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RESEARCH ARTICLE

DESCRIPTION OF A NEW SPECIES *PEGOSOMUM AFTABI* N.SP (TREMATODA: ECHINOSTOMATIDAE) IN LITTLE EGRET EGRETTA GARZETTA (CICONIIFORMES: ARDEIDAE) OF LARKANO, SINDH, PAKISTAN

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ABSTRACT

During present study on the helminth parasites of birds, a total of five Little Egret *Egretta garzetta* (Ciconiiformes: Ardeidea) were collected from different locations of river Indus at Jamshoro, Sindh, Pakistan. During examination of gut contents and visceral organs, seven trematodes belonging to genus *Pegosomum* Ratz, 1903 were collected from liver of two host birds. Present species differs from its congeners by having 26 number of collar spines, sub-terminal oral sucker, pre-pharynx absent, longer, tubular esophagus, ventral sucker rounded located at mid- level of body, cirrus sac elongated and wider at its base overlapping acetabulum, ovary spherical, slightly sub-median, both testes have smooth margin, anterior testis overlaps ceca from right side, posterior testis overlaps ceca from both sides, vitellarria commencing from lower level of pharynx, overlapping ceca reaching upto anterior testis, ceca with regular smooth outline and other varying characters.

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INTRODUCTION

Genus *Pegosomum* Ratz, 1903 contain trematodes which cause death in birds. Murata et al., 1998 reported genus *Pegosomum* with heavy infection following death in cattle egret of Japan. Genus *Pegosomum* was proposed by Ratz in 1903 to accommodate trematodes collected from the liver and bile ducts of birds. Type species is *P. saginatum* Ratz 1897 collected from the host great egret of Europe and Azerbaidzhan. Ratz in 1903 reported *P. spiniferum* collected from the host Eurasian bittern of Hungary; Tubangui and Masilungan in 1935 reported *P. bubulcum* from the liver of Eastern Cattle Egret of Philippines; Kurashvili in 1949 described *P. petrovi* collected from the host *Egretta alba* of Georgia and Russia; Shakhtakhtinskaia in 1949 reported *P. skrjabini* collected from the host purple heron and cattle egret of Russia; Skrjabin and Bashkirova in 1956 recorded *P. herodiae* collected from the host *Herodias timoriensis* of Java, Indonesia; Srivastava in 1957 collected *P. egretti* from the host Cattle Egret of India; Saksena in 1960 described *P. indicum* from the host Cattle Egret of India; Gvozdev in 1960 collected *P. ixobrychi* from the host Little bittern of Kazakhstan; In 1973 Pandey recorded *P. lucknowensis* was collected from the host Cattle Egret of Lucknow, India; Dharejo in 2006 described *P. munifi* from the host Little egret of Pakistan. This is second report of genus *Pegosomum* Ratz, 1903 reported from avian host of Pakistan. Egrets are the small white herons feed on shallow water and land. They inhabit the area of lake, river, canal, pond, lagoon etc and mainly eat upon fish but variety of small animals like crustaceans, mollusks, insect, spiders and worms are included in their diet.

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MATERIALS AND METHODS

Live little egrets (Ciconiiformes: Ardeidae) were collected from aquatic localities of river Indus at Larkano city, Sindh, Pakistan and brought to Parasitology research laboratory of department of Zoology and examined for trematode parasites. A total of seven live trematodes from liver of two hosts were collected. Trematodes were put into 0.9% saline solution and fixed under slight cover glass pressure in alcohol-formalin-acetic acid (AFA), stained with borax carmine, dehydrated in

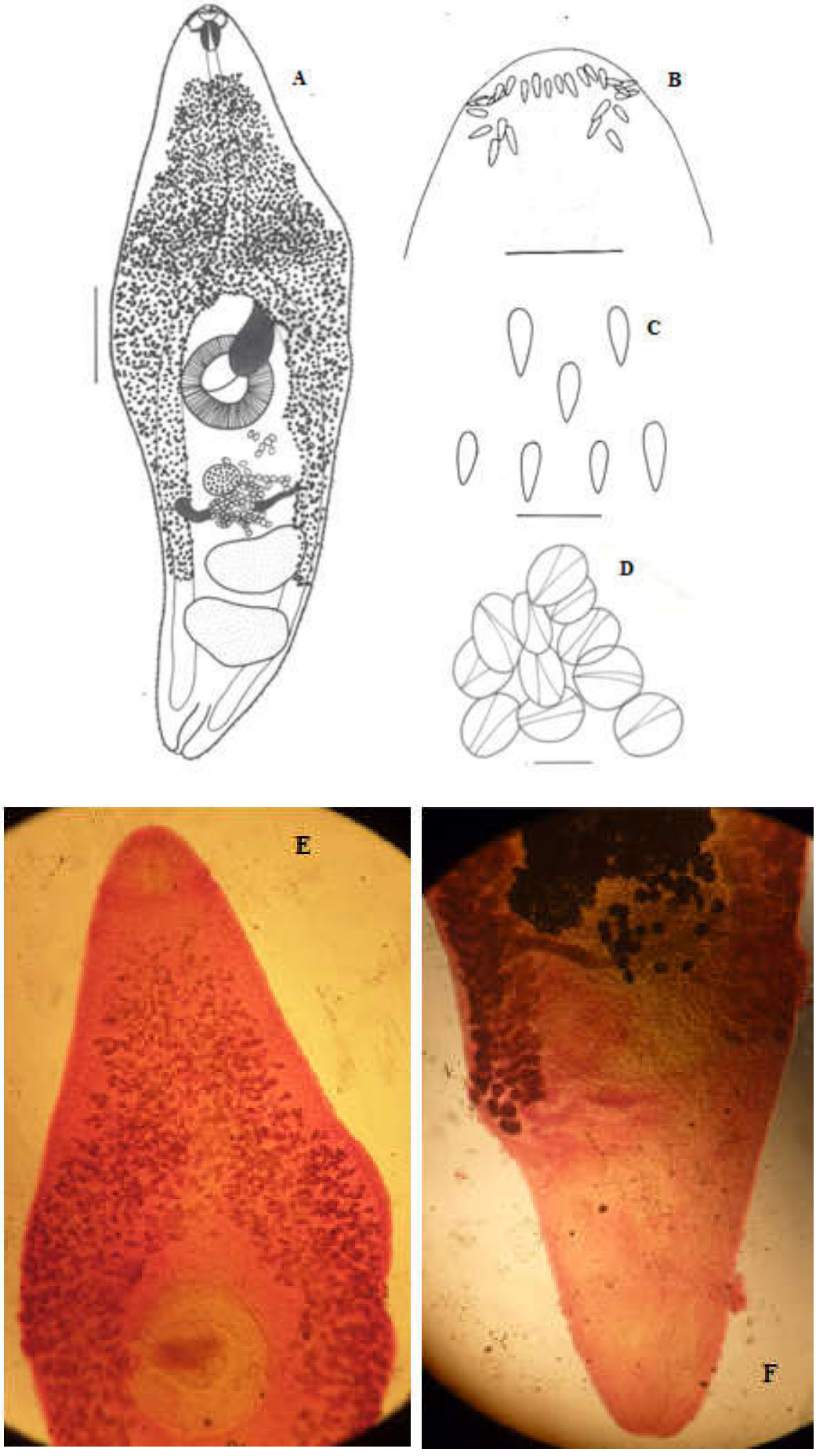

Figure 1. ***Pegosomum aftabi*** **n.sp. A. Entire worm; B. Head collar; C. Body spines; D. Eggs; E. Photograph of anterior part of worm; F. Photograph of posterior part of worm** ***Scale bar:*** **A. 1000µm; B. 300µm; C. 50µm; D.300µm.**

Table. Comparative characteristics of various species of genus *Pegosomum* Ratz, 1903 collected from avian hos

Species	Present species	*P. munifi*	*P. saginatum*	*P. egretti*	*P. lucknowensis*
Body	Densely spinose, lanceolate, maximum width at pre-equatorial region, 8160 X 2560	Spinose, broader anteriorly, gradually tapering posteriorly; a prominent anterior cone-shaped projection present, followed by a pair of broad shoulders, 6.11–8.11 X 2.22–3.11	Spinose, leaf-shaped, without shoulders, tapering at both ends, 14.0–24.0 X 5.0–9.0	Spinose, tapering at both ends, with maximum width at acetabular region, 6.67–8.7 X 2.6–3.25	Spinose, elongated, tapering at both ends, maximum width at anterior to ventral sucker, 4.12–5.16 X 1.51–1.82
Head collar	Poorly developed	Poorly developed	Poorly developed	Poorly developed	Poorly developed
Spines	26	28	20–21	25	24
Oral sucker	Subterminal, 160 X 200	0.222–0.277 X 0.194–0.194	--	Terminal, very weak, 0.15	Poorly developed, rounded, 0.08–0.09
Pre-pharynx	Absent	Absent	Absent	Absent	Absent
Pharynx	Larger than ral sucker, elongated, 320 X 300	0.388 X 0.305	Very small	Protrusible, 0.21 X 0.13	0.12–0.25 X 0.09–0.16
Esophagus	Long, tubular, 2160	0.499–0.666	Longer	Long	Moderately long, 1.21–1.75
Ventral sucker	Larger, at middle of body, 1000 X 960	0.777–0.861 X 0.861–0.888	Smaller	0.78 X 0.93	0.62–0.95
Cirrus sac	elongated, wider at its base, overlapping acetabulum, 1200 X 400	0.888–1.444 X 0.388–0.444	--	Slightly curved, round on left side, 0.61 X 0.18	Oval, 0.41–0.52 X 0.8–0.12
Ovary	Slightly sub-median, oval, very small, 320 X 400	Slightly indented, 0.388–0.388 X 0.611–0.611	Four lobed	Lobed, pear-shaped, 0.45 X 0.27–0.36	Round or slightly intended, 0.31–0.35
Anterior testis	With smooth margins 560 X 1120	0.666–1.055 X 1.527–1.999	Deeply lobed, with almost uniform diameter	Boat-shaped, 0.91-1.43 X 1.56–2.34	Crescent-shaped, 0.43–0.62 X 1.02–1.35
Posterior testis	With smooth margins, 640 X 1120	0.666-1.055 X 1.388–1.555	Deeply lobed, wider than long	Wedge-shaped with irregular anterior margin, somewhat rounded to ova, 1.10–1.56 X 1.49–1.88	0.35–0.51 X 0.02–1.11
Vitellaria	Commencing from the post-pharyngeal level, extending posteriorly, filling much of the forebody reaching up to level of anterior testis.	Vitellaria occupying most of shoulder region, extend backward laterally up to lower level of posterior testis. Follicles slightly intruding in intercecal region between ovary and intestinal bifurcation	Vitellaria occupying middle of the forebody, extend backward laterally up to posterior extremity	Vitellaria composed of small follicles, scattered in branches, extending from middle of esophagus to anterior margins of posterior testis	Vitellaria consists of small follicles, extending from behind the pharynx to the middle of posterior testis or ahead of it
Eggs	90–135 X 60–130	72.5–110 X 52.50–67.50	130 X 85	90–126 X 30–90	90–110 X 20–40
Host	*Egretta garzetta*	*Egretta garzetta*	*Ardeola alba*	*Bubulcus ibis cormonandus*	*Bubulcus ibis*
Location	Liver	Liver	--	Liver	Gallbladder
Locality	Pakistan	Pakistan	Europe, Azerbaijan, India	India	India

graded series of ethanol solutions, cleared in clove oil and xylol and mounted permanently in Canada balsam. Photographs were taken with the help of Olympus DP12 camera, followed by illustration made with the aid of camera lucida. All measurements are given in micrometer (μm) unless otherwise stated, as holotype is followed by range in parenthesis. Holotype and paratypes are deposited in the department of Zoology, University of Sindh, Jamshoro, Sindh, Pakistan.

RESULTS

Family Echinostomatidae Looss, 1899
Genus *Pegosomum* Ratz, 1903
Pegosomum aftabi n.sp. (Figure 1)

Description (based on 8 specimens): Body is densely spined, lanceolate, tapering at both ends, measuring 8160 mm (8050–8350) long by 2560 (2500–2620) wide. Forebody measuring 3560 (3500–3600) long and hindbody 3600 (3580–3630) wide. Maximum width at the level of cecal fork. Oral sucker sub-terminal, muscular, laterally elongated, wider than long, measuring 160 (150–180) long by 200 (200–280) wide. Head collar poorly developed, armed with 26 collar spines. Out of them 4 are angle spines, measuring 65 (65–87) larger than marginal spines, measuring 42 (42–75). Pre-pharynx absent. Pharynx muscular, elongated, longer than wide, larger than oral sucker, measuring 320 (300–380) long by 300 (260–300) wide. Esophagus long, tubular, measuring 2160 (2140–2200), divided into cecal fork in front of ventral sucker. Ventral sucker almost round, measuring 1000 (1000–1200) long by 960 (940–980) wide, located at mid-level of body.

Cirrus sac elongated, wider at its base, overlapping acetabulum, measuring 1200 (1200–1300) long by 400 (400–600) wide. Vitallaria commencing from the lower level of pharynx, extending posteriorly in lateral fields of body, overlapping caeca, reaching up to anterior testes and is densely arranged in forebody. Ovary almost spherical, slightly sub-median located in between ventral sucker and anterior testes, measuring 320 (300–330) long by 400 (400–700) wide. Vitelline glands located in between ovary and anterior testes, joining vitelline follicles on both sides of body. Uterus short, filled with eggs. Testes two, tandem, well apart from each other, located in last quarter of body. Anterior testes with smooth margin, measuring 560 (500–590) long by 1120 (1000–1180) wide. Posterior testis 640 (620–660) long by 1120 (1000–2000) wide. Post-testicular space 1120 (1000–1210) in size. Eggs round to oval, operculated, 90 (90–135) long by 60 (60–130) wide. Excretory duct tubular.

Taxonomic Summary

Type Host: Little egret *Egretta garzetta* (Ciconiiformes: Ardeidae).

Type locality: River Indus at Larkano City (27 N, 68 E), Sindh Province, Pakistan

Number of hosts examined: 05

Site of infection: Liver

Type specimens: Deposited in the department of Zoology, University of Sindh, Jamshoro

Etymology: Specific name refers to the father's name of the research scholar Kiran Naz Memon.

DISCUSSION

Genus *Pegosomum* was proposed by Ratz in 1903 to accommodate trematodes collected from the liver and bile ducts of birds. *Pegosomum munifi* Dharejo 2006 collected from the host little egret *E. garzetta* of Sindh, Pakistan differs from present species in body shape and size; smaller oral sucker and esophagus; number of head collar spines (28); presence of prominent shoulders; more elongated cirrus sac; ventral sucker pre-equatorial in position; ovary larger, irregular, lobed, equatorial in position; testes larger, laterally elongated, sharing edges with each other; anterior testis crescent shaped with smooth outline while posterior testis is irregularly lobed; ceca diverticulating posteriorly, reaching up to posterior end of body and larger size of eggs.

Pegosomum egretti Srivastava, 1957 collected from liver of cattle egret Bubulcus ibis coromandus of India differs from present species in number of head collar spines (25); terminal oral sucker; smaller, wavy esophagus; ventral sucker pre-equatorial in position; curved and left sided rounded cirrus sac; boat-shaped anterior and wedge shaped posterior testes, larger than present species; ovary almost equatorial, slightly lobed, pear-shaped; well-developed laurer's canal; vitellaria commencing from mid-level of esophagus, extending posteriorly reaching up to posterior testis; ceca diverticulating reaching up to posterior end of body. *Pegosomum saginatum* Ratz 1897 differs from present species in body shape and size; smaller forebody and larger hind body; distribution and number of head collar spines (20-21); pharynx longer; diverticulating esophagus; cirrus sac narrower and away from ventral sucker which is pre-equatorial in position, smaller in size; ovary multilobed, slightly at left side from axis of body; highly convoluted uterus in right of ovary; anterior testis bilobed to multilobed with irregular outline; posterior testis multilobed nearer ceca from right side; testes well apart from each other; vitellaria commencing from mid-level of esophagus extending posteriorly up to cecal ends.

Pegosomum spiniferum Ratz, 1903 differs from present species in body shape; smaller forebody and larger hind body; oral sucker terminal; wider head collar armed with (27) spines; pharynx and esophagus smaller; wider cecal fork; ventral sucker pre-equatorial and smaller; cirrus sac longer and narrower away from ventral sucker; ovary present at left side of body; anterior testis bilobed with smooth outline just nearer to equatorial region, posterior testis rounded from lower side and chipped from upper side; diamond shaped space between two testes; vitellaria commencing from lower level of pharynx extending posteriorly up to posterior end of body and extremity and ceca irregular ending up to the posterior end of body. *Pegosomum lucknowensis* Pandey, 1973 differs from present species in body shape, broadest anterior to ventral sucker; number of collar spines (24) arranged in double rows; oral sucker terminal, oval, poorly-developed; shorter esophagus; wavy intestinal ceca extending up to posterior end of body;

testes unequal, anterior crescent shaped; cirrus sac longer and oval just ahead of the ventral sucker; ovary slightly indented; uterus highly convoluted; vitellaria reaching up to posterior testis and Y-shaped excretory bladder. On the basis of aforementioned diagnostic differences between present and previously known species of the genus *Pegosomum* Ratz, 1903 a new species *Pegosomum aftabi* is proposed. The name of new species refers to the father's name of the research scholar Kiran Naz Memon.

REFERENCES

Bray, R.A., Gibson, D.I. and Jones, A. 2008. Keys to the trematoda Vol.3. CABI Publishing and The Natural History Museum, London, UK. Pp. 824.

Dharejo, A.M. 2006. Trematode parasites of birds of different feeding habits of district Hyderabad, Sindh, Pakistan. PhD thesis. University of Sindh, Jamshoro.

Euduaro, S.L. 1991. *Pegosomum ixobrychi* Govosdev, 1960 (trematoda: EChinostomatidae) from the liver of cinnamon least bittern, *Ixobrychus cinnamomeus*, Philippines (Gemlin, 1789) (Aves: Ardeidae) in the Philippines. *Philip. J. Vet. Med.* 28: 53-59.

Mehra, H.R. 1980. The fauna of India and the adjacent countries. Platyhelminths. Vol. 1 Trematoda. Zoological Survey of India. Pp. 1-418.

Murata, K., Noda, A., Yanai, T., Masegi, T. and Kamegai, S. 1998. A Fatal *Pegosomum* sp. (Trematoda: Echinostomatidae) infection in a wild Cattle egret (*Bubulcus ibis*). *J. Zoo and W. Med.* 29 (1): 78-80.

Roberts, T.J. 1991. The Birds of Pakistan. Vol. I. Non-Passeriformes. Oxford University Press. Karachi. Pp. 598.

Srivastava, O.N. 1957. A new species of *Pegosomum* an echinostomes (Trematoda) from Cattle Egret. *Proc. Nat. Acad. of Sci.* 22, 129-134.

Yamaguti, S. 1971. *Synopsis of digenetic trematodes of vertebrates* Vol. I and II. Keigaku Publishing Co. Tokyo, Japan. Pp. 1575.

Pandey, K.C. 1973. Studies on some known and unknown trematode parasites. *Indian J. of Zootom.* 14 (3): 197–219.

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