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A New Species *Tubulovesicula magnacirrosa* (Trematoda: Hemiuridae Looss, 1899) From the Fish *Pseudosciaena diacanthus* of Karachi Coast.

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ABSTRACT

A new species of the genus Tubulovesicula Yamaguti, 1934 is described here and named *Tubulovesicula magnacirrosa* n.sp. from the stomach of the fish *Pseudosciaena diacanthus* (Sciaenidae). This nematode is characterized by having long soma and small ecsoma. Oral sucker terminal, small, pharynx globular, adjacent to the oral sucker. Prepharynx absent. Intestinal caeca long, reaching to the posterior end of ecsoma. Ventral sucker large situated in the anterior-fourth of the body. Testes 2, small, almost equal in size, behind the ventral sucker. Seminal vesicle tubular, extending posteriorly to the posterior margin of ventral sucker. Pars prostatica long, with several prostatic gland cells. Hermaphroditic duct is enclosed in muscular pouch. Sinus sac large, globular, genital pore preacetabular. Ovary globular lying in the middle of the soma. Vitellaria consist of 7 tubules radiating posteriorly from the ovary, postequatorial in soma and far anterior to ecsoma. Uterus occupying, most part of the body, not reaching, into the ecsoma.

Keywords: Tubulovesicula magnacirrosa n.sp. fish, stomach, Karachi coast, Pakistan.

INTRODUCTION

Members of the family Hemiuridae Looss, 1899 are among the most frequently encountered digeneans in deep benthic teleosts. A variety of genera including. Tubulovesicula have been described from various parts of the world including Pakistan (Bilqees and Nighat, 1981; Bhutta and Khan, 1975; Linton, 1898, 1905, 1940; Nagaty, 1956; Nagaty et.al Abdel-Aal, 1962; Park, 1936; Siddiqi and Cable, 1960; Nicoll. 1914,1915, Yamaguti, 1934, 1938, 1939,1958, 1971; Zaidi and Khan, 1977; *T australica* Lebedev, 1968a, *T. longicaudata* T. Lebedev, 1968b, Sauridia Gu and Shen, 1978a,1978b, *T. sexaginta* Li and Sun, 1994, *T. lycodontis* Toman, 1992, T zonichthydis Shen, 1990*T yamagutii* Ramadan, 1984, *T. alviga* Aleshkina, 1983, Shaukat et.al 2008, Shaukat and Bilqees et.al. 2010 a, Bilqees et al. 2010 b; *T. dorabi* Bilqees et. al 2010, *T. olivaceus* Shaukat and Bilqees 2011.)

Species of the genus Tubulovesicula are known from fishes of Karachi coast including. *Tubulovesicula olivaceus* from the fish *Pomadasys olivaceum* 2011. *T microcaudtum* from the fish *Otohthus* argenteus Shaukat et al, 2008, *T. spari* Yamaguti, 1934; (Bilqees, 1981) from the fish *Muraenesox cinereus; T. magna* Bilqees and Nighat, 1981,*T. dorabi* from the fish Chirocentous dorab(Forsk.) 2010, *T. olivaceus* Shaukat and Bilgees 2011 from the fish *Pomadasys olivacetts, T. anguillae* Yamaguti, 1934; (Zaidi and Khan) from *Harpodon nehereus* and *T. anguisticauda* (Nicoll, 1914); Yamaguti, 1934; Bhutta and Khan, 1975 from *Muraenesox cinereus*. He present species is regarded new and named as *Tubulovesicula magnacirrosa* which refers to the large cirrus sac.

MATERIALS AND METHODS

The fish *Pseudosciaena diacanthus* were

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purchased from West Wharf, Fish Harbour, Karachi coast. Out of 17 fishes 2 were infected with 7 trematodes. Specimens were fixed in AFA. solution, a mixture of 70% ethyl alcohol, formalin and acetic acid in the ratio of 90:7:3, for 24 hours, washed several times with 70% ethyl alcohol, stained with Mayer's Carmalum, dehydrated in graded series of alcohols, cleared in clove oil and xylene and mounted permanently in Canada balsam. Measurements are given length by width in millimeters. Drawings were made with the help of a camera lucida. Holotype and paratype specimens arc in the collection of Department of Zoology, Jinnah University For Women, Karachi and will he deposited in the Natural History Museum, Cromwell Road, London.

TUBULOVESICULA MAGNACIRROSA N.SP.

(Figs. 1-2)

Family:	Hemiuridae Looss, 1899
Sub-family:	Diurinae Looss, 1907 (Syn. Stomachicolinae Yamaguti, 1958)
Genus:	Tubulovesicula Yamaguti, 1934 Syn. Led/hunts Pigulewsky, 1938
Species:	Tubulovesicula magnacirrosa n.sp.
Host:	Pseudosciaena diacanthus (Sciaenidae)
Location:	Stomach
Locality:	Karachi coast, Pakistan
No. of specimens:	7 specimens from two hosts, 17 fishes were examined.
Holotype:	JUW TI 1

RESULTS AND DESCRIPTION

Body spindle-shaped, differentiated into soma and ecsoma. Soma is very long, ecsoma small. Oral sucker terminal, small as compared to ventral sucker. Pharynx globular, adjacent to the oral sucker. Prepharynx absent. Intestinal caeca long, reaching to the posterior end of ecsoma. Ventral sucker large situated in the anterior-fourth of the body.

Testes are 2, small, almost equal in size, far behind the ventral sucker. Seminal vesicle tubular, extending posteriorly to the posterior margin of ventral sucker. Pars prostatica long, with numerous prostatic cells. Sinus sac pressed out, it is large, globular. Genital opening is pre-acetabular.

Ovary is at a considerable distance posterior to testes. Vitellaria consist of 7 tubules radiating posteriorly from the ovary, post-equatorial in soma and far anterior to ecsoma. Uterus is occupying most part of the body not reaching into the ecsoma and passes forward beside the acetabulum and pre-acetabular area joining the hermaphroditic duct. Excretory pore is terminal.

PRINCIPLE MEASUREMENTS OF T. MAGNACIRROS A N.SP.

(IN MILLIMETERS)

Body size	9.3 – 9.35 x 1.4 – 1.42
Soma length	6.3 – 6.5
Soma width	1.40 – 1.42
Ecsoma length	2.8 – 3.0
Ecsoma width	0.41 – 0.42
Forehody	1.54 - 1.55 x 0.87 - 0.88
I find body length	7.2 - 7.25
Oral sucker	0.4 - 0.41 x 0.38 - 0.381
Pharynx	0.10 - 0.11 x 0.20 - 0.21
Ventral sucker	0.78 - 0.79 x 0.54 - 0.541
Sucker width ratio	1: 0.076 - 0.077
Pars prostatica	1.11 - 1.30 x 0.37 - 0.38
Seminal vesicle	0.20 x 0.21 - 0.21 - 0.22
Ventral sucker to seminal vesicle	Negligible
Ventral sucker to	

anterior testis	0.55 - 0.65
Anterior testis	0.2 - 0.24 x 0.20 - 0.22
Posterior testis to ovary	0.50 - 0.51
Number of vitelline tubules	7
Ovary	0.240 - 0.241 x 0.22 - 0.23
Eggs	0.051 - 0.061 x 0.051 - 0.080

ETYMYOLOGY: The present new species *Tubulovesicula magnacirrosa* refers to the large cirrus sac.

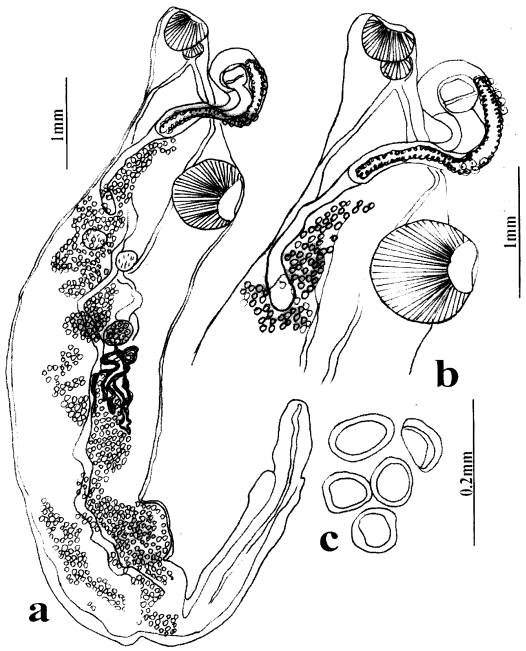

Fig.1.(a) Tubulovesicula magnacirrosa s.sp., holotype,entira. (b) Pre-acetabular region showing Large cirrus sac and associate structure. (c) Eggs of the same

DISCUSSION

The present species is characterized by having long soma, short and narrow ecsoma and sucker width ratio1:0.076 or 0.077, uterus not reaching into ecsoma. Ovary is situated almost in the middle of the soma from ecsoma. Vitellaria far anterior to ecsoma. Testes almost at equal distance between ovary and ventral sucker. Seminal vesicle is long, tubular, reaching posteriorly at the level of base of ventral sucker. Pars prostatica large, containing numerous prostatic cells.

Hermaphroditic duct small, sinus sac or sinus pouch is large, rounded anteriorly. Genital opening almost at equal distance of intestinal bifurcation and ventral sucker. The present specimen is included in this genus as it shows more of the generic characters with variations in body shape, terminal oral sucker, large cirrus sac. Yamaguti (1934) also described *T. anguillae* and *T muraenesocis*.

Later on several species have been added in the genus including T angusticauda (Nicoll, 1915); Yamaguti, 1934; *T. californica* Park, 1936; *T. diucopae* Nagaty et Abdel-Aal, 1962; *T. lindburgi* (Layman, 1930); Yamaguti, 1934; *T. madurensis* Nigrelli, 1940; *T. megnacetebulum* Yamaguti, 1939; *T. marsupialia* Oslanarin, 1965; *T. nanamoensis* (McFarlane, 1936); Manter, 1947; *T. pinguis* (Linton, 1940); Manter, 1947; *T. pseudorhombi*, Yamaguti, 1939; *T. serruni* Nagaty, 1956. Some species were regarded synonym of other species of the genus or other genus. As mention above live species .of the genus are known from marine fishes of Pakistan including *T. spari* Yamaguti, 1934; (Bilqees, 1981) from the fish *Muraenesox cinereus. T. anguillae* Yamaguti, 1934 (Zaidi and Khan, 1977) from *Horpodon nehreus, T. magria* Bilqees and Nighat, 1981, from Pomadesys olivaceum: *T. anguisticauda* Nicoll, 1914, Yamaguti, 1934 (Bhutta and Khan, 1975), Bilqees, 1981 from *Muraenesox cinereus* and *T. microcauda* Shaukat et al., 2008 from *Otolithus argenteus.*

The six Pakistani species and species found in

different parts of the world are compared with the present new species *T. magnacirrosa, T. spari* is different in having small body. *T. dorabi* Bilqees et. al 2010 is different in having flattened and plump body with tail poorly demarcated both soma and ecsoma not clearly differentiated since the body is plump. In *T. anguillae* the body is equally divided into soma and ecsoma. In *T. pseudorhombi* the body is fusi form. pointed at both ends, very broad in the middle of ecsoma. Tail is short and straight. In *T. magna* the tail is knob-like. In *T. lindbergi* the anterior end is broadly rounded. In *T. olivaceus* body is long, tail small rounded posterioly soma very large while in the present specimen *T. magnacirrosa* the body is very long and spindle-shaped. and small soma covering, almost the entire length. In *T. serrani* Nagaty, 1954 the body is very long, slender, ecsoma is equal in length to that of body proper, about half of ecsoma extended while all the new species described are different in length from *T. serrani*. In *T. serrani* the sinus sac is ovoid,thick-walled containing hermaphroditic vesicle and hermaphroditic duct, genital pore immediately anterior to intestinal bifurcation. Ovary is also ovoid as large as one testis. Vitellaria consist of 8 tubules. Uterus lies between ovary and ecsoma.

Manter (1954) has shown that number of vitelline tubules in a species of Tubulovesicula may be either 7 or 8 arranged in various positions.

The chief difference is the very long pars prostatica in *T. anguillae* where it is much longer than the seminal vesicle, also uterus extend far into the ecsoma in *T. anguillae*, while in all other species the position of uterus is quite different. *T. microcaudum* the uterus does not extend into the ecsoma, also vitelline tubules are 7 in number in all species described above.

In *T. dorabi* Bilqees et al. 2010 with other differences vitelline tubules arc transversely arranged and tail is wide, testes are relatively small, parsprostatica long, hermaphroditic pouch is muscular, genital pore is at the level of the intestinal bifurcation. Ovary is bean- shaped, sub median in the anterior half of the body.

If we compare the seminal vesicle of different species, in *T. anguisticauda* seminal vesicle is tubular and not enclosed in muscular pouch. In *T. spari* seminal vesicle is long and slender, broad at the base, runs sinuously on the postero-dorsal side of the acetabulum. In *T. anguillae* seminal vesicle is S-shaped. In *T. magna* the seminal vesicle is tubular, more or less winding, and pre-testicular in position. In *T. pseudorhombi* seminal vesicle is long, spirally coiled. In *T. lindbergi* it is tubular, sinuous at about the level of ventral sucker. In *T. pinguis* the seminal vesicle reaches near about the anterior testis. *T. anguisticauda, T. serrani, T. muraenesocis, T. magna, T. diacope, T. madurensis, T. marsupialis, T. nanomoensis* and *T. californica* have tubular seminal vesicle. *T. dorabi* as compared with other Pakistani species and species found in the world we notice that seminal vesicle is twisted at the dorsal or middle level of acetabulum while in the present specimen *T. magnacirrosa* n.sp. The seminal vesicle is tubular, extending, to posterior margin of the ventral sucker.

The position of uterus in *T. anguisticauda* is different occupying a major portion of the body space between the ventral suckers to the proximal part of the tail. In *T. spari* uterus coils down on the left side hall way into the tail. In *T. anguillae* the position of uterus is entirely different from other specimen of Tubulovesicula, which reaches the middle of the ecsoma only. In *T. muraenesocis* the uterus is confined to the body proper only. In

T. pseudorhombi uterus slightly enters the ecsoma. In *T. lindbergi* uterus shows descending and ascending arms, much coiled. In *T. pinguis* uterus slightly protrudes into the ecsoma uterus in *T. dorabi* slightly enters into the tail region. anteriorly reaching to hermaphroditic duct. While in the present specimen *T. magnacirrosa* n.sp. The uterus occupying most part of the body not extending into the ecsoma and passes forward beside the acetabultan and pre-testicular area.

The new species *T. magnacirrosa* with *T. microcaudum* following differential characteristics are found *T. microcaudum* is smaller in size as compared to *T. magnacirrosa.* In *T. magnacirrosa* the entire body size is greater and tail is also long. The cirrus sac and sinus sac are also large in size as compared to *T. magnacirrosa*. The testes are relatively far from the ventral sucker in *T. magnacirrosa* n.sp. than in microcaudum.

The present new species *T. magnacirrosa* from the fish *Pseudosciana dicanthus* is the seventh species belonging to genus Tubulovesicula reported from Pakistan having large cirrus sac. Parsprostatica, long with numerous prostatic cells. Sinus sac large and globular. The above characteristics differentiate the new species from other Pakistani species.

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