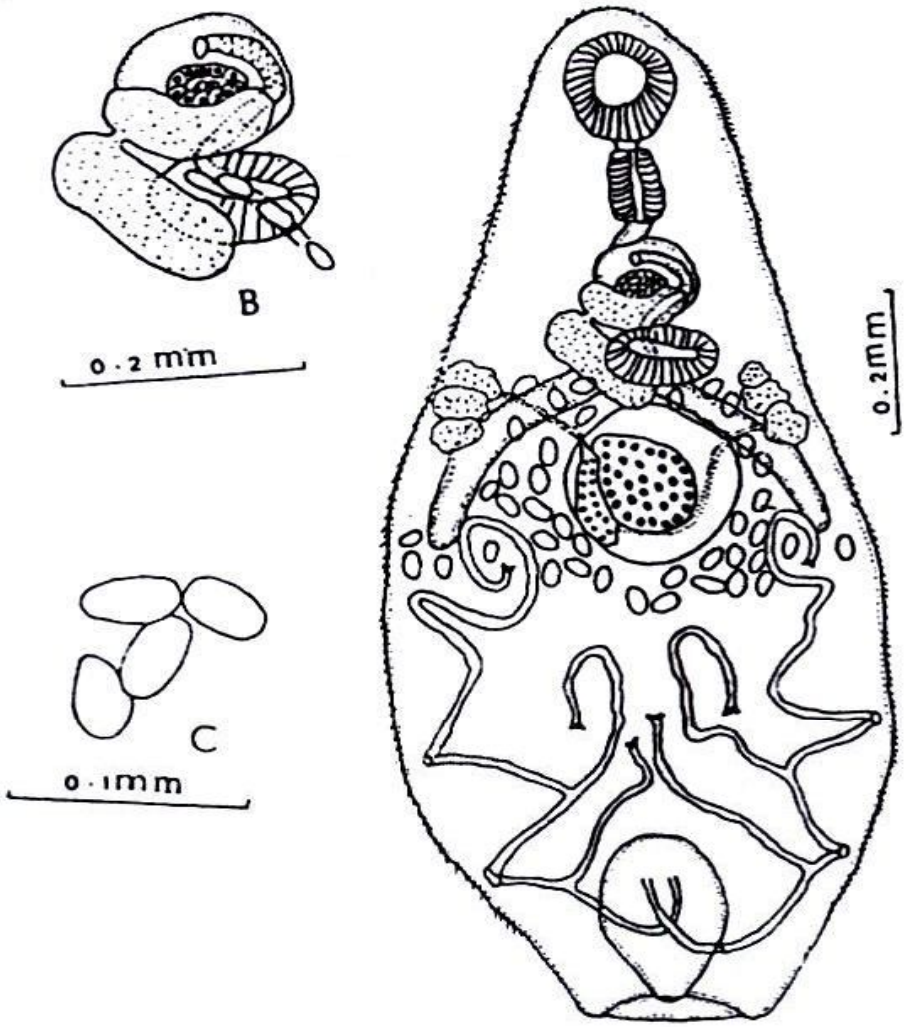
Szidat,L.(1954) : Trematodes neuvos de peces de agua dulce de la Republica Argentina Y Unintento para aclarar su caracter marino,Mus.argen.Cien. Nat.Zool.3,1-85.

Szidat,L.(1970) : Saccocoelioides octavus n.sp. nuvea especie del genero Saccocoelioides Szidat 1964 (Trematoda, Haploporinae Looss,1902) Revta Mus Argen.Cien.Nat."Bernardino Rivadavia", 10 : 82-100.

Yamaguti,S.(1971): Synopsis of digenetic trematodes of vertebrtes. Tokyo, Keigaku publ. 1074 pp.

Table (1) : Comparison between different species of the genus *Lecithobotrys* , Looss, 1902.

Characters	*L. Sprenti* Martin, 1973	*L. mugilis* Madhavi Et al, 1985	*L. Vitellosus* Sharma&Gupta, 1970	*L. Putersceens* Looss, 1902	*L. helmy - mohamedi* Ramadan Et al 1988	*L. magniovat[illegible]* (saidat, 19[illegible]) Martin, 19[illegible]	*L. imami* n.sp
Body-Shape	Elongate, with tubular glands anteriorly, spined	Elongate, tapering posteriorly and spined	Elongate and Spined	Fusiform, Spined	Elongate, Spined (5-4 u)	Fusiform, Spined	Elongate, [illegible]
Body size	0.56-0.75X0.13-0.18	0.39-0.4X20.13-0.18	1.23X0.38	2.3X0.75	1.08-1.30X0.39-0.43	0.7X0.36	1.34X0.6
Oral sucker	0.08-0.1X0.09-0.1	0.039-0.051 X 0.041-0.054	0.08X0.08	0.21	0.11-0.14X0.10-0.15	0.11X0.11	0.12X0.15
Ventral sucker	0.079-0.1X0.08-0.1	0.054-0.088 X 0.038-0.054	0.1X0.105	0.26	0.10-0.12X0.08-0.12	0.12X0.12	0.09X0.12
Suckers ratio	1.02 : 1	1:1-1.2	1:1.16	1.4:1	0.9-1.18 :1	0.91 :1	1.3 :1
Prepharynx length	0.06	0.058-0.088	0.03	Fairly long	0.02-0.04	Very short	0.02
Pharynx	0.08-0.27X0.08-0.09	0.027-0.031 X 0.039-0.058	0.045X0.035	0.1 X 0.1	0.07-0.10X0.08-0.13	0.08X0.08	0.10X0.07
Oesophagus length	0.18	0.028-0.058 long	0.075	Long	0.21-0.28		0.18
Caeca length	Saccular	Short, saccular		Short, tubular	0.12-0.14	Saccular	0.15X0.04
Testis	0.11-0.24X0.05-0.07	0.062-0.078 X 0.039-0.058	0.13X0.13	Postacetabulum	0.13-0.18X0.12-0.16	Rounded	0.22X0.20
Cirrus pouch	0.22-0.28X0.11	0.098-0.11 X 0.054-0.080		Small	0.16-0.25X0.12-0.18	Small	0.15X0.12
Seminal vesicle length	Bipartite	Bipartite	Bipartite	Bipartite	Bipartite 0.07-0.08	Bipartite	Bipartite En 0.05 Ex 0.09
Ovary	0.07-0.1X0.05-0.08	0.035-0.046 X 0.035-0.038	0.075X0.075	Pretesticular	0.06-0.1X0.06-0.07	Pretesticular	0.07X0.13
Vit. foll. No Side	7-10	8-9	9 in circle	7	15-26	8	3 in each side
excretory vesicle	Y-Shaped	Short, saccular		Elongate, saccular	Y-Shaped	Y-Shaped	Fine tubules
Eggs	60-77X23-40 u	78-79X31-37 u	22X15 u	44-47X28-28 u	42-47X18-28 u	95-114X41-60 u	40X18 u
Hosts	*Mugil spp.*	*Mugil spp.*	*Mugil spp.*	*Mugil spp.*	*Mugil spp.*	*Leporinus obtusidens*	*M. Cephalus*
Location	Intestine	Intestine	Intestine	Intestine	Intestine	Intestine	Intestine
Locality	Australia	India	India	Triest	Egypt, Lake Qarun	Argentina	Egypt, Lake Qarun



A) Adult worm

B) Cirrus pouch

C) Eggs

FIG. 1

الملخص العربـــــى

عـــزل نوع جـــديد من ديـــدان التريماتودا المتطفلـــة على اسماك البـــورى الاصـــيل من بحيرة قارون بجمهورية مصر العربية

د يهوم عبد الحميد منصور لعلوم الباســـــل

تم وصـــف نوع جـــديد من ديـــدان التريماتـــودا المتطفلـــة على اسماك البـــورى الاصـــيل من بحـــيرة قـــارون بالفيـــوم بجمهوريـــة مصـــر العربيـــة ، وهـــذا النوع يختلف عـــن جميـــع الانـــواع المعروفـــة من نفس الجنس باحتوائـــه على جهـــاز اخراجـــى متطـــور والقليـــل من الغـــدد المحية وقصـــر فى طـــول قبل البلعـــوم مـــع كـــبر فى حجـــم البلعـــوم ، كما ان هنـــاك اختـــلاف فى شـــكل الجســـم العام

تم عمـــل مقارنـــة بين جميـــع الانـــواع المعروفـــة واقتراح مفتـــاح مناســـب للتفرقـــة بينهـــم .

قسم الطفيليا ت ـ كليـــة التربيـــة ـ جامعة القاهرة ـ فرع الفيـــوم

البحوث الطبية البيطرية ببني سويف

مجلد ٤ العدد ٢ / ٢

سنة ١٩٩٤

يوليو