

A new species *Stilesia deshmukhi* (Eucestoda: *Thysanomidae*) fuhrmann, 1907 from Pune district M.S. India

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Abstract

Cestode parasites are the endoparasites in the intestine of the host, they live anaerobically, grow and reproduce in the intestine. The gravid proglottids are dispersed out of the host body during the process of defecation. These parasites affecting the health of host and lead to malnutrition and various diseases. Though non-pathogenic infection, it causes marked economic loss. *Stilesia* a tapeworm parasite having sheep, goats, other livestock as a host. The worm under discussion deals with description of new species of genus *Stilesia* (Railliet, 1893) from *Capra hircus* and *Ovis aries* as a type species. The present form agrees all the characters of the genus *Stilesia* and differs from all known species.

Keywords: *Stilesia*, scolex, proglottids, ovary, testes

Introduction

The cestode (*Stilesia*) occur more frequent in sheep and goats, and cattle. The genus *Stilesia* was established by Railliet, 1893^[4, 11] from *Ovis aries* in Europe, Asia, and Africa, as *Stilesia globipunctata*. Later, many species were added by different authors. The present paper deals with new species of the genus *Stilesia* viz. *Stilesia deshmukhi* of *Capra hircus* from Pune district.

Materials and Methods

The cestode worms were collected from the intestine of *Ovis bharal* hircus from Shirur, Pune M.S. India, in the month of July 2002. Cestode specimens were cleaned and fixed in 4% formalin. Fixed specimens then washed in distilled water stained in hematoxylin, after dehydration in alcohol grades the cestode specimens were cleared in xylene and mounted in D.P.X. The morphology and anatomical details studied from taxonomical point of view with the help of photographs and camera lucida drawings. The measurements of taxonomically important body parts are in m.m. The identification of the parasites was done by referring the Yamaguti. S. (1956)^[14]: Systema Helminthum Vol. II.

Descriptions

Some specimens of the cestode parasites were collected from the Intestine *Ovis bharal*. During the period of June 2002 to May 2005. The worms were long with thin musculature, creamy white color, having scolex, numerous immatures, mature and gravid proglottids. The worms were flattened, preserved in 4% formalin, from the flattened worms two were stained in Harris hematoxylin, passed through various alcoholic grades, cleared in xylol, mounted in D.P.X. and the whole mount slides were prepared for further anatomical studies.

The scolex is medium in size, globular in shape distinctly marked off from the strobila broader than long. It measures 0.962 (0.920-1.005) in length and 0.747 (0.725-0.770) in width. The suckers are four in number, large in size oval in

shape, arranged in two pairs, one pair in each half region of scolex, overlapping on each other in each pair, it measures 0.437 (0.410-0.465) in length and 0.305 (0.275-0.335) in width.

The neck is short and wide, broader than long almost four times broader than long, it measures 0.145 (0.136-0.155) in length and 0.546 (0.461-0.631) in width the segmentation starts immediately behind the scolex.

The mature segments are broader than long almost seventeen times broader than long, with convex lateral margins with slight projections at the posterior corners of the segment, it measures 0.071 (0.065-0.078) in length and 1.1 (1.075-1.125) in width.

The testes are on two lateral fields, twenty-seven in number oval in shape, it measures 0.025 (0.010-0.040) in length and 0.02 (0.012-0.028) in breadth. The cirrus pouch is small, elongated somewhat oval at one third from the anterior margin of the segment, obliquely placed, the cirrus pouch measures 0.045 (0.043-0.047) in length and 0.018 (0.016-0.020) in width.

The cirrus is thin slightly curved, contained within the cirrus pouch, it measures 0.030 (0.028-0.032) in length and 0.022 (0.020-0.024) in width. The vas deferens is short, medium in length, obliquely placed, curved distinctly and measures 0.072 (0.070-0.074) in length and 0.005 (0.004-0.006) in width. The ovary is small, oval, near the anterior margin of the segments, with 3-4 short, blunt acini. The ovary is 0.029 (0.027-0.031) in length and 0.054 (0.053-0.055) in width. The vagina is thin tube posterior to cirrus pouch, runs obliquely from genital pore, reaches and opens in the ootype, it measures 0.34 (0.30-0.38) in length and 0.004 (0.003-0.005) in width. The ootype is small in size, rounded in shape, in the concavity of ovarian lobes and measures 0.011 in diameter. The genital pores are medium in size, oval in shape, marginal, one third from the anterior margin of the segment, regularly alternate and measures 0.014 (0.012-0.016) in length and 0.011 (0.010-0.012) in width.

The longitudinal excretory canals are in medium in width and measures 0.072 (0.067-0.078) in length and 0.012

(0.010-0.14) in width.

The gravid segment is broader than long, almost five times broader than long it measures 0.40 (0.38-0.42) in length and 0.891 (0.885-0.897) in width. Before the entrance of eggs, the par uterine organ is a dense, cylindrical, slightly bowed body of a stratified structure 0.279 (0.267-0.291) in length and 0.128 (0.097-0.160) in width, two in number, its medial end is more often bends anteriorly up to the entrance of the eggs the par uterine organ becomes spherical, on the poster lateral surface of which vestiges of the uterus in the form of small appendage which are visible.



Fig 1: Scolex- Photograph

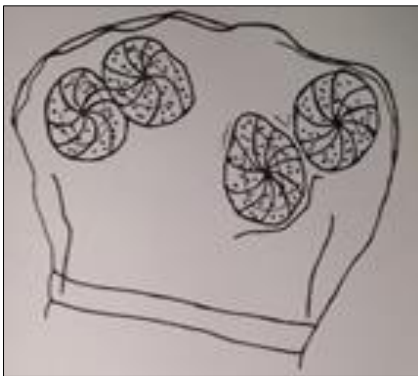


Fig 2: Scolex-Camera lucida drawing.

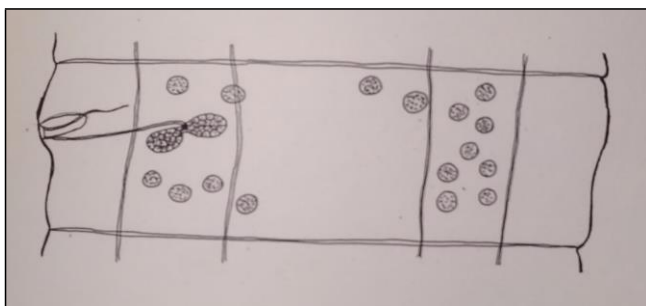


Fig 3: Mature segment- Camera lucida drawing.

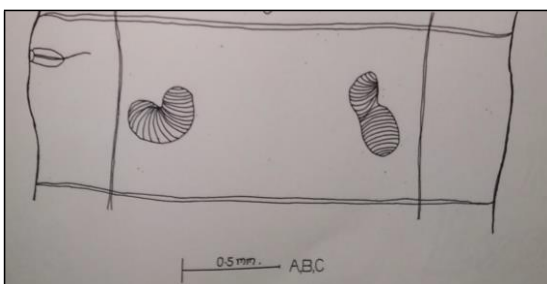


Fig 4: Gravid segment - Camera lucida drawing

Result and Discussion

The genus *stilesia* is erected by Railliet, 1893 [4, 11] for *Taenia globipunctata*, Rivolta, 1893.

1. *Stilesia globipunctata* (Rivolta 1874) Railliet, 1893 type species.
2. *S. vittata*, Railliet, 1896
3. *S. hepatica*, Wollfhugel, 1903
4. *S. okapi*, Leiper, 1935
5. *S. leiperi*, Kadam *et al* 1980
6. *S. caballeroi*, Kalyankar, *et al* 1981
7. *S. southwelli*, Jadhav B. V. *et al* 1982
8. *S. aurangabadensis*, Majid *et al*, 1982
9. *S. garhwalensis*, Malhotra and Capoor 1983
10. *S. kotwarensis*, Malhotra and capoor 1983
11. *S. marathwadensis*, Jadhav B. V. *et al*. 1985
12. *S. jadhavae* Jadhav, 1999
13. *S. yawalensis*, Kalse *et. al.* 1999
14. *S. pandeyi*, Nanaware & Jadhav, 2004

The worm under discussions is differ from other worms as under.

1. The present worm differs from *S. globipunctata* (Rivolta 1874) Railliet, 1893 [4, 11], small, rounded 0.5-0.8, in the total number of testes 4-7, size of testes 0.045-0.050, shape and size of cirrus pouch small, pyriform, ventral to vagina, 0.04-0.05 ovary spherical, 0.040-0.058 vagina dorsal to cirrus pouch.
2. The worm under discussion differs from *Stilesia vittata* Railliet, 1896, segmentation not distinct, testes 5-9 each in two lateral groups 0.046-0.066 in diameter, vas deferens closely coiled, between cirrus pouch and outer wall of excretory vessel. Cirrus pouch 0.090-0.112 long and 0.55 thick, elongated, cylindrical, ovary rounded compact 0.10 in diameter, situated between poral vessel, vagina posterior to cirrus pouch, genital pore in anterior half of the segment.
3. The parasite under discussion differs from *Stilesia hepatica* Wollfhugel, 1903. Which is described from the liver, there are 6-7 testes on each side, pre ovarian in anterior half. The form under discussion also differs in vas deferens not closely coiled, but extending up to excretory canal, ovary small, compact, oval, vagina anterior to cirrus pouch, genital pore in the middle of the segment.
4. *Stilesia okapi*, reported by Leiper (1935) from Okapi (family: *ciiraffidae*) from London zoo can be differentiated from the present form mainly by the number of the testes and other features. In *Stilesia okapi* Leiper, 1935 there are only 2-3 testes in each lateral field.
5. The present form differs from *Stilesia leiperi*, Jadhav B. V. *et al.* 1980, which is having 5-6 testes on each side, cirrus pouch elongated, cylindrical, vas deferens not closely coiled but extend beyond long excretory canals, ovary medium, almost circular, compact with small acini, genital pore in anterior half of the segment.
6. The present worm differs from *Stilesia caballeroi*, Kalyankar *et al*, 1981. in having the scolex very small, 0.41 in width, size of suckers 0.12 in diameter, size of cirrus pouch 0.11-0.14 x 0.033-0.050 shape and size of testes 1 to 11 testes on each side, disposed in 2 to 3 rows and measures 0.038-0.888 in *S. caballeroi*. Vas deferens form a dense bundle of convolutions.
7. The present form differs from *Stilesia southwelli*

- Shinde, *et al* 1982, which is having quadrangular scolex, mature segments 5 times broader than long, testes 4 in each two lateral groups, outside the excretory canal, group vas deferens very much coiled, reaching upto ovary, ovary small, round without acini, vagina posterior to cirrus pouch, genital pore at 1/3rd from anterior margin of the segment, par uterine organs two in each segment, saccular, transversely elongated, containing (10-15) group of eggs.
8. The present worm differs from *Stilesia aurangabadensis*, Majid *et al* 1982, in having the scolex instead of large spherical, 0.728 in diameter, testes rounded in two lateral groups, 5 on each lateral side of the segment and lateral to ovary 0.028 in diameter. Vas deferens not coiled, reaches up to longitudinal excretory canal, cirrus pouch cylindrical, elongated, 0.146 ovary medium in size, compact, circular in poral half, and measures. 0.097.
 9. The present tapeworm can further be distinguished from *Stilesia garhwalensis* Mahhotra, and Capoor, 1983, in the size of scolex 0.510-0.840, number of testes of size of cirrus pouch 0.011-0.101 in diameter, size of ovary 0.009-0.097 in diameter, Vagina posterior to cirrus pouch, genital pore situated at anterior 1/3rd level of lateral margin of segments.
 10. The present tapeworm can be differentiated from *Stilesia kotwarensis*, Malhotra and Capoor, 1993 by number of testes 1 to 12, width of scolex 0.836-1.102 size of cirrus pouch 0.022-0.179 x 0.1001-0.150 shape and size of ovary small, spherical, situated inner to the longitudinal excretory canal on poral side and measures 0.019. Genital pore irregularly alternate at anterior 1/3rd level of lateral margin of segment.
 11. The *Stilesia marathwadensis* Shinde, *et al*, 1985 ^[9], is having segments broader than long 0.022-0.025, testes 5-7 in number, rounded, in two groups, 0.008 in diameter whereas in the present form these 6-4, testes on two lateral sides, oval in shape 0.078-0.083 in size, the form under discussion also differs from *S. marathwadensis* in size of cirrus pouch.
 12. The present form differs from *Stilesia jadhavae*, Jadhav, 1999, in having the segments 8 times broader than long, number of testes 5-7 in numbers, in respect of length of cirrus pouch 259 diameter of ootype 0.045 size of ovary 0.197, vagina anterior to cirrus pouch.
 13. The present cestode differs from *S. yawalensis*, Kalse *et. al.* 1999, in having scolex quadrangular, distinctly marked off from strobila, segment broader than long, testes rounded, in 2 groups (5-6 in number), vas-deference thin, curved, cirrus pouch oval ovary medium, globular, a single mass, vagina thin, Genital pore marginal.
 14. The present tapeworm differs from *S. pandeyi*, Nanaware *et. al.* 2004, in having large scolex with four suckers, neck short and wide almost four times broader than long 0.136-0.155 mm. Mature segments almost 17 times broader than long with convex lateral margins and slight projections at posterior corners of segment 0.067-0.078 mm. Testes are on two lateral fields, twenty in number, oval 0.010-0.039 mm. Cirrus pouch small, elongated, somewhat oval at one third of anterior margins of segments. obliquely placed 0.049. Cirrus thin slightly curved contained within cirrus pouch, 0.039 mm. Vas deferens short, medium, obliquely placed, curved distally and measures 0.072 mm ovary small, oval, near anterior margin of segments, with 3-4 short, blunt acini, 0.029 x 0.058 mm. vagina thin tube posterior to cirrus pouch, runs obliquely from genital pure reaches and opens in ootype 0.340 mm. Ootype small, round, in concavity of ovarian tubes, 0.010 mm in diameter. Genital pores are medium, oval, marginal, one-third from anterior margin of segments, regularly alternate, measures 0.015 mm longitudinal excretory canals are of medium in width, in two pairs, 0.067-0.078 mm. Gravid segment almost five times broader than long, 0.409-0.437 mm in width. Before entrance of eggs par uterine organ is a dense cylindrical, slightly bowed body of a stratified structure 0.267-0.291 mm, two in number its medial and more often bends anteriorly. Upon entrance of eggs, par uterine organ becomes spherical, on postero-lateral surface of which vestiges of uterus in the form of small appendage are visible.
- The author feels that these differentiating characters are valid enough for regarding this cestode worms as a new species and proposed *S. desh mukhi* n.sp. In honor of Dr. R.A. Deshmukh. Head of Zoology Department Bharti Vidyapeeth, Pune. He has contributions in the field of cestode Taxonomy.

Taxonomic Summary

Genus: *Stilesia* Railliet, 1893 ^[4, 11]

Species: *Stilesia desh mukhi* nsp.

Host: *Ovis bharal*

Habitat: Intestine

Locality: Shirur, Pune.M.S.

Period of Collection: June 2002 to May 2005.

Etymology: Named to honor Dr. R.A. Deshmukh

Acknowledgement

Authors is thankful to the Head, Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad and Fergusson College Pune for permission and facilities during tenure of this Ph.D. research work. Author is thankful to his research guide Late Professor Dr. Baba V. Jadhav for valuable guidance.

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