

TWO NEW HEMIURID TREMATODES FROM THE FISH *PLECTORHYNCHUS CINCTUS* (T.S.) OF KARACHI COAST

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ABSTRACT

Two new trematodes of genus *Tubulovesicula* (Hemiuridae: Dinurinae) are described here from the stomach of the fish *Plectorhynchus cinctus* (T.S.) of Karachi coast, namely *Tubulovesicula microrchis* n.sp., and *Tubulovesicula magnavesicula* n.sp. *T. microrchis* is characterized by having elongate body, short ecsoma, oral sucker small, wider than long, prepharynx and esophagus absent, caeca long reaching to posterior extremity of ecsoma. Acetabulum larger than oral sucker, round, in anterior third of body proper. Testes two, ovary small, between acetabulum and ovary, separate, oblique. Seminal vesicle long. Tubular, slightly twisted, reaching far posterior to acetabulum, pars prostatica large, mostly preacetabular, hermaphroditic duct enclosed in a pouch. Genital pore posteroventral to pharynx. Ovary post-testicular, oblong, in anterior half of body proper. Vitellaria consist of long winding, thick tubules, laterally overlapping caeca reaching to body margins, far anterior from end of body proper, uterus winding reach posteriorly to a little distance but not entering into ecsoma, then ascending anteriorly between the two testes to the preacetabular region. Another species *T. macrovesicula* n.sp. also has elongate body with ecsoma more than half of body proper in length. Oral sucker cup-shaped, subterminal, prepharynx and esophagus absent. Caeca long reaching to posterior extremity of ecsoma. Acetabulum large, rounded, in anterior half of body proper. Genital opening at the base of pharynx. Testes two, postequatorial, obliquely symmetrical, seminal vesicle large, mostly postacetabular reaching to the anterior and close to posterior testis, pars prostatica preacetabular, hermaphroditic duct long, preacetabular, hermaphroditic pouch prominent. Ovary rounded to oval, near posterior end of body proper, vitellaria consist of 6-7 long, twisted tubules, two small, directed anteriorly, 4-5 directed posteriorly reaching into tail. Uterus coiled entering to a long distance into ecsoma.

Keywords: Two new trematodes, genus *Tubulovesicula*, stomach, marine fish, Karachi coast, Pakistan.

INTRODUCTION

Six species of genus *Tubulovesicula* Yamaguti, 1934 are known from the fishes of Karachi coast (Bilqees, 1981; Zaidi & Khan, 1977; Bhutta & Khan, 1975; Bilqees & Nighat, 1981; Shaukat *et al.*, 2008). Species of the genus described previously from marine fishes of Pakistan are *T. spari* Yamaguti, 1934 (Bilqees, 1981); *T. anguillae* Yamaguti, 1934 (Zaidi & Khan, 1977); *T. angusticaudum* Nicoll, 1914, Yamaguti, 1934 (Bhutta & Khan, 1975); *T. magna* Bilqees & Nighat, 1981; *T. microcauda* Shaukat *et al.*, 2008; *T. dorabi* Bilqees *et al.*, 2010. Present two species of genus are regarded new for which the names *Tubulovesicula microrchis* n.sp. referring to small testes and *T. macrovesicula* n.sp. referring to large seminal vesicle, are proposed and described here.

MATERIALS AND METHODS

One hundred and nine fishes *Plectorhynchus cinctus* were collected from the fish harbour, Karachi coast during a period of 11 month (January – November 2005). Out of these four trematodes were recovered from the stomach of one fish and six from the stomach of other fish which grossly appeared different from the other trematodes. These were fixed in AFA (70% ethyle alcohol 92 ml + formalin 5 ml + acetic acid 3 ml) under slight cover glass pressure, stained with Mayer's carmalum, dehydrated, cleared in clove oil and xylene and mounted permanently in Canada balsam. Diagrams are made with a camera Lucida, measurements are given length by width in millimeters. Holotype and paratype specimens are deposited in the Department of Zoology, Jinnah University for Women, Karachi and are available to other scientists on loan.

Tubulovesicula microrchis n.sp.

(Fig.1)

Host: *Plectorhynchus cinctus* (T.S.) Pomadasyidae
Location: Stomach
Locality: Fish harbour, Karachi coast

No. of specimens: 4 from one fish, 109 fishes examined
 Holotype No.: BMC-T181

Diagnosis: Body elongate, relatively small, total body length 2.9 – 3.1, width 0.59 – 0.62 widest at the acetabular level. Ecsoma or tail small, widest at the junction with soma, oral sucker terminal, wider than long. 0.15 – 0.16 by 0.19 – 0.29 in size. Prepharynx absent, pharynx small, 0.09 – 0.11 by 0.10 – 0.11, esophagus also absent, caeca long reaching to posterior extremity of soma not entering into tail. Acetabulum in anterior third of soma, nearer to anterior end, rounded, larger than oral sucker, 0.35 – 0.38 in diameter. Testes two, small, transversely elongate, postacetabular, between acetabulum and ovary 0.07 – 0.09 by 0.12 – 0.13 in size. Seminal vesicle long, slightly twisted, 0.59 – 0.62 in length, mostly postacetabular, extending anteriorly to its lateral side, pars prostatica large, almost preacetabular, 0.49 – 0.51 in length, 0.17 – 0.19 in width, hermaphroditic duct small, hermaphroditic pouch prominent. 0.21 – 0.24 by 0.15 – 0.17 in size. Genital pore posterolateral to pharynx at the margin of right caeca. Ovary pre-equatorial, oblong, in anterior half of soma, 0.22 – 0.23 by 0.17 – 0.19 in size. Vitellaria consist of seven, long, thick, winding tubules extending laterally to the body margins overlapping caeca. Uterus reaching posteriorly to a little distance terminating much anterior to end of soma, not entering into ecsoma, anteriorly extending, between the two testes to preacetabular region. Eggs numerous, 0.031 – 0.034 by 0.0011 – 0.0013. Uterus long, coiled, extending posterior to vitellaria not reaching into tail, anteriorly running dorsal to acetabulum and joining the hermaphroditic duct. Excretory vesicle long, arms uniting at the base of pharynx.

***Tubulovesicula macrovesicula* n.sp.**

(Figs. 2)

Host: *Plectorhynchus cinctus* (T.S.) Pomadasyidae
 Location: Stomach
 Locality: Fish harbour, Karachi coast
 No. of specimens: 4 from one fish, 109 examined
 Holotype No.: BMC-T186

Diagnosis: (Based on 6 specimens). Body long, delicate and smooth. Body length with ecsoma, 3.7 – 4.1 width 0.55 – 0.56, widest at the acetabular level. Ecsoma about one and a half time smaller than soma, 1.61 – 1.69 by 0.50 – 0.59 in size, slightly broader at the junction with soma terminating into a bluntly pointed end. Anterior end of body tapering at the level of pharynx with rounded anterior extremity. Oral sucker almost rounded, subterminal with a small pre oral lobe, 0.24 – 0.27 in diameter. Prepharynx and esophagus absent, pharynx small, 0.13 – 0.14 in diameter. Acetabulum much larger than oral sucker, rounded, 0.44 – 0.48 in diameter. Testes two, postacetabular, postequatorial, oval to rounded, almost symmetrical, 0.21 – 0.23 by 0.13 – 0.17 in size. Seminal vesicle large, mostly postacetabular, anteriorly becomes narrow, lateral to acetabulum, much wider posteriorly reaching to level of left testis, slightly twisted 0.40 – 0.42 long, 0.14 – 0.1 wide, connected with the pars prostatica anterior to acetabulum. Pars prostatica long 0.43 – 0.45 in length, with numerous prostatic cells. Hermaphroditic duct enclosed in a prominent hermaphroditic pouch, 0.21 – 0.23 by 0.15 – 0.18 in size. Genital pore at the base of pharynx. Ovary near the base of soma, slightly larger and at a little distance posterior to testes. Vitellaria consist of six long irregular tubular, two directed anteriorly and four posteriorly, entering into ecsoma. Uterus long, reaching to a greater distance into tail, posterior to vitellaria, anteriorly extending between the testes, and in the preacetabular region joining the small hermaphroditic duct at the base of hermaphroditic pouch. Eggs numerous, oval in shape, measuring 0.046 – 0.48 by 0.005 – 0.006 in size. Excretory vesicle tubular, long, arms united at the base of oral sucker.

DISCUSSION

The present two species of the genus *Tubulovesicula* Yamaguti, 1934 *T. microrchis* n.sp. and *T. macrovesicula* n.sp. from the fish *Plectorhynchus cinctus* are distinctly different from the previously described species from Pakistan and elsewhere in important diagnostic features.

In *T. microrchis* tail is short, flattened, testes are very small, seminal vesicle is long tubular, slightly twisted, reaching far posterior to acetabulum. Seminal vesicle in other species is long and slender (*T. spari* Yamaguti, 1934, *T. microcaudum*); S-shaped (*T. anguillae* Yamaguti, 1934); long and spirally coiled (*T. pseudorhombi* Yamaguti, 1938); tubular (*T. angusticauda* Nicoll, 1915; Yamaguti, 1934; *T. serrani* Nagaty, 1956; *T. muraenesocis* Yamaguti, 1934; *T. magna* Bilquees & Nighat, 1981 *T. lindbergi* (Layman, 1930) Yamaguti, 1934; *T. pinguis* (Linton, 1940) Manter, 1947; *T. diacope* Nagaty et Abdel-Aul, 1962; *T. madurensis* Nigrilli, 1940; *T. marsupialis*

Oshmarin, 1965; *T. herbrue* Nagaty *et* Abdel-Aul, 1962; *T. nanomoensis* (McFarlane, 1936, Manter, 1947), (*T. californica* Perk, 1936) or long and twisted (*T. dorabi* Bilqees *et al.*, 2010).

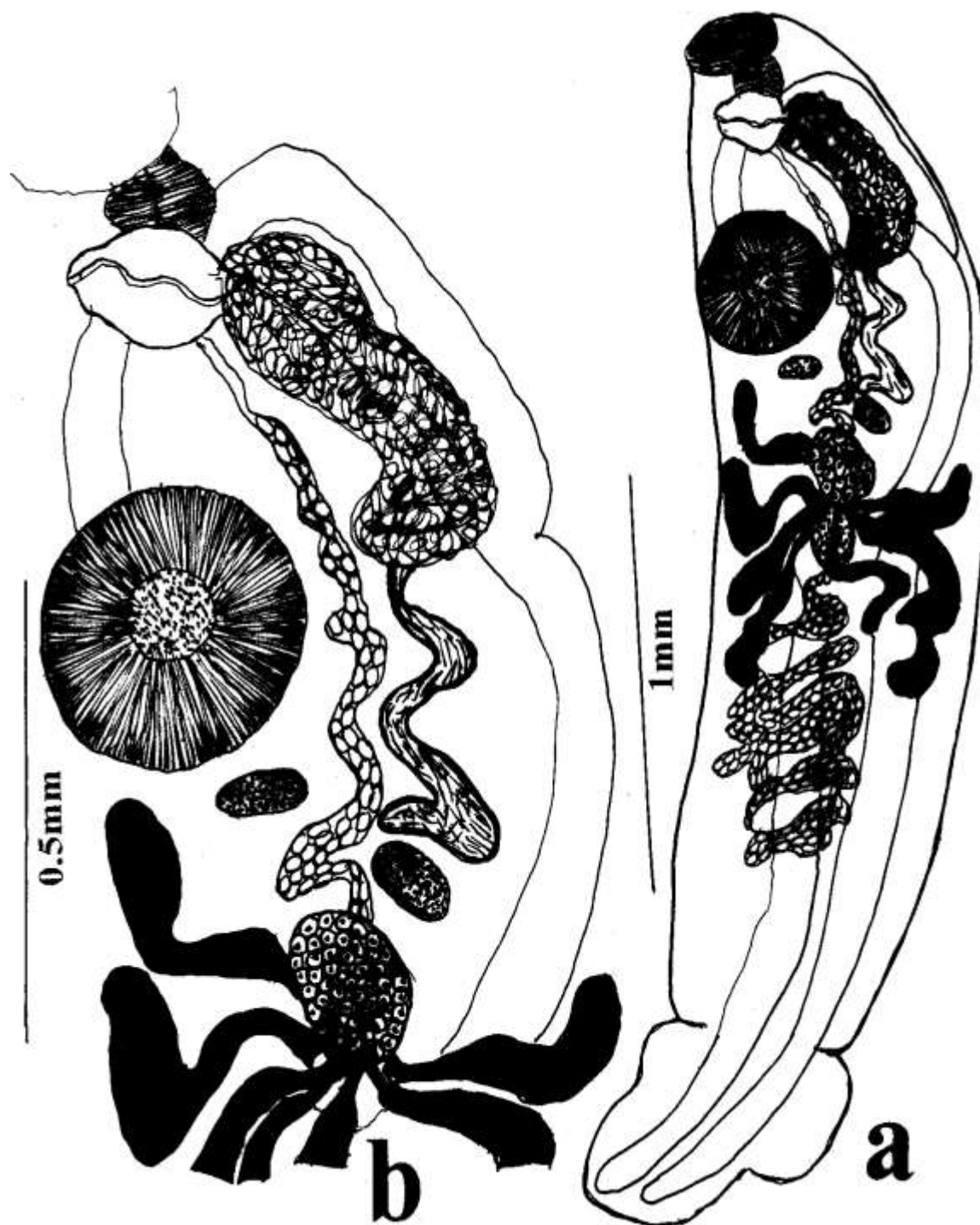


Fig.1. *Tubulovesicula microrchis* n.sp. a) Holotype, entire specimen b) Preacetabular and postacetabular region showing testes, seminal vesicle, pars prostatica, ovary and associated structures.

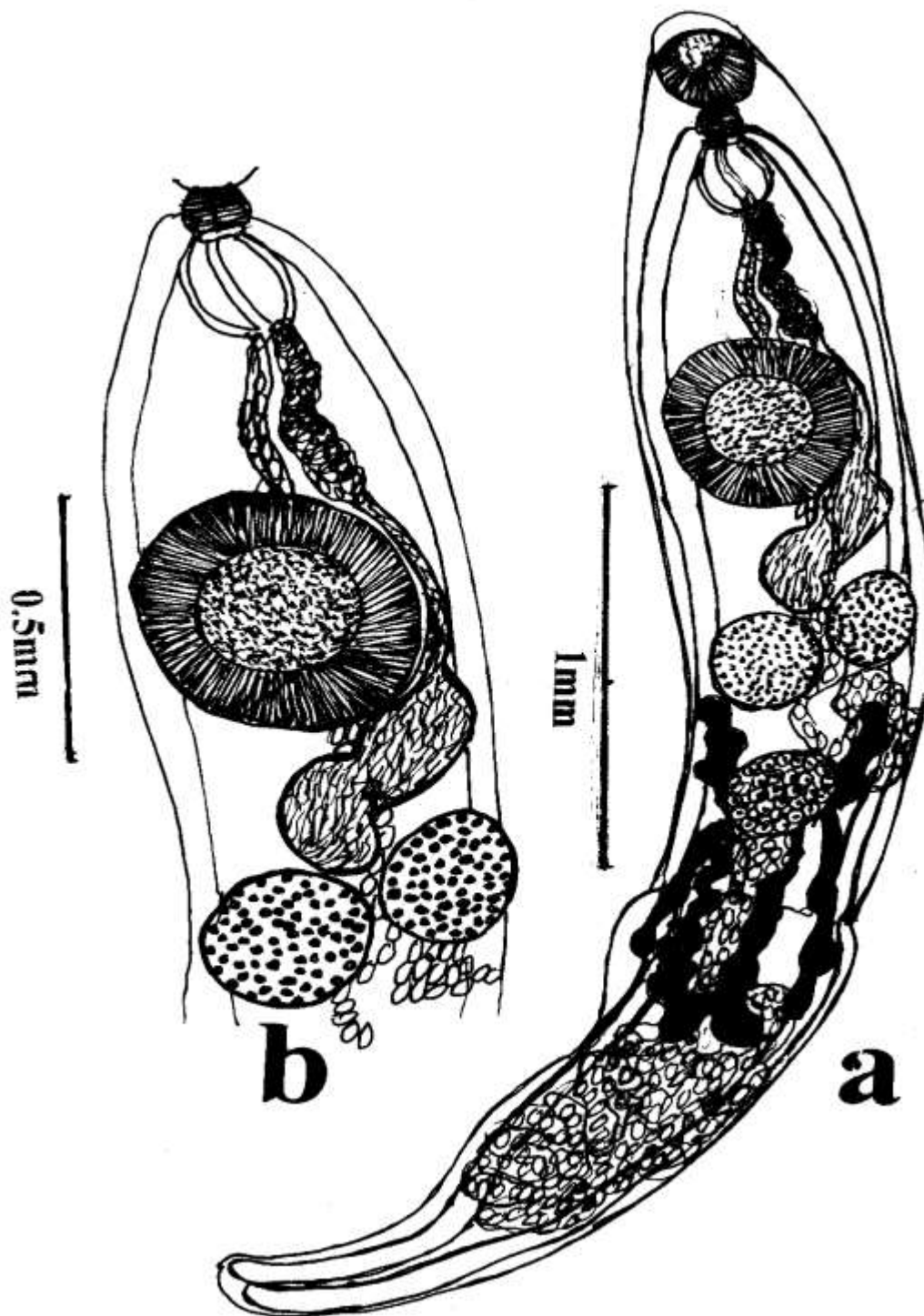


Fig.2. *Tubulovesicula macrovesicula* n.sp. a) Holotype, entire specimen b) Preacetabular and postacetabular region showing testes, large seminal vesicle, pars protatica and associated structures.

The above mentioned species comparatively have larger testes, different position of ovary and vitellaria, and relative size of the tail. *T. magnacetabulum* Yamaguti, 1939 has very large acetabulum and body widest at this level, seminal vesicle tubular, although testes are small, right testis is immediately anterior and close to acetabulum. According to Yamaguti (1971) *T. californica*, *T. diacope* and *T. herbrue* are species inq.

The other new species *T. macrovesicula* is peculiar in having a large seminal vesicle extending posterior to acetabulum and consisting of a large and wide proximal region slightly twisted, with distal portion tubular joining the elongate pars prostatica in the preacetabular region. In this respect this species is different from all other previous species of the genus mentioned above as well as from *T. microrchis* n.sp. described here. Other differences are in body size, relative size of body and tail, position and size of ovary, testes, posterior extent of vitellaria and tail.

The species previously reported from marine fishes of Pakistan are *T. spari* Yamaguti, 1934 from *Muraenesox cinereus* (Bilqees, 1981); *T. angusticauda* (Nicoll, 1914) Yamaguti, 1934, from the same fish host (Bhutta & Khan, 1975); *T. magna* Bilqees & Nighat, 1981; and *T. dorabi* Bilqees *et al.*, 2010 from *Chirocentrus dorab*. These species are also distinguishable from the two new species described here in the above mentioned diagnostic features. The fish hosts also belong to different fish families. *T. anguillae* Yamaguti, 1934 (Bilqees, 1981) from the fish *Hopodon nehereus*; *T. microcauda* Shaukat *et al.*, 2008 from the fish *Otolithus argenteus*, and *T. pinguis* has cervical glands which are absent in other species including the present species.

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