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A New Subfamily Asymmetrinae (Trematoda: Fellodistomidae) with *Asymmetra magnacirrosa* n.gn. n.sp. from the Fish, *Sparus berda* (Forsk.) of Karachi Coast

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ABSTRACT

A new trematode subfamily Asymmetrinae with *Asymmetra magnacirrosa* n.gen. n.sp. is described here from the intestine of the fish *Sparus berda* of Karachi coast and is accommodated in the new subfamily Asymmetrinae. The new trematode is characterized by having a small, elongate to elliptical body, slightly subterminal, large, rounded, oral sucker, prepharynx prominent, pharynx small, esophagus moderate size, ceca reaching behind middle of the body and acetabulum round, smaller than oral sucker, in anterior third of the body. Testes are two, rounded to oval in shape, submedian, oblique one anteriolateral and other posterolateral to acetabulum, cirrus sac large, transversely elongate, between ovary and anterior to acetabulum containing seminal vesicle and pars prostatica, genital atrium tubular, cirrus sac long with a bulb like terminal reaching posterior to cirrus sac at the anterior level of posterior testis. Genital pore postbifurcal, submedian, with a saccular outgrowth, ovary is smaller, submedian, pretesticular. Vitellaria is in acetabular and preacetabular zone, postovarian to post-testicular, consisting of 8-9 large rounded to oval follicles. Uterus long, coiled inbetween post vittaline zone, reaching to near posterior end of body, anteriorly reaching to genital pore. Eggs numerous, small. Excretory vesicle large, Y-shaped.

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FMB conceived the study. SP and MFH collected the specimens. BK prepared the figures. FMB and AK wrote the article.

Key words:
Trematode, *Asymmetra magnacinosa*, *Saprus berda*, Asymmetrinae.

INTRODUCTION

Trematodes are the most common parasites of fishes of Karachi coast (Bilqees, 1981; Shaukat and Bilqees, 2005, 2012). Trematodes of family Fellodistomidae Nicoll, 1913 are also known from fishes of Karachi coast (Bilqees, 1972, 1976a,b, 1978, 1978). During a routine survey of trematodes of fishes of Karachi coast some peculiar trematodes were recovered from the fish *Sparus berda* (Forsk.). These are included in the family Fellodistomidae but could not be accommodated in any of the existing subfamilies of the family and a new subfamily Asymmetrinae is proposed and reported here, with description of *Asymmetra magnacinosa* n.gen., n.sp.

MATERIALS AND METHODS

Twenty nine fishes *Sparus berda* were collected from the fish harbour, Karachi coast, and examined for trematode parasites. Out of these from the intestine of one fish 5 trematodes were recovered. These were fixed in F.A.A. (70% alcohol 92 ml + formalin 5 ml + acetic acid 3 ml) for 24 hours, stained with Mayer's carmalum, dehydrated, cleared in clove oil and xylene and mounted permanently in Canada balsam. Diagrams were 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 research workers on loan.

Asymmetra magnacinosa n.gen., n.sp.
(Figs. 1-2)

Host	*Sparus berda* (Forsk.)
Location	Intestine
Locality	Fish harbour, Karachi coast
No. of specimens	5 from a single fish, 29 fishes were examined
Holotype No.	BMC-T157

Body small, smooth, 1.6–1.9 in length, 0.61–0.69 in width, greatest width at the level of cirrus sac and ovary, oral sucker subterminal, rounded, 0.17–0.19 in diameter, preoral lobe small, 0.020–0.030 in diameter. Prepharynx prominent 0.05–0.07 in length, pharynx been-shaped, 0.05–0.06 by 0.07–0.09 in size. Esophagus moderately

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long, 0.11–0.13 in length. Testes lateral, obliquely tandem, postovarian, anterior slightly smaller than the posterior. Anterior testis, 0.11–0.13 by 0.09–0.10, and posterior 0.15–0.17 by 0.09–0.11 in size. Cirrus sac is large, preacetabular, and pretesticular near to ovary, obliquely transverse, 0.29–0.30 by 0.08–0.09 in size, containing rounded to oval seminal vesicle and pars prostatica. Cirrus very long, tubular with bulb-like terminal end 0.05–0.06 in diameter, provided with two spine-like projections. Cirrus through the genital opening coming out directed backward posterior to cirrus sac reaching to the level of posterior testis. Genital atrium tubular, genital pore postbifurcal, submedian with a saccular outgrowth, 0.11–0.13 in diameter. Ovary rounded, submedian, pretesticular, laterally overlapping left ceca. Ovary 0.11–0.12 in diameter. Vitellaria consist of 8-9 rounded, oval to slightly irregular follicles commencing at the level of anterior to posterior testis on the left and acetabular to postesticular on the right. Uterus coiled, mostly in hindbody, not reaching to posterior extremity and terminating slightly anterior to posterior end, anteriorly reaching to genital atrium. Eggs numerous, small, elongated, 0.010–0.011 by 0.006–0.008 in size. Excretory vesicle is Y-shaped, excretory pore terminal.

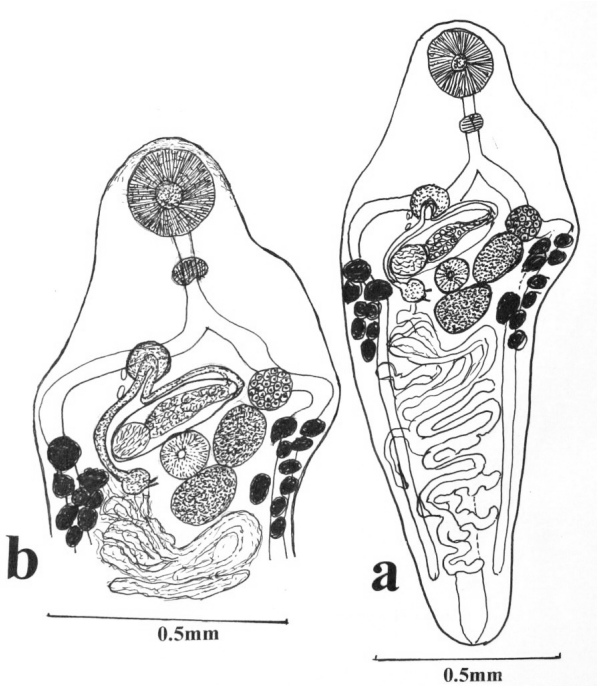

Fig. 1. *Asymmetra magnacirrosa* n.gen., n. sp. a, whole mount holotype; b, anterior body region showing pre and postacetabular region, gonads, cirrus sac and vitellaria.

Asymmetrinae n. subfam.

Diagnosis

Fellodistomidae: small, elongate to elliptical body, aspinose. Oral sucker large, rounded, subterminal, prepharynx prominent, pharynx small, esophagus of moderate size, caeca reaching behind midbody. Acetabulum smaller than oral sucker, rounded, in anterior third of body. Testes two, rounded to oval, submedian, laterally placed inside left caeca, one anterodorsal and other posterodorsal to acetabulum. Cirrus sac large, transversely elongate, between ovary and anterior of acetabulum containing seminal vesicle and pars prostatica, cirrus very long with a bulb-like terminal ending, genital pore postbifurcal, submedian with a saccular overgrowth. Ovary is small, submedian, pretesticular. Vitellaria in acetabular and preacetabular zone consisting of lateral groups of 8-9 large follicles. Uterus long coiled, in between post vitelline zone, reaching to near posterior end of the body. Excretory vesicle, Y-shaped.

Parasite of marine fish.

Type genus *Asymmetra* n.gen.

***ASYMMETRA* n. gen.**

Diagnosis

Fellow distomidae, Asymmetrinae n.subfam. with characters of subfamily.

Type species

Asymmetra magnacinosa n.gen., n.sp.

Type host

Sparus berda (Forsk.)

Type locality

Fish harbour, Karachi coast

DISCUSSION

Trematodes of family Fellodistomidae Nicoll, 1913 (Syn. Steringophoridae Odhner, 1911) contains several subfamilies which are separatd from each other on the basis of presence or absence of cephalic projections and cervical folds, position of acetabulum, caeca united posteriorly or not, position of testes, ovary, vitellaria and presence of a series of sublateral lobes.

In the present specimens sublateral lobes are not present, therefore, these cannot be included in the subfamily Lissotomatinae Skrjabin *et* Koval, 1957. In the subfamily Infudibulostominae Yamaguti, 1971 vitellaria are in acetabular zone, and these are acetabular,

preacetabular, post-acetabular, and testicular zones and testis is single.

Subfamily Lintoniinae Yamaguti, 1970 is characterized in having vitellaria in bunch-like clusters in post-testicular, lateral fields between acetabulum and anterior testis. Acetabulum is postequatorial, caeca very short and ovary is overlapping acetabulum in Antorchiinae Skrjabin and Koval, 1957, but in the new subfamily acetabulum is pre-equatorial, caeca long, and ovary is far anterior to acetabulum. In Proctoecinae Skrjabin *et* Koval, 1957 vitellaria extending laterally in ovariotesticular or acetabulotesticular lateral fields but the present specimens have a different position of vitellaria.

Vitellaria is largely or entirely preacetabular, bifurcoacetabular or acetabulotesticular in Fellodistominae Stafford, 1904 and ovary is postacetabular and is different from the specimens understudy. Acetabulum is discoid and unusually large in Discogasteroidinae, Srivastava, 1939 and vitellaria anterior to acetabulum or testes. While the present specimens have a very small acetabulum and a different position of vitellaria.

Excretory vesicle is I-shaped in the subfamily Parantorchiinae. Lissolomatinae Skrjabin *et* Koval, 1957 is peculiar in having anterior and posterior edges of body turned over ventral or with a series of submarginal lobes on each side. Cirrus pouch is preacetabular, genital atrium with muscular genital lobe, ovary infront of posterior testis and vitellaria extending in lateral fields of middle third of body.

Subfamily Piriforminae Skrjabin *et* Koval, 1957 is characterized by having caeca united posteriorly, acetabulum large, postequatorial testes obliquely contiguous with each other, cirrus pouch preacetabular, containing bipartite seminal vesicle, bulbous pars prostatica and small cirrus. Ovary is trilobed, anterolateral to posterior testis and vitellaria forming bunches of follicles in lateral fields of fore body.

Heterorchiinae Dollfus, 1950, specimens of this family have testes diagonal or subsymmetrical, cirrus sac over reaching acetabulum. Genital pore at varying preacetabular level, ovary pre or intertesticular, vitellaria extending in lateral fields, largely in ovariotesticular, occasionally acetabulotesticular zone.

Infundibulostominae Siddiqi *et* Cable, 1959 is characterized by having body spined, single testis, postacetabular, external seminal vesicle is present, cirrus sac over reaching acetablum containing internal seminal vesicle and pars prostatica, genital pore is median immediately preacetabular, vitellaria in two lateral clusters at acetabular level.

Unlike the new subfamily Asymmetrinae in Pyriforminae Skrjabin *et* Coval, 1957 caeca are united posteriorly, gonads massed together at posterior extremity and uterus is pretesticular.

In Symmetrovesiculinae Yamaguti, 1958 vitellaria forming longitudinal series of several bunches of dendritic tubular acini in each post-testicular, extra-caecal field, and excretory vesicle is divided into symmetrical tubes. While in the present specimens excretory vesicle is Y-shaped and vitellaria have a different morphology and position. In Trigonocryptinae Yamaguti, 1971 acetabulum is indented medially and ridged equatorially and vitellaria is in fore body and is different from the present specimens.

Subfamily Tergestiinae (Skrjabin *et* Coval, 1957) Yamaguti, 1958, cephalic projections, cervical folds are present and vitellaria on each side of the hind body, but these projections and folds are absent in new subfamily.

In Baccigerinae Yamaguti, 1958, acetabulum is in anterior half of the body and testes are postacetabular, vitellaria in accetabular, acetabulo-testicular or bifurcovarian zone, genital pore is close to intestinal bifurcation or preacetabular.

Member of subfamily Stenakrinae Yamaguti, 1970 have testes near the posterior extremity and uterus is usually pretesticular or intertesticular, vitellaria in lateral fields of fore and hind body. While in the present specimens testes are in anterior half of the body and uterus is mostly post-testicular.

The above mentioned distinct characteristic features of various subfamilies of family Fellodistomidae separate these from the specimens understudy and these cannot be included in any of the existing subfamilies. Therefore, a new subfamily Asymmetrinae is proposed to accommodate the uninvestigated trematodes from the fish *Sparus berda* (Forsk.), and a new genus and new species *Asymmetra magnacinosa* n.gen., n.sp. is described in the new subfamily. Genus name refers to the asymmetrical arrangement of gonads species name *A. magnacinosa* refers to the large cirrus sac and cirrus.

Statement of conflict of interest

Authors have declared no conflict of interest.

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