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A TAXONOMIC STUDY OF A NEW CESTODE COTUGNIA DOMESTICUSAE SP. NOV. (CESTODA: DAVAINEIDAE) IN DOMESTIC CAT FROM LATUR DISTRICT

Zoology

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ABSTRACT

The present investigation deals with a new species of the genus *Cotugnia* from the intestine of domestic cat i.e. *Felis chaus*, at Ahmedpur district Latur (M.S.) India. The new species *Cotugnia domesticusae* is come closer to all the known species of the genus *Cotugnia* in general topography of organ but differs due to scolex squrish shape, rostellum armed, four suckers, mature segments broader than long, craspedote, testes 40-50 in numbers, cirrus pouch cylindrical in shaped, cirrus straight, curved, ovary medium, oval, vagina posterior to the cirrus pouch, ootype medium, vitelline gland squarish or triangular and genital pore medium, oval shape.

KEYWORDS

Cestoda, Cotugnia Domesticusae, Sp. Nov., Davaineidae, Felis Chaus.

INTRODUCTION

Genus *Cotugnia* was erected by Diamare in 1893, with its type species *C. digonopora* from *Gallus gallus domesticus.* So far following species of the avian Cestode genus *Cotugnia* are reported.

1. *Cotugnia digonopora*
2. *Cotugnia polyacantha*
3. *Cotugnia cuneateatenuis*
4. *Cotugnia joyeuxi*
5. *Cotugnia parva*
6. *Cotugnia fleari*
7. *Cotugnia bahli*
8. *Cotugnia intermedia*
9. *Cotugnia noctua*
10. *Cotugnia taiwanesis*
11. *Cotugnia rimandoi*
12. *Cotugnia magna*
13. *Cotugnia aurangabadensis*
14. *Cotugnia columbae*
15. *Cotugnia srivastavi*
16. *Cotugnia magdoubii*
17. *Cotugnia satpulensis*
18. *Cotugnia yamaguti*
19. *Cotugnia vishakhapatnamensis*
20. *Cotugnia rajivji*
21. *Cotugnia kamatiensis*
22. *Cotugnia chengmaii*
23. *Cotugnia manishae*
24. *Cotugnia ganguae*
25. *Cotugnia mehdii*
26. *Cotugnia alii*
27. *Cotugnia sillodensis*
28. *Cotugnia singhi*
29. *Cotugnia lohaensis*
30. *Cotugnia shankari*
31. *Cotugnia liviae*
32. *Cotugnia streptopelii*
33. *Cotugnia hafeezi*
34. *Cotugnia indiana*
35. *Cotugnia tetragona*
36. *Cotugnia orientalis*
37. *Cotugnia mahekarii*
38. *Cotugnia jadhavii*
39. *Cotugnia babai*

The present worm comes closer to all the known species of the genus *Cotugnia*, Diamare (1893), but differs due to some other characters.

MATERIALS AND METHODS

Cestode parasites were collected from the intestine of *Felis chaus,* at Ahmedpur district Latur (M.S.) India in the month of January 2019. These cestodes preserved in hot 4% formalin and stained with Harris haematoxylin, 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. The identification is made with the help of Systema Helminthum.

DESCRIPTION

Eight cestode parasites were collected from the intestine of domestic cat i.e. *Felis* at Ahmedpur district Latur (M.S.) India, in the month of January, 2019. The worms are short, with thick musculature, white in colour, with scolex, immature and mature segments.

The scolex is large in size, almost squarish in shape, distinctly marked off from the strobila, large in size, with four suckers, armed rostellum and measures0.533-0.737 in length and 0.726-1.136 in breadth. The rostellum is small in size, oval in shape, near the anterior margion of the scolex, transversely placed, elongated, armed with rostellor hooks, in a single circle and measures 0.045-0.124 in length and 0.181-0.204 in breadth. The rostellar hooks are in a single circle. They are short, single prolonged 120-130 (125) in number and measure 0.006-0.014 in length and 0.001 in breadth. The neck is absent. The segmentation starts immediately the scolex.

The mature segments are large in size, boarder than long, craspedote, each with a double set of reproductive organs, with concave or convex lateral margin and short blunt, round projection at the posterior corner of the segments and measure 0.402-0.477 in lengths and 1.584-1.933 in breadth. The testes are small to medium in size, oval in shape, 40-50 in number, in a single field, unevenly distributed, post ovarian, mostly near the posterior margin of the segments, extending outside the longitudinal excretory canals and measure 0.030-0.053 in length and 0.023-0.053 in breadth. The cirrus pouch on each side, is medium in size, cylindrical in shape, elongated, obliquely placed, directed anteriorly, almost near the anterior margin of the segments, do not reach upto the longitudinal excretory canals, narrow proximally broad distally and measures 0.189-0.197 in length and 0.008-0.038 in breadth. The cirrus is thin, curved, slightly broad proximally, narrow distally, contained within the cirrus pouch protruded slightly out of the genital pore and measures 0.189-0.197 in length and 0.008 in breadth. The vas deferens is of medium size, curved, extends anteriorly, crosses longitudinal excretory canals, turns posteriorly and measures 0.129-0.258 in length and 0.008 in breadth. Ovary on each side, is medium in size, oval in shape, placed in the anterior region of the segments, multilobed, lobes are of unequal in size and shape, 6-7 in number, compact and measures 0.235-0.341 in length and 0.038-0.318 in breadth. The vagina is thin tube, posterior to cirrus pouch, starts from the genital pore, extends transversely for a long distance, turns slightly anteriorly, then posteriorly, crosses longitudinal excretory canals, enlarges and forms a small, slender, cylindrical receptaculum seminis, extends and opens into ootype and measures 0.432-0.508 in length and 0.007-0.009 in breadth. The receptaculum seminis is broader in the middle, narrow at both the ends, cylindrical in shape, curved and measures 0.068-0.083 in length and 0.008-0.030 in breadth. The Ootype is medium in size, oval in shape, ventral to the ovary and measures 0.038-0.045 in length and 0.030 in breadth. The vitelline gland is medium in size, squarish or triangular in shape, a single mass, compact, obliquely placed, post ovarian or postero-lateral or internal to the ovary and measure 0.060-0.083 in length and 0.045-0.121in breadth. The genital pores are medium in size, oval in shape bilateral, marginal, at 1/3rd or 1/4th from the amterior margin of the segments and measure 0.045-0.076 in length and 0.015-0.030 in breadth. The longitudinal excretory canals are of medium width and measures 0.015 in breadth.

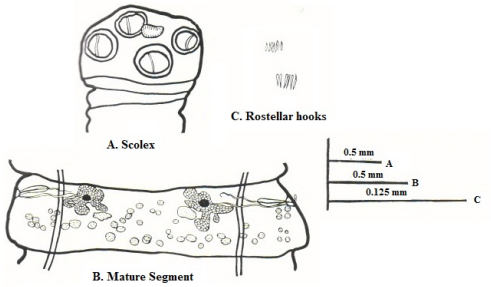

Fig. *Cotugnia domesticusae,* Sp. Nov.

DISCUSSION

The present Cestode parasite under discussion is having scolex squarish shape, rostellum armed, armed four suckers, mature segments broader than long, testes 40-50 in numbers, cirrus pouch cylindrical shaped, cirrus straight, curved, ovary medium, oval, vagina posterior to the cirrus pouch, Ootype medium, vitelline gland squarish or triangular and genital pore medium, oval shape.

The present form comes closer to all the known valid species of the genus *Cotugnia* in general topography of organs but differs due to some taxonomic characters by following species.

1. The present Cestode differs from *Cotugnia digonopora,* Pasqual, 1890, Diamare, 1893 in having diameter of scolex 1.56, diameter of rostellum 0.15, number of testes 100-150, length of cirrus pouch 0.300 and reported from *Gallus gallusdomesticus*.
2. The present Cestode differs from *Cotugnia polyacantha,* Furmann, 1909 in having scolex 0.450 in diameter, rostellum 0.220 in diameter, number of hooks 420, testes about 100 in numbers , length of cirrus pouch 0.180.
3. The present Cestode differs from *Cotugnia cuneateatenui,* Meggitt, 1924 which has scolex rounded, number of hooks 400, number of testes 30-50 I number.
4. The present cestode differs from *Cotugnia jyoeuxi,* Baer, 1925 which has diameter of scolex 0.67, diameter of rostellum 0.19, number of hooks 250, number of testes 30-50 in numbers, length of cirrus pouch 0.0075 and reported from *Turner shngalensis,* in French, Guinea.
5. The present Cestode differs from *Cotugnia parva,* Baer, 1925 which has diameter of scolex 0.49-0.68 × 0.69-0.85, diameter of rostellum 0.15, number of hooks 378-396, number of testes 32-41 in numbers, length of cirrus pouch 0.96-0.106 and reported from *Columba livia,* in Burma, India.
6. The present Cestode differs from *Cotugnia fleari*, Meggit, 1927, which has scolex diameter 0.45 × 0.58, rostellum not mentioned, testes 28-44 in numbers, length of cirrus pouch 0.29-0.31 and reported in *Columba livia*, in Egypt, India.
7. The present Cestode differs from *Cotugnia bhali,* Johri, 1934 which has the diameter of scolex 0.500, diameter of rostellum 0.34 and number of hooks 332, number of testes 69-74, length of cirrus pouch 0.25-0.223.
8. The present cestode differs from *Cotugnia intermedia,* Johri, 1934 which has the diameter of 0.44-0525, rostellum not mentioned, hooks not mentioned, testes 69-74 in numbers, length of cirrus pouch 0.215-0.223.
9. The present Cestode differs from *Cotugnia noctua,* Johri, 1934 which has the diameter of scolex 0.570, diameter of rostellum 0.225, number of hooks not mentioned, number of testes 170-182, length of cirrus pouch 0.176-0.200.
10. The present Cestode differs from *Cotugnia taiwanensis,* Yamaguti, 1935 in presence of diameter of scolex 0.51-0.740, diameter of rostellum 0.440, number of hooks 200, number of testes 12-13 and reported in Indochina, India.
11. The present Cestode differs from *Cotugnia rimandoi,* TubanduiMasilungan et al., 1937, in having number of testes about 100-136 and reported from *Columba livia* in Philippines.
12. The present Cestode differs from *Cotugnia magna,* Burt, 1940 in having diameter of scolex 0.580-0.620, diameter of rostellum 00.285-0.315, number of hooks 480-500, number of testes 150 and reported from *Columba livia* in Ceylon.
13. The present Cestode differs from *Cotugnia aurangabadensis,* Shinde, 1969 in presence of diameter of scolex broad 0.483, diameter of rostellum 0.300, number of hooks 500 in two rows, number of testes 80-90, length of cirrus pouch 1.30×1.040, ovary compact.
14. The present Cestode differs from *Cotugnia colunbae,* Shinde, 1969 in presence of diameter of scolex 0.54-0.74, diameter of rostellum 0.447, number of hooks 1200, number of testes 12-14, length of cirrus pouch 0.3, ovary bilobed.
15. The present Cestode differs from *Cotugnia shrivastavi, Malviya* and Dutta, 1970 in presence of diameter of scolex 0.726, diameter of rostellum 0.446, number of testes 80-85.
16. The present Cestode differs from *Cotugnia magdoubii,* Megzoubiand Kasim, 1980 in presence of diameter of scolex 0.44-0.55, diameter of rostellum 0.25-0.55, number of testes not mentioned, length of cirrus pouch 0.15-0.18.
17. The present Cestode differs from *Cotugnia satpulensis,* Shinde et al. 1983, in presence of diameter of scolex 0.535, diameter of rostellum 0.230, number of hooks 337, number of testes 43-52.
18. The present Cestode differs from *Cotugnia yamaguti,* Shinde et al. 1985, in presence of scolex globular, rostellum rounded, number of hooks about 500, number of testes 190-200, ovary bilobed.
19. The present Cestode differs from *Cotugnia vishakhapatnamensis,* by having size of scolex 28-35 × 0.336-1.056.
20. The present Cestode differs from *Cotugnia rajivji,* Jadhav et al., 1994 in presence of diameter of scolex 0.62-1.004, oval in shape, diameter of rostellum 0.37-0.44, number of hooks 350-400, length of cirrus pouch 0.280-0.282, ovary bilobed.
21. The present Cestode differs from *Cotugnia kamatiensis,* Kharade and Shinde, 1995,is having number of hooks 200-210, number of testes 95-105, ovary bilobed
22. The present Cestode differs from *Cotugnia chengmaii,* Wongsad et al., 1998, is having number of hooks numerous, number of testes 30-35, ovary bilobed.
23. The present Cestode differs from *Cotugnia manishae,* Shinde et al., 1999, in presence of diameter of scolex 0.462 × 0.485, diameter of rostellum 0.223 × 0.227, number of hooks 110-120, number of testes 85-90(90).
24. The present Cestode differs from *Cotugnia ganguae,* Shinde et al., 1999, in presence of number of hooks 275300, number of testes 150160, ovary bilobed.
25. The present Cestode differs from *Cotugnia mehdii,* Mahajan et al., 1999, in presence of diameter of scolex 0.985× 1.576, diameter of rostellum 0.129 × 0.182, number of hooks 110, number of testes 140-150.
26. The present Cestode differs from *Cotugnia alii,* Shinde et al., 2003in presence of diameter of scolex 0.450-0.456 × 0.636-0.657, number of hooks 100-110, number of testes 80-85.
27. The present Cestode differs from *Cotugnia sillodensis,* Jadhav et al., 2003, in presence of number of hooks 220-250, number of testes 165-175, ovary irregular median.
28. The present Cestode differs from *Cotugnia singhi*, Pawar et al., 2004, is having number of hooks 200-210, number of testes 65-70 and ovary irregular.
29. The present Cestode differs from *Cotugnia lohaensis,* Jadhav et al., 2004, in presence of shape of scolex, number of hooks 190-210 in numbers, testes 28-30 in numbers, ovary bilobed.
30. The present Cestode differs from *Cotugnia shankari,* Tat and Jadhav, 2005, in presence of diameter of scolex 0.947-1.000× 0.955-1.175,number of hooks 105-205, number of testes 27-40, length of cirrus pouch 0.098-0.030, ovary bilobed.
31. The present Cestode differs from *Cotugnia liviae,* Patil et al., 2005 in presence of diameter of scolex 0.369 × 0.359-0.437mm, diameter of rostellum 0.175-0.0189 × 0.097-0.131, number of hooks 250-270, number of testes 120-125(123), length of cirrus pouch0.225×0.068.
32. The present Cestode differs from *Cotugnia streptopelii,* Jadhav et al., 2009 in having scolex longer than broad 8.04-5.36 × 9.82-5.36 quadrangular, diameter of rostellum 2.58-2.14 × 1.96-1.25, number of hooks numerous, number of testes 27-30, ovary compact, almost bilobed, vitelline gland post ovarian, oval.
33. The present Cestode differs from *Cotugnia hafeezi,* Nanaware et al., 2010, in having diameter of scolex 1.2245 × 1.086 × 0.996-1.176, quadrangular, diameter of rostellum 0.95 × 0.317, number of hooks 55-60, number of testes 150-160.
34. The present Cestode differs from *Cotugnia Indiana,* Kasar et al., 2010 from diameter of scolex square, number of hooks 110-120, number of testes 115-120.
35. The present Cestode differs from *Cotugnia tetragona,* Nanaware et al., 2011 in presence of scolex tetragonal 0.927 (0.688-1.666) × 0.773 (0.667-0.879), diameter of rostellum 0.280 (0.212-0.349) × 0.450, number of hooks 120-130, number of testes 60-70, length

of cirrus pouch 0.185, ovary bilobed, vitelline gland round.

36. The present Cestode differs from *Cotugnia orientalis,* Nanaware and Bhure, 2011 in presence of scolex quadrangular 1.266 × 0.927, diameter of rostellum 0.227 × 0.636, number of hooks 115-125, number of testes 45-50, length of cirrus pouch 0.168, ovary bilobed, W-shaped, vitelline gland round.
37. The present cestode differs from *Cotugnia mahekarii*, Shukla et al., 2012, is having shape of scolex quadrangular, rostellum is oval, hooks absent, number of testes 63(60-65), length of cirrus pouch 0.534 (0.533-0.535), genital pore oval, ovary oval, vagina long tube, posterior to cirrus pouch.
38. The present Cestode differs from *Cotugnia jadhavii, Shukla* et al., 2012 is having scolex large, quadrangular, rostellum oval, testes 90-100 in numbers, ovary V shaped.
39. The present Cestode differs from *Cotugnia babai,* Sambhaji Shinde, Amol Thosar and Rajesh Katyayani, 2016 is having scolex round in shape, rostellum unarmed, unarmed four suckers, mature segments broader than long, testes 104 in numbers, cirrus pouch cone shaped, cirrus straight, curved, ovary bilobed with irregular margin, vagina posterior tothe cirrus pouch, ootype small, vitelline gland compact and genital pore small, oval shape.

The above noted characters of these parasites are valid enough to erect a new species for the Cestode and hence the name *Cotugnia domesticusae,* Sp. Nov. is proposed after common name of host i.e. domestic cat.

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