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Morphological Variation in *Allocreadium wallagoensis* sp. nov. (Digenea: Allocreadiidae) from *Wallago attu* (Bloch & Schneider, 1801) at Jayakwadi Dam of Aurangabad district (M.S.)

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Abstract

In present study, new species of *Allocreadium* is described from the intestine of freshwater cat fish *Wallago attu* from Jayakwadi Dam of Aurangabad district in Maharashtra state of India. Morphologically, in this species ovary is smaller than testes, close or even overlapping to the anterior border of testis. Cirrus sac is large, well developed, lying obliquely anterior to the acetabulum and overlapping left or right ceca. Vitellaria are numerous, extending from acetabulum to posterior extremity and distributed over both sides around the ceca.

Keywords: Trematode, morphology, Jayakwadi Dam, Aurangabad District (M.S.).

1. Introduction

In Asia, species of *Allocreadium* [1] are among the most common and widely distributed freshwater fish parasites. Jayakwadi reservoir, which is located at Paithan district of Aurangabad, Maharashtra state (19°29'8.7"N and 75°22'12"E). It possesses rich fishery resources, but only a few data on the helminth parasites of fishes in this reservoir have been reported. In Asia *A. gotoi* [2], *A. tosai* [3], *A. aburahaya* and *A. shinanoense* [4] were reported from intestine of freshwater fish in Nagano, Central Japan, *A. markewitschi* [5], *A. dogieli* [6], and *A. hemibarbi* [7] were reported from previous United States of Russia (USSR) are considered as new species [8]. In India, *A. singhi* was reported in *barbus tor* [9]. Later on *A. lucyae* was reported from freshwater fish of Alabama and Florida. [10]. *A. patagonicus* was reported from the intestine of *Percichthys colhuapiensis* in Argentina [11]. Later on *A. danjiangensis* was reported from freshwater fishes in China [12].

Relative size of the oral and ventral suckers; extent of the vitelline glands; position of the ovary; extent of the intertesticular space; length of the esophagus; size of pharynx; and position of the genital pore are important features to differentiate various species of *Allocreadium* [13]. This is the first outbreak of *Allocreadium*, from *Wallago attu* in India. Later on information

compiled into a monograph on adult digeneans of freshwater fishes from the Lake Biwa basin in Shiga Prefecture, central Japan, from the existing specimens including literature and recorded three previously known species and two unidentified species of *Allocreadium* [14].

2. Materials and Methods

a. Collection of fishes.

Fishes were collected during January 2011 to December 2012 from fish market near Jayakwadi reservoir, which is located at Paithan district of Aurangabad, Maharashtra state (19°29'8.7"N and 75°22'12"E).

b. Preservation and Slide preparation of parasites.

The length of each fish was measured; intestine of fishes was dissected out and the intestinal specimens were isolated and counted specimens were washed with 0.6% saline, fixed in 70% ethanol, stained with hematoxylin, and mounted in Canada balsam [15]. They were then observed using light microscopy; drawings were made with the aid of a drawing tube. All measurements are given in millimeters. Scientific names of the fishes are given [16].

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3. Description

A. wallagoensis sp. nov.

Body is slender, flattened with maximum width at the level of acetabulum just anterior to midbody, 4 mm in length and 0.98 mm in width. Prepharynx is absent, pharynx muscular, oval to round, 0.020 mm in length and 0.016 mm in width. Esophagus measured about 0.046 mm in length and 0.040 mm in width is bifurcating into ceca anterior to acetabulum. Ceca are broad, blind, long, reaching at posterior region measures about 2.79 mm in length and 0.040 mm in width. Oral sucker measured about 0.039 mm in length and 0.032 mm in width acetabulum is some what oval to round, 0.055 mm in length and 0.036 mm in width, with muscular grids.

Cirrus pouch is large and spherical situated at the posterior end of pharynx measured about 0.037 mm in length and 0.022 mm in width. Uterus extended from acetabulum reaches up to posterior testes. Seminal receptacle is small pyriform situated below ovary.

Ovary is oval, overlap by the posterior margin of acetabulum, smaller than testes and 0.046 mm in length and 0.024 mm in width.

Testes are large, oval in shape, right testes measures about 0.055 mm in length and 0.024 mm in width and left testes measures about 0.051 in length and 0.026 mm in width.

Vitellaria are extending from posterior margin of ventral sucker. Excretory bladder is tubular.

4. Result and Discussion

Yamaguti 1971 divided *Allocreadium* in three subgenera i.e. *Allocreadium*, *Allocreadioides* and *Neoalloeceadium*. Size of oral and ventral suckers, position of ovary, vitellaria, length of esophagus, size of pharynx and position of genital pores are important characters to differentiate the species [13]. The present form is referred to the genus *Allocreadium* [1]. Many species of this genus was reported from all over the world. In India *A. handiai*, *A. kasia*, *A. mahaseri*, *A. nicolli* and *A. schizothoracis*, were reported [17]. Later on *A. ophioccephali* and *A. dollfusi* was described [18, 9]. The species differs from *A. papilligerum* mainly in having remarkable large cirrus sac. In *A. carparum* vitellaria are large reaching anteriorly not less than to mid acetabulum while in *A. isoporum* vitellaria are smaller and not reaching anteriorly the level of acetabulum. In *A. carparum* testis are diagonal, in *A. isoporum* testis are large while in *A. danjiangensis* testis are globular, oval, entire near middle of hind body. In *A. danjiangensis* ovary is oval much smaller than testis situated at posterior to acetabulum and in *A. hupehensis* it is much closer to acetabulum. In *A. carparum*, cirrus pouch is large, elongated; in *A. papilligerum* it is small and spherical while in *A. danjiangensis* cirrus pouch is anterior and slightly curved ventrally. In *A. lamellorchis* seminal receptacle is well developed and large testis with 4-5 petal shaped lobes. *A. lobatum* Wallin (Trematoda: Allocreadiidae) was described [19] from the host *Semotilus corporalis* (Mitchill), a description that has remained applicable in many freshwater fish species [20-23].

The present form closely resembles with the genus *A. patagonicus* [11] in the extension of intestinal caeca up to the posterior end of the body. The present form also resembles to *A. danjiangensis*, in having elongated cirrus sac and opening sub-median in position but it differs in having larger size of the ovary, extension of vitelline follicles and position of testes [12]. The new form also differs from *A. punctatai* [24] in having long tubular esophagus, post equatorial and overlapping testes and in the position of genital pore.

The present form also resembles to *A. danjiangensis*, in having elongated cirrus sac and opening sub-median in position but it differs in having larger size of the ovary, extension of vitelline follicles and position of testes [12].

The present parasite differs from *A. khami* [25] from *Mustacembalus aramatus*, river Kham, India which is having oral sucker sub terminal, pharynx oval or elliptical, esophagus absent, ventral sucker oval, ovary is longitudinally slightly oval, testes rounded, excretory bladder is tubular.

The typical features of the present species include esophagus bifurcating into ceca at acetabulum. Ceca are long. Cirrus pouch is large and spherical situated at the posterior end of pharynx. Testes are large and oval in shape. Ovary is oval, overlap by the posterior margin of acetabulum, smaller than testes. All the evidences justify the designation of *A. wallagoensis* as a new species.



Fig 1: *A. wallagoensis* sp. nov.

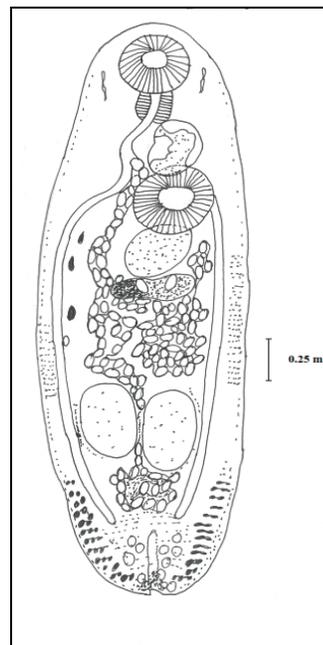


Fig 2: Camera Lucida diagram

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