

PARACOCHLEOTREMA INDICUM GEN. NOV. SP. NOV.
(TREMATODA: DIGENEA) FROM INDIA

P. N. SHARMA and A. N. GUPTA

Department of Zoology, University of Udaipur, Udaipur

Abstract. On the basis of the study of fifteen forms of digenetic trematodes obtained from *Dugong dugong* a new genus *Paracochleotrema* was erected with *P. indica* as its genotype. The family Opisthotrematidae Poche, 1926 with the genera *Opisthotrema* Fischer, 1883, *Pulmonicola* Poche, 1926, *Lankotrema* Crusz et Fernand, 1954 and *Cochleotrema* Travassos et Vogelsang, 1931 were reviewed. The genus *Cochleotrema* was held valid and distinct from *Opisthotrema* and the species *C. cochleotrema* was transferred to the genus *Cochleotrema*. The division of the family Opisthotrematidae Poche, 1926 into two subfamilies was not found very tangible. An emended diagnosis of the family Opisthotrematidae Poche, 1926 and an emended key to the genera of the family Opisthotrematidae are given.

Fifteen mature specimens of *Paracochleotrema indicum* g. n., sp. n. were recovered from the nasal passage of *Dugong dugong* examined at Mandapam-India. Freshly dead dugong was examined for the observance of the parasites. After about an hour or so these trematodes were seen inside the nasal passage of the dead host.

Paracochleotrema gen. n.

Generic diagnosis: Opisthotrematidae, body oval to semicircular, flattened, concave ventrally due to ventral cuticular margin, muscular rim uninterrupted by oral sucker present, cuticle smooth, oral sucker subterminal, oesophagus slender and not very long, caeca sinuous reaching very near to posterior extremity, testes symmetrical, lobate outside caeca in posterior part of body, cirrus pouch long median containing slender convoluted seminal vesicle and long protrusible cirrus. Genital pore terminal. Ovary oval slightly shifted from the median line, Lauer's canal may be present. Vitellaria of acini H-shaped extending from the anterior level of ovary to the level of caeca and enclosing the testes. Uterus loops convoluted lying in the central part of the body, metraterm present. Eggs very small and unfilamented. Excretory vesicle tubular. Parasitic in nasal passage of dugong.

Genotype: *P. indicum* sp. n.

***Paracochleotrema indicum* sp. n.**

Fig. 1

Host: *Dugong dugong*; locality: Mandapam, India; location: nasal passage.

Type material deposited in the helminthological collection of the Department of Zoology, University of Udaipur, Udaipur, India.

Description: (The measurements of the holotype are given in brackets.) The viable parasite is white. The body is oval, its anterior end is bluntly rounded, posterior end broadly rounded. The body is concave ventrally due to cuticular margin more or less turned ventrad. The margin is beset with asterisks at intervals and is devoid of spines. A muscular body rim uninterrupted by oral sucker is present which is 0.040—0.080 mm

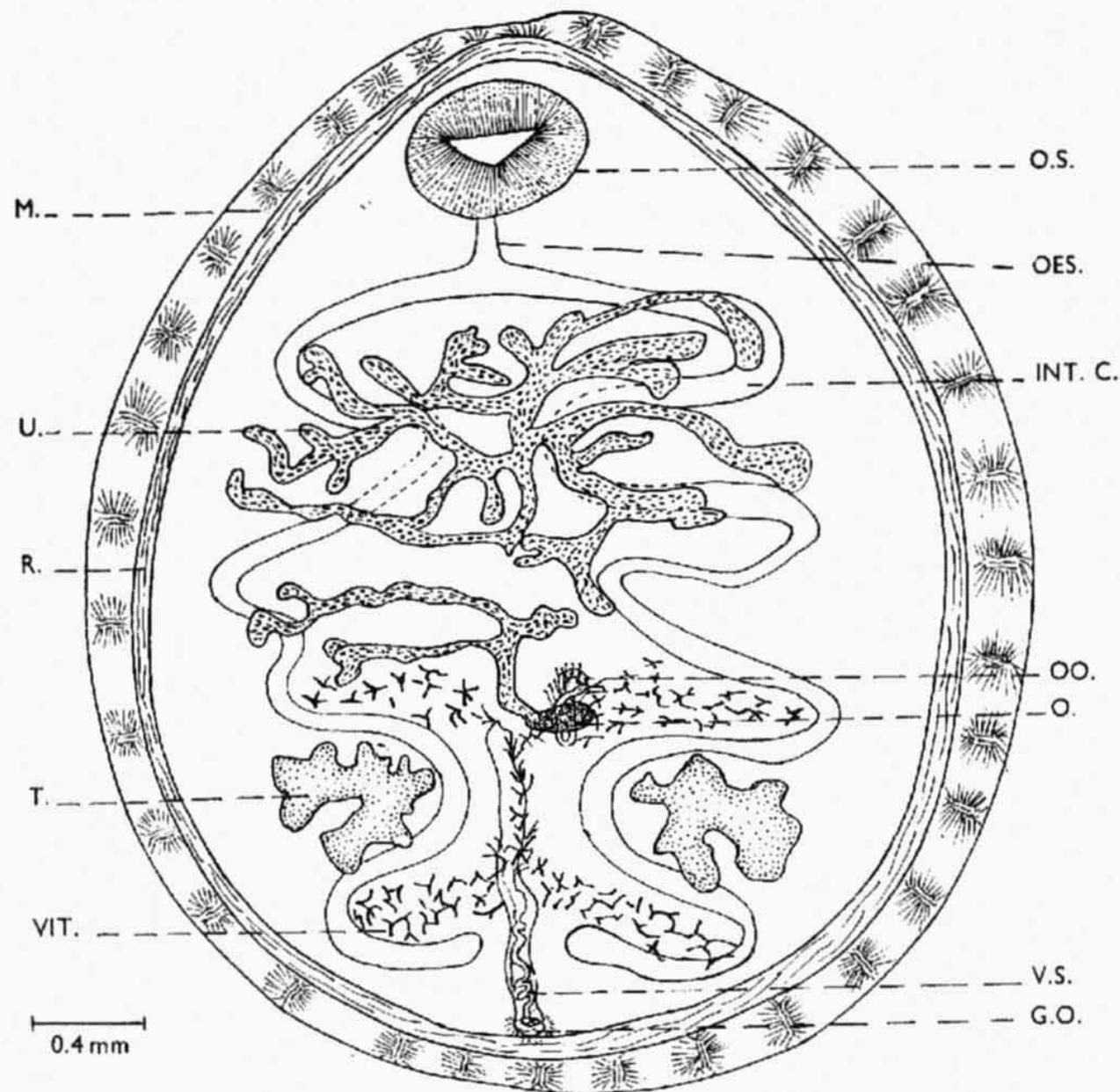


Fig. 1. Dorsal view of *Paravochleatremma*. G. O. — genital opening, INT. C. — intestinal caecum, M. — margin, O. — ovary, OES. — oesophagus, OO. — ootype, O. S. — oral sucker, R. — rim (muscular), T. — testis, U. — uterus, VIT. — vitellaria, V. S. — vesicula seminalis

thick immediately beneath the cuticular margin. The presence of asterisks makes peculiar ornamentation on the cuticular margin.

The body measures 2.880—3.800 (3.800) mm in length and 2.320—2.800 (2.800) mm in breadth and is widest in the middle region. The oral sucker is subterminal and well developed lying below the muscular rim. It measures 0.520×0.560 (0.520×0.560) mm. There being no prepharynx, the mouth leads directly into a short and slender oesophagus which measures $0.160—0.200 \times 0.040—0.080$ mm. Pharynx is also absent. The bifurcal

point of intestine lies at 0.710—0.720 (0.720) mm from anterior end. Acetabulum absent. The caeca are fairly wide and sinuous forming serpentine loops in a fashion that the furrows correspond with one another of the opposite side. The caeca extend almost to the posterior extremity of the body with its medially turned endings coming very close to the cirrus sac.

The testes located within the depression of the caeca, are lobate and situated a little behind the posterior half of the body. They are symmetrical and extracaecal. Right testis measures $0.280-0.520 \times 0.320-0.480$ (0.520×0.480) mm, left testis 0.480×0.560 (0.480×0.560) mm. The vas efferens, arising from either testis, ascends anteriorly a little to reach the cirrus sac and opens into the vesicula seminalis which is convoluted and contained in it. The cirrus sac is tubular and elongated. It lies in the middle of the body in the posterior half and measures $0.400-1.200 \times 0.080$ (1.200×0.080) mm. The convoluted vesicula seminalis forms a long ejaculatory duct at its distal end, which opens into the genital pore. The genital pore is terminal and situated at the posterior end of the body.

The oval or slightly transversely elongated ovary is pretesticular and situated to the right of the median line, slightly away from the anterior end of cirrus pouch. It measures $0.108-0.160 \times 0.160-0.200$ (0.160×0.200) mm. Receptaculum seminis and Laurer's canal present. Uterus long, slender, convoluted, occupying greater part of central portion of the body. The convolutions of the uterus overlap lateral loops of caecum. The metraterm present and clearly differentiated. Eggs are oval without filaments measuring 0.0180×0.0045 (0.018×0.004) mm. Vitellaria consisting of more or less irregular acini situated in intercaecal area restricted to the space between last two ridges of the caecal loop. They extend from the level of anterior edge of ovary to hind end of caeca. They are H-shaped, the two limbs of vitellaria keeping the testes confined within them. Excretory vesicle tubular, the opening is terminal on the dorsal side.

Discussion: The present form clearly belongs to the family Opisthotrematidae Poche, 1925—1926. These forms show several very important taxonomic features which demand a review not only of the family but the genera included therein. There are certain characters unreported hitherto which warrant the emendment of the family diagnosis.

The authors do not agree with Price 1932 and Yamaguti 1958, who consider *Cochleotrema* to be a synonym of *Opisthotrema*, but take it for a valid taxon in accord with the opinion of Skrjabin (1964).

In the authors' opinion the criteria used for differentiation of subfamilies Opisthotrematinae Harwood, 1939 and Lankatrematinae Yamaguti, 1958 are not suitable and they recognize, in agreement with Skrjabin, only the family Opisthotrematidae.

Skrjabin (1964) based his key to the genera of the family on the characters or position of the testes and intestinal caeca only. The joint authors, however, feel that characters should be more broadly based, hence more features should be employed to differentiate them.

The study of the present 15 forms recovered from the nasal passage of *Dugong dugong* from Indian marine waters near Mandapam, show that it belongs to the family Opisthotrematidae Poche, 1925—1926, but differs from all the four genera, viz., *Opisthotrema*, *Cochleotrema*, *Pulmonicola* and *Lankatrema*. These forms differ from all of them in the smaller, unfilamented eggs and not pretesticular vitellaria.

In view of all these differences these are sound enough to warrant its assignment to a new genus *Paracochleotrema* with *P. indicum* as its type species. The emendment in the diagnosis of the family Opisthotrematidae is also called for.

Emended diagnosis of the family Opisthotrematidae: Body spoonshaped, spinose ventrally, pharynx absent, oesophagus slender, caeca without diverticules. Acetabulum absent. Testes symmetrical in posterior half of body. Cirrus pouch present. Genital pore median

at posterior extremity. Ovary median or submedian, intercaecal, pretesticular. Receptaculum seminis and Laurer's canal present, latter may be absent occasionally. Uterus confined to intercaecal field or overlapping caeca laterally, eggs with long polar filaments rarely unfilamented. Vitellaria follicular or acinious from the level of ovary to hind end. Excretory vesicle short, with partly anastomosing lateral branches. Parasites of Sirenia.

Type genus: *Opisthotrema*

1. Eggs not filamented, vitellaria extending even to posttesticular level or caecal end	<i>Paracochleotrema</i>
2. Eggs filamented, vitellaria pretesticular	3
3. Testes intercaecal	4
Testes postcaecal	5
Testes extracaecal	6
4. Vitellaria small, intercaecal, rim present, uterus intercaecal, caecal end not turned but straight	<i>Pulmonicola</i>
5. Vitellaria large, marginal, rim and margin absent, uterus inter- and extracaecal, caecal end not turned	<i>Lankatrema</i>
6. Vitellaria small intercaecal, margin present, uterus may overlap caeca, caecal end directed medially	<i>Cochleotrema</i>
7. Vitellaria small, mostly intercaecal, no rim or margin, uterus extracaecal, caecal end directed externally	<i>Opisthotrema</i>

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A. N. G., Department of Zoology,
University of Udaipur, Udaipur,
Rajasthan, India