

EPISTHMIMUM ALYKHANI SP.NOV.. (TREMATODA: ECHINOSTOMATIDAE) FROM THE CATTLE EGRET (BUBULCUS IBIS) IN LARKANA SINDH, PAKISTAN.*SANJOTA N.DAS¹, H. A. SAEED, R. R. GHAZI² AND G.S. GACHAL¹¹Department of Zoology,
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Email:drsanjota@gmail.com**Received** : 18.09.2018; **Accepted** : 01.11.2018**ABSTRACT**

The helmintho fauna of ten specimens of Cattle egret (*Bubulcus ibis*) from Larkana Sindh, Pakistan was studied. From all the specimens studied, the 30% were positive for helminths. The genus *Episthmium*⁹, was recovered in small intestine of Cattle egret and proposed as new species *Episthmium alykhani* sp.n. The new species is characterized by having: Body of parasite is flattened 6-6.24 by 2-2.5, Head collar bears 18 spines, Pre-pharynx absent, Ventral sucker is rounded, Testes tandem, anterior testis is cup shaped 0.7-0.79 by 1.52-1.63, posterior testis is roughly spherical 1- 1.2 by 1.2-1.3, Ovary horizontal elongated 0.3-0.4 by 0.8-0.86, Vitellaria dense commence from below the bifurcation reaches upto the anterior region of posterior testis. Eggs 0.17-0.22 by 0.08-0.091.

Figures : 04

References : 24

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KEY WORDS: *Bubulcus ibis*, *Episthmium alykhani* sp.n., Larkana, Pakistan, Sindh.**Introduction**

Variety of birds show helminth parasitic infection in their internal organs. The bird cattle egret is cosmopolitan species of heron belongs to the family Ardeidae. The massive and rapid expansion of the cattle egret's range is due to its relationship with humans and their domesticated animals. As the keeping of livestock spread throughout the world, the cattle egret was able to occupy otherwise empty niches. Many populations of cattle egrets are highly migratory and dispersive. Birds are general source of dissemination of parasites, causing fatal diseases in humans. The problem of helminthic parasitism is not only in Pakistan but also in many countries of the world is of great economic importance and deserves serious attention. The species of the genus *Episthmium*⁹ is recovered from the small intestine of the host Cattle egret in Larkana, Sindh, Pakistan. The genus *Episthmium* is worldwide in distribution; it belongs to the family Echinostomatidae,⁸ and subfamily Echinochasmidae¹².

Materials and Method

Ten birds cattle egret were caught alive from District Larkana, Sindh, Pakistan and brought to the Parasitology laboratory, Department of Zoology, University of Sindh, Jamshoro, Pakistan. The birds were autopsied in the laboratory for the collection of internal helminth parasites.

During examination of the gut contents and visceral organs eight mature specimens were collected from the small intestine of birds. Later these specimens were fixed in hot steaming 70% ethanol, where trematodes expanded and instantly died. Later the specimens were gently placed over a clean glass slide, pressed lightly with another, tied with thread and fixed in F.A.A. solution for twenty-four hours, stained with Mayer's carmalum, dehydrated in graded series of ethanol, cleared in clove oil and rinsed with xylene. Finally, the specimens were permanently mounted in Canada balsam for detailed further study. Line Drawings were made with the aid of a Camera lucida. Measurements were length by width in millimeters (mm). Photomicrographs were prepared with the courtesy of Department of Zoology, University of Karachi. Specimens were deposited in the Parasitological laboratory, Department of Zoology, University of Sindh, Jamshoro.

Episthmium alykhani* sp.nov.*(Figure: A-D)**Host: Cattle egret (*Bubulcus ibis*)

Locality: Larkana Sindh, Pakistan

Site of infection Small intestine

Number of Hosts examined/infected: 10/03

Number of specimens recovered: 08

Prevalence: 30%

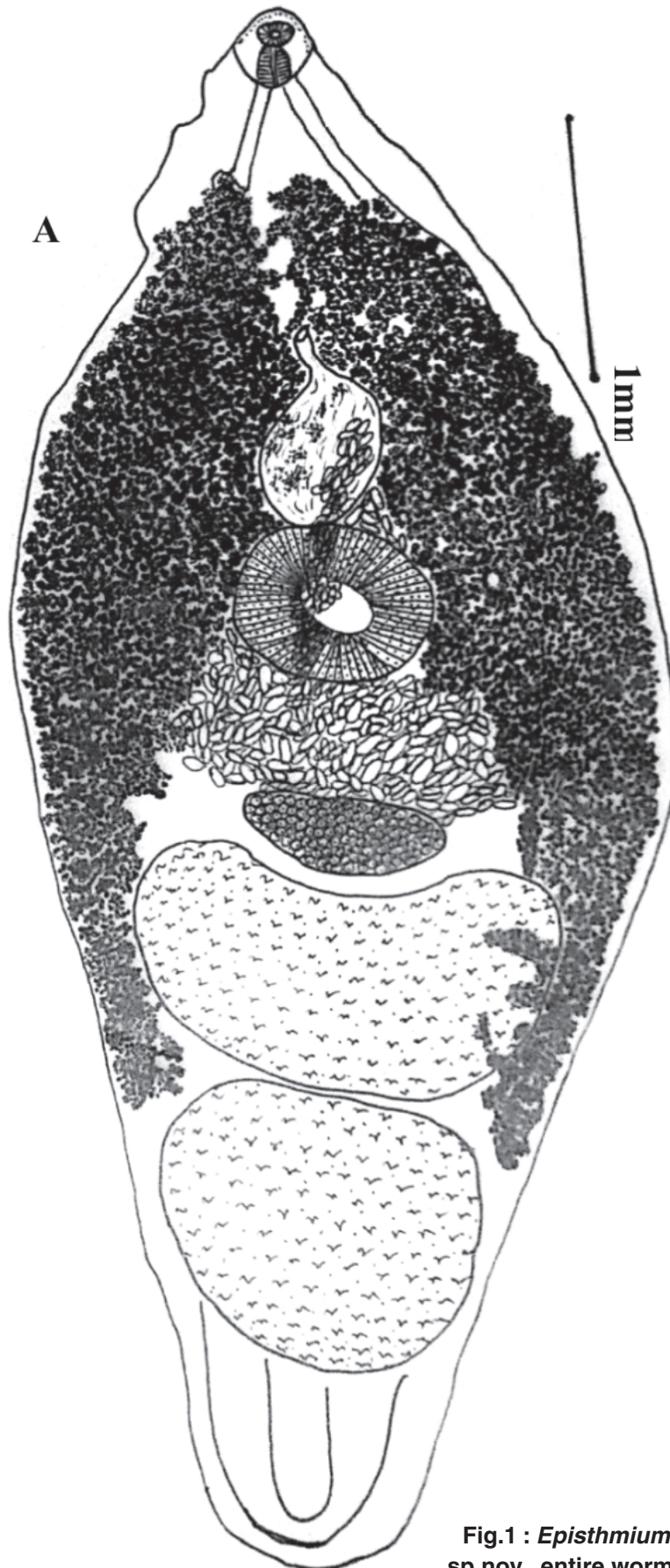


Fig.1 : *Episthmium alykhani* sp.nov., entire worm, holotype

DESCRIPTION IS BASED UPON EIGHT MATURE, EGG BEARING AND PERMANENTLY MOUNTED SPECIMENS:

Body of parasite is flattened, long, aspinose, leaf shaped 6-6.24 by 2-2.5. Maximum width attained at acetabular level. Tegumental spines start from below the pharynx up to the acetabular region.

Head collar well developed it bears 18 spines of which are on each lobe arranged in single row, not interrupted dorsally. Lateral spines are larger in size.

Oral sucker is sub-terminal, rounded and much smaller than ventral sucker 0.1-0.14 in size. Pre-pharynx absent, Pharynx well developed larger than oral sucker 0.13- 0.15 by 0.09-0.1. Intestinal bifurcation start from the pharynx reaches up to the end of hind body.

Ventral sucker is rounded in shape situated in middle of the body at distance 1.9-2.01 from anterior region.

Testes have smooth outline, tandem, unequal in size occupy greater part of posterior region of the body. Anterior testis is cup shaped smaller in length and larger in width from posterior testis measure 0.7-0.79 by 1.52-1.63, posterior testis is roughly spherical shaped 1- 1.2 by 1.2-1.3 in size.

Ovary pre-testicular, horizontal elongated occupy in cup or slightly above in the cup of anterior testis 0.3-0.4 by 0.8-0.86.

Cirrus sac is large, pouch shaped with narrower anterior and broader posterior slightly overlaps by ventral sucker 0.7-0.8 by 0.33-0.43. Genital opening lie between intestinal bifurcation at distance 0.9-0.1 and above the acetabulum.

Vitellaria dense commence

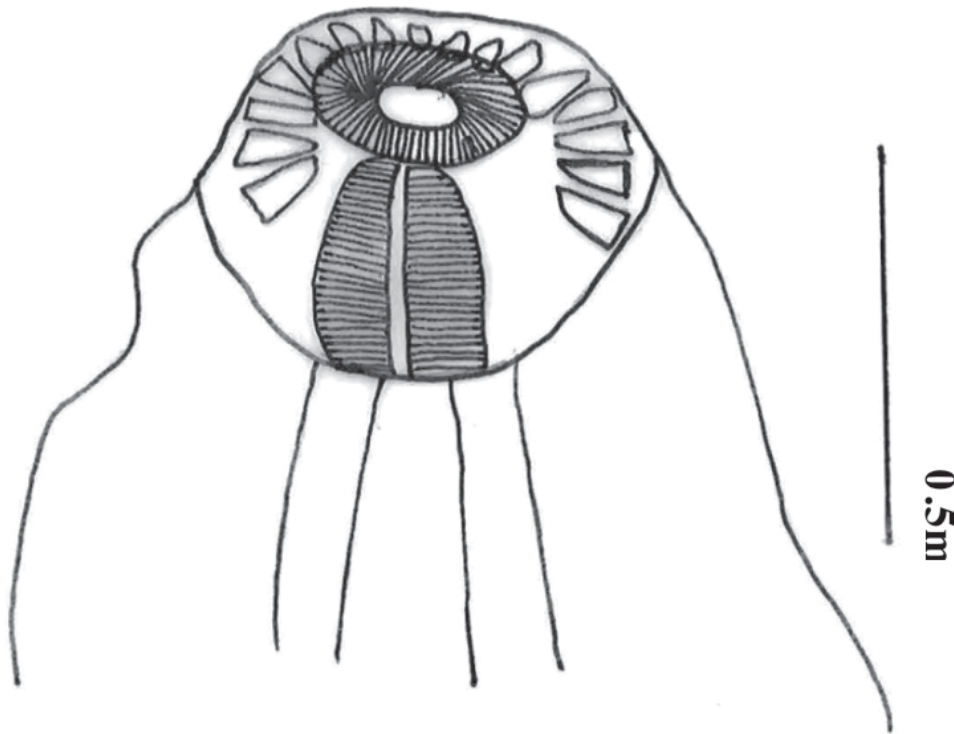


Fig. 2: Enlarged Head collar spines



Fig. 3 : Enlarged eggs

from below the bifurcation arranged in lateral fields, reaches up to the anterior region of posterior testis.

Uterus more occupy between cirrus pouch and ovary. Eggs are oval shaped, double walled 0.17-0.22 by 0.08-0.091.

Discussion

Yamaguti,²⁴ have listed fifteen species of the genus *Episthmium*⁹ mainly reported from avian hosts in Egypt, Africa, Siberia, Europe, India, Philippines, Berlin, Ghana, Nile river, Azerbizhan, Georgia, Poland, North Queensland, Brazil, Mangolia, Argentina and Pakistan.

Five species of the genus *Episthmium* have been reported from Pakistan are *E. bursicola*^{9,2} recovered from *Bubulus ibis*; *E. egrettae*²³; *E. jamshorensis*⁴; *E. bilqeesae*³ and *E. sindhensis*⁶ reported from intestine of *Egretta garzetta* in Sindh, Pakistan.

The body size of present specimens are (6-6.24 by 2-2.52), while - *E. proximum*²¹ larger in size (7 by 2) from present specimens and *E. africanum*^{19,9} (3.3-4.0 by 0.7-0.8); *E. bursicola*^{9,2} (2.787 by 0.727); *E. chauhani*¹⁵ (2.68-4.12 by 0.92-1.56); *E. colymbi*¹⁷ (2.37 by 0.725); *E. corvus*^{1,14} (1.06-1.06 by 0.46-0.49); *E. gallinum*²² (1.1 by 0.4); *E. ghanense*⁷ (2.2-1.4 by 0.5-0.4); *E. intermedium*¹⁸ (2.68-3.48 by 0.88-1.04); *E. mathevossiana*^{16,20} (1.85-1.65 by 0.58-0.56); *E. oscar* Travassos,²¹ (6 by 2); *E. prosthovitelatum*¹¹ (2.0-2.4 by 0.75-0.9); *E. skrjabini*¹³ (0.79 by 0.306); *E.*



Fig. 4 : *Episthmium alykhani* sp.nov., entire worm
Photomicrograph (5x10)

*wernickii*¹⁰ (3.0); *E. egrettae*²³ (1.84 by 0.41) and *E. solanensis*⁵ (2.688-4.64 by 0.656-1.194); *E. jamshorensis*⁴ (1.67 by 0.55); *E. bilqeesae*³ (1.45 by 0.41) and *E. sindhensis*⁶ (1.2 by 0.41) are smaller in size from present specimens.

The number of collar spines in present specimens are 18, while in *E. chauhani*; *E. intermedium*; *E. prosthovitellatum*; *E. reniovarum*; *E. solanensis* these are 24, in *E. skrjabini*; *E. bursicola*; has 22 spines, in *E. wernickii*; *E. egrettae* has 26 spines; in *E. bilqeesae* has 24; in *E. jamshorensis* and *E. sindhensis* these are 28 spines.

The oral sucker in present specimens is rounded and sub-terminal, while in *E. jamshorensis*; *E. bilqeesae*; *E. sindhensis* and *E. egrettae* it is terminal and smaller in size from present form, in *E. africanum* and *E. solanensis* position of oral sucker is also same like present specimens.

Pre-pharynx in present specimens is absent, while in all reported species pre-pharynx is present. Intestinal bifurcation in present forms start from the pharynx, while in all reported species intestinal bifurcation start from at some distance below the pharynx.

Ventral sucker in present specimens is larger in size 0.6 by 0.8, while in *E. egrettae* it is 0.34 by 0.27; in *E. jamshorensis* 0.24-0.3; in *E. bilqeesae* 0.26-0.17; *E. sindhensis* 0.2-0.26; in *E. solanensis* 0.5 by 0.54 are smaller in size. In present specimens position of acetabulum also different from *E. bilqeesae* and *E. sindhensis*.

The ovary in present specimens is horizontal elongated shape, situated in cup or above the cup of anterior testis 0.3-0.84 in size, while in *E. africanum* ovary is rounded and situated above the anterior testis; in *E. colymbi* it is overlapped by acetabulum and rounded in shape; in *E. bursicola* and *E. egrettae* ovary occupy below the acetabulum at lateral side; in *E. jamshorensis* and *E. bilqeesae* it is rounded, located nearer to acetabulum; in *E. sindhensis* it is rounded lie above the anterior testis. In present specimens size of ovary is larger from all reported species, also different position and shape of ovary.

In present specimens anterior testis

is cup shaped and larger in width posterior testis is roughly spherical shape located in most posterior region of the hind body, while in *E. africanum* anterior testis is rounded and posterior is elongated, in *E. colymbi* anterior is elongated and posterior is indented, in *E. bursicola* anterior testis rounded and posterior is rounded to elongated; in *E. egrettae* testes are antero-posteriorly elongated; in *E. solanensis* anterior is transversely elongated and posterior is longitudinally elongate; in *E. jamshorensis* anterior is spherical and posterior is vertically elongated; in *E. bilqeesae* testes are smooth and spherical; in *E. sindhensis* both are transversely elongated. In present specimens testes are larger in size from all reported species.

In present specimens vitellaria commences from below the pharynx extend up to the anterior region of posterior testis, while in *E. solanensis* and *E. jamshorensis* commence from the level of pharynx, in all other reported species the vitellaria commence from the pharynx extend up to the posterior extremity while in present specimens vitellaria extend up to the anterior region of posterior testis.

Cirrus sac in present specimens is pouch shaped and slightly overlapped by anterior region of acetabulum, for from acetabulum and intestinal bifurcation, while in *E. africanum* it is rounded, small above acetabulum, genital

opening for from acetabulum like present specimens; in *E. colymbi* is oval small and mostly overlapped by acetabulum (genital opening is not clear in line drawings); in *E. bursicola* it is balloon shaped, located above of acetabulum; in *E. egrettae* it is winding around the lateral side of ventral sucker; in *E. jamshorensis* it is balloon shaped and overlaps half of cirrus sac by acetabulum; in *E. bilqeesae* cirrus sac is pyriform lie above the ventral sucker; in *E. sindhensis* it is also pyriform overlapped by acetabulum. Cirrus sac in *E. jamshorensis*; *E. bilqeesae*; *E. sindhensis* smaller in size from present specimens and also all other species except in *E. egrettae* size of cirrus sac approximately match with present specimens.

In present specimens uterus occupies between cirrus pouch above the acetabulum and ovary while in all other reported species uterus position is also different.

Conclusion

Episthium alykhani is distinguished from earlier reported species of the genus *Episthium* in having different body size and shape, absence of pre-pharynx, intestinal bifurcation start just below the pharynx, size of acetabulum, larger size and shape of ovary and testes, arrangement of vitelline follicles and occurrence and position of uterus. Keeping in view the specific differences a new species name is in honour of Dr. Aly Khan a renowned Parasitologist in Pakistan.

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