



Taxonomic observations of *Circumoncobothrium paithenensis* n.sp. from freshwater fish *Mastacembelus armatus*

Shah Shabbir Ahmed Yasin*

*Department of Zoology, Swami Muktanand College of Science, Yeola, Nashik, 423401, India

Abstract- Occurrence of a new species of the genus *Circumoncobothrium* Shinde, 1968 i.e., *C.paithenensis* n.sp. reported from a freshwater fish *Mastacembelus armatus* from Paithan, Marathwada region (M. S.) India. It is distinct from the other species of the genus *Circumoncobothrium* Shinde, 1968 in having scolex conical, hooks 58 in numbers, with short neck, mature proglottids are two times broader than long, testes 70-80 in numbers, ovary distinctly bilobed, and vitellaria follicular.

Keywords- *Piscian tapeworm, Circumoncobothrium paithenensis* n.sp., *Mastacembelus armatus*, Marathwada region.

Introduction

The genus *Circumoncobothrium* is erected by Shinde G.B., 1968 from the intestine of freshwater fish *Ophiocephalus leuconpunctatus* as a type species *C. ophiocephali*. Jadhav and Shinde, 1976 added three new species of this genus viz., *C. aurangabadensis* and *C. raoii* from *Mastacembelus armatus* and *C. gachuai* from *Ophiocephalus gachua*. Chincholikar and Shinde, 1976 described two new species of this genus *C. shindei* from fresh water fish *Mastacembelus armatus* and *C. bagariusi* from *Bagarius* species. Shinde, 1977 reported *C. khami* from *Ophiocephalus striatus*. Jadhav et.al., 1990 described *C. yamaguti*, from *Mastacembelus armatus* Shinde et.al., 1994 created *C. alii* from *Mastacembelus armatus*. Patil et.al., 1998 added *C. vadgaonensis* as a new species to this genus from *Mastacembelus armatus*. Wongsawad and Jadhav, 1998 added *C. baimaii* from *Mastacembelus armatus*. *C. punctatusi* is added by Kalse and Shinde, 1999 from *Ophiocephalus punctatus*. Shinde et.al., 2002 described *C. mastacembelusae* as a new species from *Mastacembelus armatus*. Pawar et. al., 2002 reported *C. armatusae* (minor) from *Mastacembelus armatus* to this genus. Tat and Jadhav, 2004 reported *C. manjari* from *Ophiocephalus gachuva*. Later on Supugade et. al., 2005 added *C. vitellariensis* from *Mastacembelus armatus*.

Materials' and methods

The tapeworms were collected from the intestine of freshwater fish *Mastacembelus armatus* (Lecepede, 1800) from Paithan (M.S.) India. These cestodes were preserved in hot 4% formalin, stained with Harris haematoxylin and Borax carmine, passed through various alcoholic

grades, cleared in xylene, mounted in D.P.X. and drawings are made with the aid of Camera Lucida. All measurements are given in millimeters.

Results (Based on thirteen species)

The scolex is large, almost triangular or cylindrical, long, slightly broad at the base, the apex, with two bothria extending up to the posterior end of the scolex and measures 2.363 in length and 0.454 to 0.909 in breadths. The scolex bears an armed rostellum, which is small in size, oval in shape and measures 0.225 in length and 0.340 in breadth. The rostellar hooks are 58 in number, arranged in a single circle in four quadrants. All hooks are straight, few slightly curved, small and large. The smaller hooks measures 0.053 in length and 0.005 in breadth, whereas larger hooks measures 0.074 in length and 0.008 in breadth. The neck is very short and measures 0.510 in length and 0.454 in breadth. Mature segments are almost two times broader than long with irregular margins and measures 0.460 to 0.557 in length and 1.018 in breadth. The testes are 70 to 80 in number medium in size, oval in shape, distributed in two groups, lateral to the ovary, unevenly distributed and measures 0.029 to 0.038 in length and 0.019 to 0.029 in breadth. The cirrus pouch is of medium size, oval, in the center of the segment, anteroposteriorly and obliquely situated, pre-ovarian and measures 0.097 in length and 0.043 in breadth. The cirrus is thin, slightly coiled and measures 0.106 in length and 0.009 in breadth.

The vas deference is thin, slightly curved, an elongated tube measures 0.169 in length and 0.004 in breadth. The ovary is distinctly bilobed; dumb-bell shaped in appearance, just posterior to the middle of the segment, lobes almost equal in size and connected with each other by thin isthmus. Each lobe is oval, with few acini and measures 0.121 in length and 0.183 in breadth. The isthmus is thin, long and measures 0.121 in length and 0.024 in breadth. The vagina is a thin tube, arises from the genital pore takes two curves, runs posteriorly reaches and opens in to the ootype and measures 0.291 in length and 0.009 in breadth. The ootype is small, round, post ovarian and measures 0.024 in diameter. The genital pores are small, oval, at the middle of the segments and measure 0.029 in length and 0.033 in breadth. The vitelline follicles are small in size, round in shape, distributed from anterior to posterior margin of segment, in two rows on each lateral side of the segment and measures 0.009 in diameter. The uterus is saccular, extends vertically up to the anterior margin of the segment, consists of eggs which are oval, operculated and measures 0.339 in length and 0.291 in breadth.

DISCUSSION

The genus *Circumoncobothrium* was established by Shinde in 1968 as a type species *C. ophiocephali* from *Ophiocephalus leucopunctatus*. The present worm comes closer to all the known species of the genus *Circumoncobothrium* Shinde, 1968 in general topography of organs. But differs due to some characters from *C. ophiocephali* Shinde, 1968 in having distinct scolex, broad in the middle and tapering at both the ends, rostellar hooks 80 in numbers, presence of neck, ovary compact, single conical mass, vitellaria follicular and reported from *Ophiocephalus leucopunctatus*; from *C. aurangabadensis* Jadhav and Shinde, 1976 in having the scolex broad in the middle and narrow at both the ends, hooks 42 in numbers, presence of neck and testes 135-145 in numbers; from *C. raoii* Jadhav and Shinde, 1976 in having scolex broad in the middle and narrow at both the ends, hooks 46 in numbers, arranged in single circle, neck present, testes 210-215 in numbers; from *C. gachuai* Jadhav and Shinde, 1976 in having the scolex pear shaped, hooks 46 in numbers, neck

present, mature proglottids squarish, testes 375-400 in numbers, vitellaria follicular, arranged in two rows and reported from *Ophiocephalus gachua*; from *C. shindei* Chincholikar and Shinde, 1976 in having the scolex narrow anteriorly and broad posteriorly, hooks 49 in numbers, neck present, testes 260-275 in numbers, evenly distributed and ovary dumb-bell shaped; from *C. bagariusi* Chincholikar and Shinde, 1976 in having the scolex narrow anteriorly and broad posteriorly, hooks 55 in numbers, testes 275-285 in numbers, arranged in two lateral fields, vitellaria follicular and reported from *Bagarius* sp.; from *C. khami* Shinde, 1977 in having the scolex cylindrical, hooks 48 in numbers, lancet shaped, mature proglottids squarish, testes 190-200 in numbers, evenly distributed, vitellaria follicular and reported from *Ophiocephalus* sp.; from *C. yamaguti* Jadhav *et. al.*, 1990 in having the scolex distinct, narrow anteriorly and broad posteriorly and testes 130-150 in numbers; from *C. alii* Shinde *et. al.*, 1994 in having scolex triangular, hooks 34 in numbers, neck present and testes 230-240 in numbers; from *C. vadgaonensis* Patil *et. al.*, 1998 in having the scolex triangular, hooks 56 in numbers, neck present, testes 490-510 in numbers and vitellaria follicular; from *C. baimaii* Wongsawad and Jadhav, 1998 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; from *C. punctatusi*, Kalse and Shinde, 1999 in having scolex rectangular, hooks 40-50 in numbers, neck present, mature proglottids squarish, testes 140-150 in numbers, vitellaria follicular, arranged in 3-6 rows and reported from *Ophiocephalus punctatus*; from *C. armatusae* Shinde *et. al.*, 1999 in having scolex triangular, hooks 58 in numbers, neck present, testes 90-100 in numbers, ovary compact and vitellaria follicular, arranged in 3-4 rows on lateral side of the segments; from *C. mastacembelusae* Shinde *et. al.*, 2002 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; from *C. armatusae (minor)* Pawar *et. al.*, 2002 in having scolex triangular, hooks 58 in numbers, testes 190-200 in numbers and vitellaria follicular; from *C. manjari* Tat and Jadhav, 2004 in having the scolex triangular, hooks 48 in numbers, in single circle, neck present, testes 128-145 in numbers, vitellaria follicular and reported from *Ophiocephalus*

gachua; from *C. vitellariensis* Supugade *et. al.*, 2005 in having scolex large, triangular, hook 48 in numbers, testes 250-260 in numbers and vitellaria follicular, arranged in 3-4 rows. In above aforesaid discussion on the present parasite deserves status of a new species and named *Circumoncobothrium paithenensis n.sp.*

Taxonomic summary

Type species - *Circumoncobothrium paithenensis n.sp.*

Host - *Mastacembelus armatus*

Habitat - Intestine

Locality - Paithan, M.S. India.

Period of collection - 2005- 2009

References

- [1] Chincholikar L.N. and Shinde G.B. (1976) *Marathwada Univ J of Sci Nat Sci* 16 (Sci):9: 183-185.
- [2] Wongsawood C. and Jadhav B.V. (1998) *Riv Di Parasit Vol. XV (LIX)* 3 :291-294.
- [3] Shinde G.B. and Kalse A.T.(1999) *Riv Di Parasit Vol. XVI (LX)* 3: 209-215.
- [4] Shinde G.B., Pawar S.B. and Chavhan S.P.(2002) *Riv Di Parasit Vol XX (LXII)* 3:195-198.
- [5] Jadhav B.V.(1976) *Marathwada Univ J Sci XV* 8: 269-272.
- [6] Jadhav B.V. and Shinde G.B.(1976) *Indian J Biol Sci Asso* 112: 163-164.
- [7] Patil S.R., Shinde G.B. and Jadhav B.V.(1998) *J. of Para Diseases* 22, 2: 148-151.
- [8] Pawar S.R. (2002) *Riv Di Para Vol XX LXIII* 3: 219-222.
- [9] Shinde G.B.(1968) *Riv Di Para* 19(2): 111-114.
- [10] Shinde G.B. (1972) *Riv Di Parasit Vol. XX (LXIII)* 3: 195-198.
- [11] Shinde G.B. and Jadhav B.V.(1976) *Marath Univ J Sci Vol. XV Sci.* 8: 24-29.
- [12] Shinde G.B.(1977) *Ibid* 16 (89):129-132.
- [13] Shinde G.B. and Chincholikar L.N.(1977) *Marh Uni Jour* 9: 177-179.
- [14] Shinde G.B., Sarwade D.V., Jadhav B.V. and Mahajan M.A.(1994) *Riv Di Parasit* 11 (55): 167-169.
- [15] Tat M.B. and Jadhav B.V.(2004) *Nat J Life Sciences* 1 (1):129-132.
- [16] Yamaguti S.(1934) *Jap J Zool* 6: 1 – 112.
- [17] Yamaguti S.(1954) *Acta Okayama* 8 (4): 353-374.

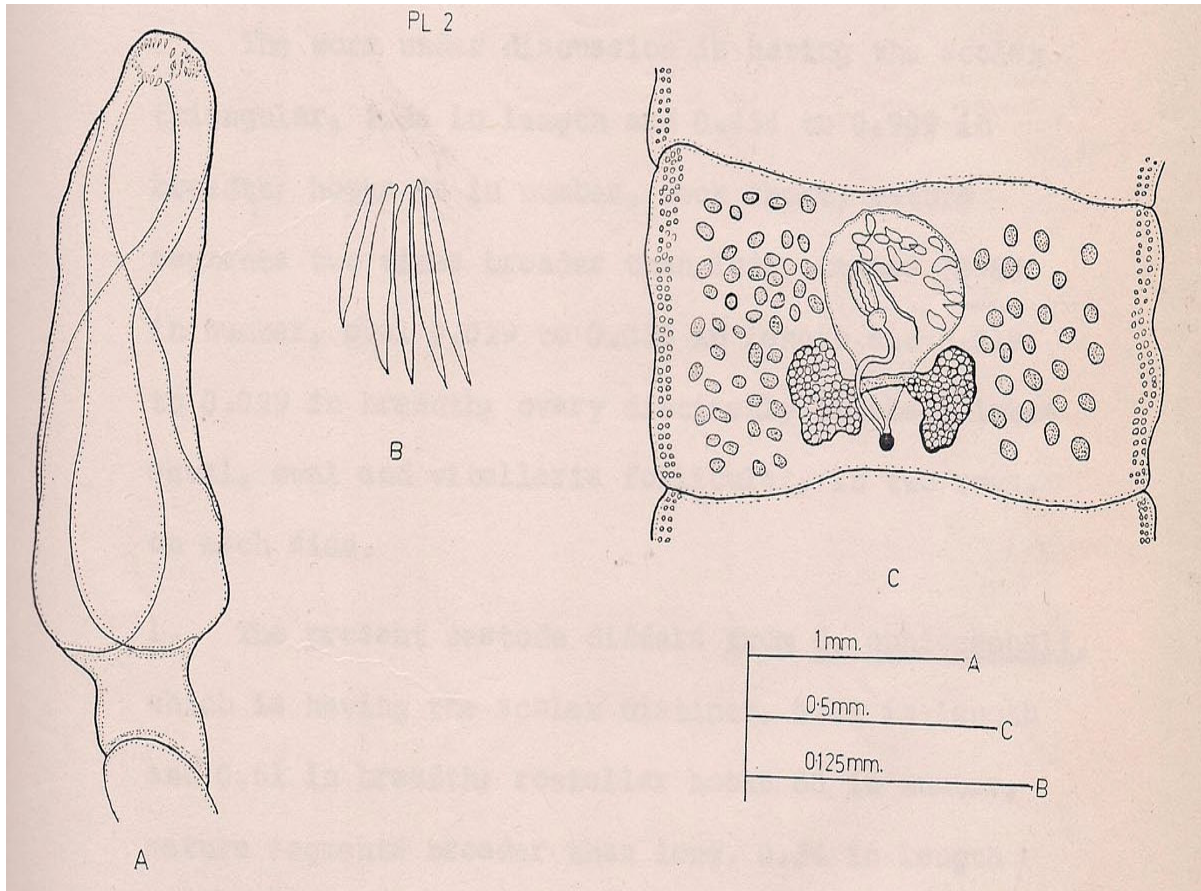


Fig. 1-*Circumoncobothrium paithenensis* n.sp. a) Scolex b) Hooks c) Mature segment