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First record of genus *Thaparotrema* Gupta, 1955 (Trematoda: Ophisthorchiidae) in Pakistan

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Abstract

During recent study on helminth parasites of freshwater fishes of district Jamshoro, Sindh, Pakistan, a total of 23 host fishes *Rita rita* (Siluriformes: Bagridae) were examined. During helminthic examination only 04 trematodes belonging to the genus *Thaparotrema* Gupta, 1955 were collected from gallbladder of 04 fishes. These specimens have close resemblance with *Thaparotrema pedicellatum* (Verma, 1927) in all essential features and identified as such. Previously this species is reported from intestine of *R. Rita* in India whereas present one is recorded from gallbladder of the same host. This is first record of the genus *Thaparotrema* Gupta, 1955 from Pakistan.

Keywords: *Thaparotrema* Gupta, 1955; *Rita rita*; Sindh; Pakistan.

1. Introduction

The genus *Thaparotrema* Gupta, 1955 was proposed to accommodate trematodes collected from intestine and gallbladder of fresh water fishes. The genus was erected for *Thaparotrema vittalani* Gupta, 1955 that was described from intestine of the Bagrid catfish *R. Rita* in India. Previously this species was placed in the genus *Opisthorchis* Blanchard, 1895 later on Scholz (2008) transferred it to the genus *Thaparotrema* Gupta, 1955 on the basis of small, elongated or fusiform body covered with tegumental spines, having no prepharynx and with sinuous excretory system [1]. Type species of the genus *Thaparotrema* Gupta, 1955 is *T. vittalani* Gupta, 1955 collected from Bagrid catfish *R. Rita* of India. Other species of the genus include *T. pedicellatum* Verma, 1927 collected from *Hemibagrus nemurus* of Thailand, also in *Rita buchani* of India; *T. piscicola* Odhner, 1902 collected from *Gymnarchus milotic* of Africa; *T. botswanaensis* Rensburg *et al.*, [2] collected from *Clarias gariepinus* of South Africa. Fishes are one of the most important groups of vertebrates, which benefit human being in various ways. Fishes all over the world suffer from varieties of parasitic diseases that cause mortality in them either directly or indirectly [3]. Helminth parasites of fish which live in the alimentary canal damage the lining wall of the host fish and some other organs such as liver and bile duct. These parasites either cause diseases in fish directly or make them susceptible to other diseases. Besides mortality in fish, some helminth parasites are also transmitted to humans through fish. *R. Rita* is an edible fresh water catfish locally called as “Khagga” in Pakistan. This fresh water species is found in streams, rivers, canals and ponds, mainly occurs in shallow waters [4]. Young fishes are greenish brown above and silvery brown on back of body. It is extremely slimy when captured [5]. It is bottom-dwelling carnivorous catfish and feeds on mollusks, small fish, crustacean, and insects as well as on decaying organic matter [6]. Reports on helminth parasites of *R. Rita* in Pakistan are limited to those of Ahmad *et al.* [7]; Ayaze *et al.* [8]; Khanum, Ferdos and Farhana [9]; Kakar and Bilqees [10]; Nazir *et al.* [11] and Shakir and Khan [12]. Whereas, no attempt has been made to undertake research on the helminth parasites of *R. Rita* in Sindh province of Pakistan. Being edible fish in Pakistan, it is possible that the fish might be harboring helminths of zoonotic importance. Therefore, the interest was developed to investigate this fish for the presence of helminth parasites.

2. Materials and method

During current studies a total of 23 fishes *R. Rita* were examined for the presence of helminth parasites. Live fishes were collected during January-September, 2015 from different areas of the province and brought to the Parasitology Laboratory of Department of Zoology University of Sindh, Jamshoro, Pakistan. Fishes were dissected and viscera were separated in Petri dishes

and examined under stereo dissecting microscope. During helminthic examination, only 04 trematodes belonging to the genus *Thaparotrema* Gupta, 1955 were collected from gallbladder of the 04 host fishes. Methods described by Garcia and Ash^[13] and Schmidt^[14] were followed for collection and preparation of trematodes for detailed study. Worms were fixed under slight cover glass pressure in 70% ethanol, stained with borax carmine, dehydrated in graded series of ethanol, cleared in clove oil and xylol and mounted in Canada balsam. Diagrams were made with the help of a camera lucida. Photographs were taken with camera Olympus DP12. Specimens were identified with keys and literature available. Permanent mounts of the specimens are deposited in the department of Zoology, University of Sindh, Jamshoro, Sindh, Pakistan.

3. Result

Family Ophisthorchiidae Braun, 1901

Genus *Thaparotrema* Gupta, 1955

Thaparotrema pedicellatum Verma, 1927

Body of the worm is long, cylindrical anteriorly and tapering posteriorly; body measures 4.347–4.530 mm armed with tegumental spines except post-testicular end of the body; greatest width at post-equatorial region of the body measured 0.759–0.80 mm in size; oral sucker is long, terminal, measuring 0.230–0.280 × 0.184–0.20 mm in size; ventral sucker is well developed, pre-equatorial in position measuring 0.115–0.135 × 0.138–0.150 mm in diameter; prepharynx is short 0.046–0.050 mm in length; pharynx is rounded to oval in shape, measuring 0.055–0.060 mm in diameter; esophagus is short measuring 0.161–0.182 mm in length; intestinal bifurcation in middle of oral sucker and ventral sucker; ceca long, extending from middle of oral and ventral sucker, running laterally, reaching up to the posterior extremity of body; cirrus sac oval to cone-shaped situated in front of ventral sucker measuring 0.184–0.195 × 0.092–0.095 mm. Testes situated in posterior region of the body, near caecal ends; testes tandem, anterior testis is rounded measuring 0.368–0.390 × 0.253–0.260 mm and posterior testis is oval to round, measuring 0.322–0.328 × 0.391–0.396 mm in size; ovary rounded, submedian, anterolateral to anterior testis, measuring 0.230–0.260 × 0.184–0.187 mm in size; post testicular space is 0.092–0.10 mm in size; seminal vesicle post-acetabular measuring 0.115–0.120 × 0.092–0.097 mm in size; seminal receptacle rounded to oval in shape, posteromedial to ovary, measuring 0.92–0.98 × 0.161–0.165 mm in size; uterine coils entirely intercaecal, between ventral sucker and ovary, occupying an area of 0.40–0.85; vitelline follicles compact, largely retrocaecal, extending in lateral fields, between ventral sucker and ovary; genital pore anterior to ventral sucker.

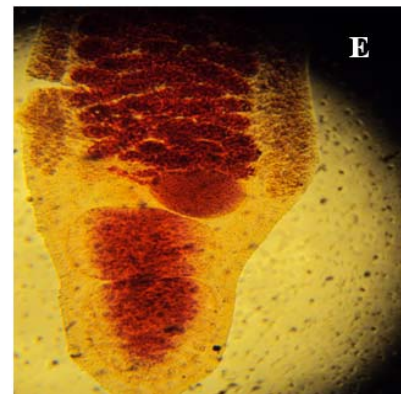
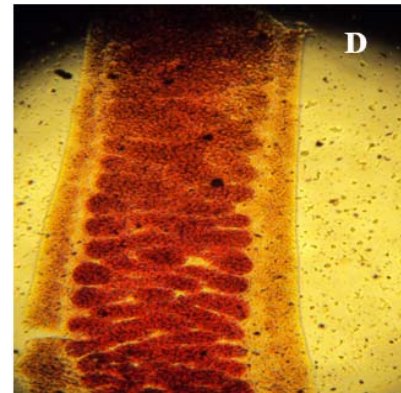
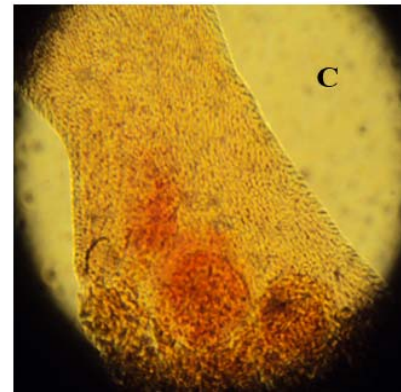
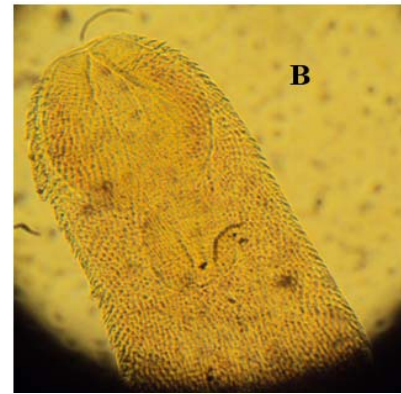
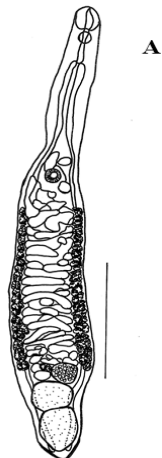


Fig 1: *Thaparotrema pedicellatum* Verma, 1927. A. diagram of entire worm. B, C, D, E. Photographs of different parts of the trematode.

Scale bar: 1 mm

4. Discussion

T. piscicola^[1] collected from gall bladder of *Gymnarchus niloticus* of Africa differs from present species in lacking prepharynx; pharynx rounded to oval; ovary anterior to seminal receptacle; excretory bladder with sigmoid stem and excretory pore is terminal; *T.*

pedicellatum^[1] collected from intestine of *Hemibagrus nemurus* of Thailand differs from present species in having elongated body; oral sucker subterminal; pharynx oval; esophagus absent; testes separated by excretory bladder; ovary anterior to seminal receptacle; uterine coils not much compact; excretory bladder with sigmoid stem between anterior and posterior testes and excretory pore is subterminal; *T. vitallani*^[15] collected from intestine of Bagrid Catfish *R. rita* of India differs from present species in having smaller body; prepharynx absent; testes diagonal (at opposite pole) near caecal end and separated by excretory bladder; anterior testis large; uterine coils not compact entirely; vitelline follicles not compact highly, extending from post-bifurcal level of intestine up to the level of anterior testis; excretory bladder with sigmoid stem between anterior and posterior testes; and excretory pore is terminal; *T. botswanensis*^[2] collected from gall bladder of *Clarias gariepinus* of Botswana, South Africa differs from present species in having elongated body; prepharynx absent; esophagus long; both testes oval and diagonal separated by excretory bladder; excretory bladder with sigmoid stem between anterior and posterior testes and excretory pore is subterminal.

The present species has close resemblance with *Thaparotrema pedicellatum* Verma, 1927 in all morphological characteristics and is identified as such. However this genus is being reported from the first time from Pakistan.

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