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A NEW SPECIES OF GENUS *CIRCUMONCOBOTHRIUM* JAFRABADENSIS N. SP. (CESTODE: PTYCHOBOTHRIIDAE, LUHE, 1902) FROM A FRESH WATER FISH *MASTACEMBELLUS ARMATUS*

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ABSTRACT

The present paper contains the description of *C. jafrabadensis*, a new species of genus *Circumoncobothrium* (Shinde, 1968). Five specimen of cestode parasites were collected and flattened, preserved in 4% formalin, stained with Harris Haematoxylin, dehydrated through various alcohol grades, mounted in DPX and whole mount slides prepared for detailed anatomical studies. The drawings made using camera lucida. All measurements are in millimeters, unless otherwise indicated. The present species differs from earlier reported species in having large, triangular scolex with two bothria; 44 rostellar hooks, 11 in each quadrant; testes 140 – 150 (143) arranged in two lateral fields; vitellaria follicular, small round, in 2 – 4 rows, subcortical in position on each lateral side.

KEYWORDS: Cestoda, *Circumoncobothrium jafrabadensis* n. sp., *Mastacembellus armatus, Jafrabad, Jalna.*

INTRODUCTION

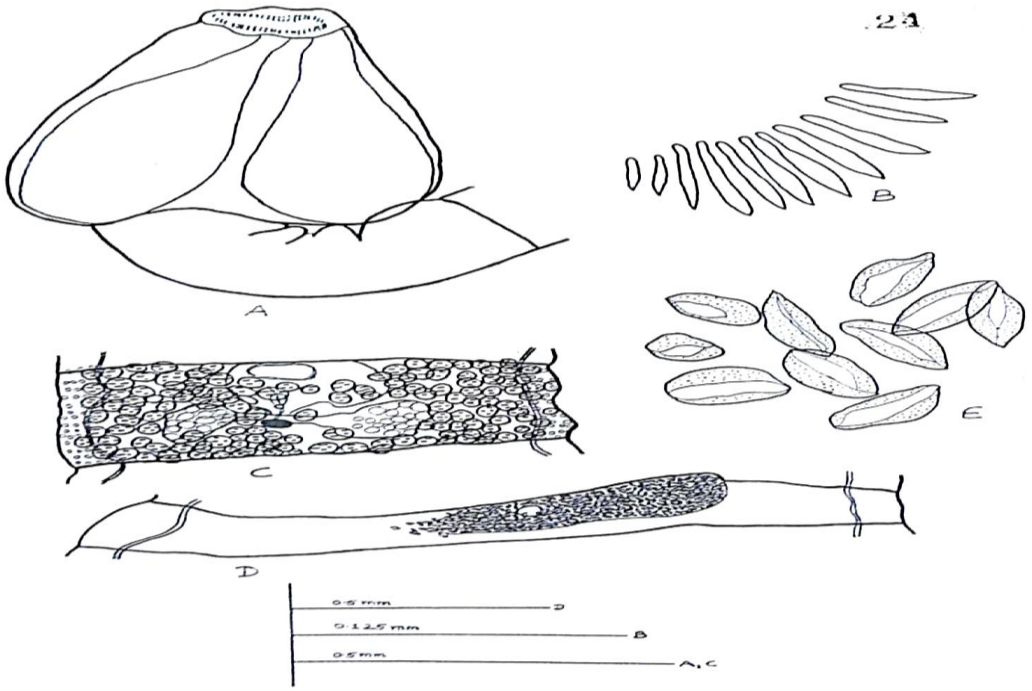
The genus *Circumoncobothrium* was erected by Shinde in1968[1] found in the intestine of fresh water fish *Ophiocephalus leuconpunctatus* as a type species *C. ophiocephali.* Jadhav[2] then added a new species of this genus *C. aurangabadensis* from *Mastacembellus armatus*. Shinde[3] further added *C. raoii* from *Mastacembelus armatus.* Shinde and Chincholikar[4] described a new species of this genus *C. shindei* from freshwater fish *Mastacembelus armatus.* Chincholikar and Shinde[5] added new species *C. bagariusi* from *Bagarius* species Shinde[6] reported *C. khami* from *Ophiocephalus striatus*. Jadhav *et al.*,[7] added *C. gachuai* from *Ophiocephalus gauchua* Jadhav *et al.*,[8] described *C. yamaguti*, from *Mastacembelus armatus* Shinde *et al.*,[9] created *C. alii* from *Mastacembelus armatus.* Patil[10] added *C.*

vadgaonensis as a new species to this genus from *Mastacembelus armatus*. Wongsawad and Jadhav[11] added *C. baimaii* from *Mastacembelus armatus.* Shinde and Kalse[12] added two new species of the genus viz. *C. armatusae* from *Mastacembelus armatus* and *C. punctatusi* from *Ophiocephalus punctatus.* Shinde[13] described *C. mastacembelusae* as a new species from *Mastacembelus armatus. C. armatusae* (*minor*) was described by Pawar[14] from *Mastacembelus armatus* belonging this genus. Tat and Jadhav[15] reported *C. manjari* from *Ophiocephalus gachuva*. Supugade[16] added *C. vitellariensis* from *Mastacembelus armatus.* Kharade[17] added *C. cirrhinae* from *Cirrihina mrigala*. Shelke,[18] added one more species *C. mehdii* from *M. armatus.* Pardeshi[19] added *C. ambajogaiensis* from *Mastacembelus armatus.* Jawalikar[20] added one more new species *C. yogeshwari* from *M. armatus*. Borde[21] added *C. purnae* from the host, *Mastacembelus armatus*. Later on Kalse[22] added one more new species *C. naidui* from *M. armatus.* Shah[23] added *C. paithenensis* from *M. armatus.* Menkudale and Jawale[24] added one more new species C. *thapari* from *Ophiocephalus stratus. C. jadhavae* was added by Pardeshi[25] from *M. armatus.* Kadam[26] added *C. clariasi* from Clarias batrachus and lastly Yogesh[27] added *C. hemlatae* from *Mastacembelus armatus*. Fartade et al added *C. nathii*[28] in 2015 from *Channa marulius* The present paper deals with the description of a new species *C. jafrabadensis* collected from fresh water fish, *Mastacembellus armatus* at Jafrabad, Tq. Jafrabad, Dist. Jalna. M. S., India.

MATERIALS AND METHODS

Five worms were collected from the intestine of *Mastacembellus armatus* (Lecepede, 1800). The intestine of the hosts were cut open, in normal saline water in petridishes, shaken lightly, contents decanted several times and cestodes were stretched with the help of lukewarm water and flattened between cover glass and slides, fixed in 4% formalin until 24 hrs and washed in distilled water. Whole mounts were stained using Harris haematoxylene, dehydrated in increasing alcoholic grades, cleared in xylene and mounted in D.P.X. Illustrations were drawn using Camera Lucida and measurements are taken in mm. Identification was carried out using Systema Helminthum volume II (Yamaguti, 1956).

RESULTS AND DISCUSSION



The worms were medium in length, thin, white with scolex, numerous immature, mature and gravid segments. Scolex is triangular, 1.147-1.220 in length and 0.492-1.137in breadth. Scolex bears two oval bothria, 1.099 to 1.198 in length and 0.060 to 0.485 in width. Anterior end of scolex has a truncated disc, armed with 44hooks arranged in four quadrants. Hooks lanceolate slightly curved; large hooks measure 0.064x0.009 and small hooks measure 0.027 x 0.003. Neck is short, measures 0.872-1.106) x 0.371-0.492.

Mature segments broader than long, measure 0.454-0.553 in length and 1.273- 1.349 in width. Testes medium to large, oval to round, in two lateral fields, 140 – 150 (145) in number and measure 0.030 – 0.098 in length, 0.030-0.076 in width and 0.030 in diameter. The cirrus pouch is medium, oval, pre-ovarian, and measures 0.068 x 0.028-0.045. The cirrus is thin, slightly curved and measures 0.068 x 0.008.

The ovary is bilobed, post-equatorial in position. The lobes are oval, unequal, with 8-12 short, round, blunt, acini. Ovary measures 0.667-0.849 x 0.152-0.258. The isthmus is long, wide, measures 0.265-0.280 x 0.030-091. The vagina is thin, medium in length, measures 0. 076 x 0.008. The ootype is large, oval, pre-ovarian, measures 0.053-0.076 x 0.030-0.045. Vitellaria follicular, follicles in 2-4 rows on each side, medium, round, sub-corticular in position and measure 0.015-0.030 in diameter.

Gravid segments were 6-7 times broader than long measuring 0.225-0.511 x 3.247-3.406. Uterine sac fully developed, with irregular, convex lateral margins, filling almost half of the segment and measures 0.102-0.327x1.249-1.271. The eggs are oval, medium, operculated, measures 0.029 – 0.061 in length and 0.019 – 0.030 in width. The uterine pore is large, oval, double walled, measures 0.091-0.136 x 0.091-0.114 and 0.91in diameter.

DISCUSSION

The genus *Circumoncobothrium* was erected by Shinde G. B. (1968) as type species *C. ophiocephali* from *Ophiocephalus leucopunctatus*. Later on twenty six more species have been added to this genus. They differ from the cestode under discussion, in many characters which are as follows:

The present form differs from *C. ophiocephali*[1] in rostellar hooks (80), in the number of testes (70-80), in structure of ovary irregular, conical mass thin in middle with expanded lateral lobes with 2-3 acini; in number of rows of vitelline follicles (in 14 – 15 rows on each side). Present cestode differs from *C. aurangabadensis*[2] which is having 42 hooks, testes round, 135-145; acini of ovarian lobes (3-4 acini); vitellaria (granular). It differs from *C. raoi*;[3] in rostellar hooks (46), arranged in single circle; in testes round, 210-215; vitellaria (granular). The cestode differs from *C. shindei*,[4] in rostellar hooks (49); in the shape and number of testes 260-275 (273); in structure of ovary (round, compact lobes); vitellaria granular. It differs from *C. bagariusi*[5] in rostellar hooks (55); in the number of testes 275-285(276); in number of acini of ovarian lobes (5-6); vitellaria (irregular) and reported from *Bagarius sp*., in India. The cestode differs from *C. khami* Shinde,[6] which is having rostellar hooks 48; testes 190-200 in numbers, vitelline follicles round, in a single layer, near lateral margins and reported from *Ophiocephalus sp.* in India. The present tapeworm differs from *C. gachuai*[7] in having hooks 46 in numbers, testes 375-400 in numbers, vitellaria follicular, arranged in two rows and reported from *Ophiocephalus gachua*, in India. It differs from *C. yamaguti*[8] in rostellar hooks (56); testes 130-150 in numbers ovary round, centrally placed, near posterior margin; vitellaria (granular). Present cestode is different from *C. alii*,[9] in rostellar hooks (34); shape and number of testes (round, 230 -240) ovarian lobes (compact); vitellaria - granular. It varies from *C. vadgaonensis*[10] in rostellar hooks (56); testes (490 - 510); ovarian lobes (compact with regular margin); vitellaria (follicular in 2 rows). The present tapeworm differs from *C. baimaii*[11] in having the scolex pear shaped, hooks 48 in

numbers, neck present, testes 88-100 in numbers, ovary compact and reported from *Mastacembelus armatus* in Chang Mai.

The tapeworm being discussed differs from *C. armatusae*,[12] which is having scolex triangular, hooks 58 in numbers; testes 90-100 in numbers; ovary compact and vitellaria follicular, arranged in 3-4 rows on lateral side of the segments. The present tapeworm differs from *C. punctatusi*[12] in having scolex rectangular, hooks 40-50 in numbers; testes 140-150 in numbers, vitellaria follicular, arranged in 3-6 rows and reported from *Ophiocephalus punctatus*, in India. The tapeworm parasite differs from *C. mastacembelusae*[13] in having scolex pear shaped, hooks 30 in numbers, testes 130-140 in numbers, ovary compact and vitellaria follicular, arranged in 2-3 rows on each lateral side. The present tapeworm differs from *C. armatusae (minor)*[14] in having scolex triangular, hooks 58 in numbers, testes 190-200 in numbers and vitellaria follicular. The present tapeworm differs from *C. manjari*[15] in having the scolex triangular, hooks 48 in numbers, in single circle; testes 128-145 in numbers, vitellaria follicular and reported from *Ophiocephalus gachua*, in India. The present tapeworm differs from *C. vitellariensis*[16] in having scolex large, triangular; hooks 48 in numbers, testes 250-260 in numbers and vitellaria follicular, arranged in 3-4 rows. The present tapeworm differ from *C. cirrhinae*[17] in having scolex cylindrical, barrel shaped, rostellar hooks 56 in number; testes 300-305 in number, ovary multi lobed with 7-8 acini, vitellaria granular. It differs from *C. mehdii*[18] in rostellar hooks (56); testes (284); ovarian lobes (compact with regular margin); vitellaria (follicular).

The present tapeworm differ from the species *C. ambajogaiensis*[19] which has rostellar hooks 48 number; testes (150-160) in number, oval; ovary bilobed, dumbbell shaped; vitellaria are follicular, in two rows. The tapeworm differ from the species *C. yogeshwari*[20] which is having hooks (53); testes 95 – 98; ovary indistinctly bilobed. The present tapeworm differs from the species *C. purnae*[21] from *Mastacembelus armatus* in having hooks (52); testes (230-235; vitellaria follicular in 3-5 rows. The present tapeworm differs from the species *C. naidui.*,[22] which is having cylindrical, hooks 40 in number; testes 200 – 210 in number, ovary oval. The tapeworm differs from the species *C. paithenensis*[23] long, rostellar hooks 58 in number; testes 70 - 80 in number medium in size, oval in shape, vitellaria follicular; ovary is distinctly bilobed, dumb-bell shaped. The given tapeworm differs from the species C. *thapari*;[24] rostellar hooks are 52 in number; The testes are 95 in number, medium in size, oval in shape; vitellaria are follicular, 2-3 rows; ovaries medium, lobed. The present

tapeworm differs from the species *C. jadhavae,*[25] where; hooks are 35-45 in number; testes are oval to rounded, 95-105; vitellaria are follicular in two rows, and ovary is bilobed. The present worm differs from *C. clariasi*[26] in having hooks 48 in number; testis 254 in number; vitellaria follicular. It differs from *C. hemlatae*[27] in rostellar hooks (54); testes (200 -225); ovarian lobes (compact with regular margin); vitellaria (granular). It differs from *C. nathii*[28] in rostellar hooks (63); testes (70); ovarian lobes (dumbbell shaped with irregular margin); vitellaria follicular in 3-4 rows.

CONCLUSION

The above said characters necessitate the erection of a new species for these worms and hence the name *Circumonchobothrium jafrabadensis* n**.** sp**.** is proposed after the locality.

Type species	*Circumoncobothrium jafrabadensis* n**.** sp.
Host	*Mastacembellus armatus* (Cuv. and Val).
Habitat	Intestine
Locality	Jafrabad, Tq. Jafrabad, Dist. Jalna. M. S., India.

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