

A New Acanthocephalan Parasite *Pseudorhadinorhynchus Chilkai* Sp.Nov. Explicating Faunal Diversity

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Abstract:

*The degree of variation of life i.e. biodiversity, the catalog of earth, the magic of our planet is incomplete. The genetic diversity among the fascinating biota is the result of several thousand years of tough competition within an individual among sp. with other organism and several biotic and abiotic environmental factors during the process of evolution. The Global Biodiversity Assessment published in 1995 by the United Nation Environment Program estimate that about 13-14 million species exist on our planet of which about 1.2 millions have been documented and over 86 percent have not been described. Present research and finding a new Acanthocephalan parasite *Pseudorhadinorhynchus chilkai* is one step ahead of decoding the faunal biodiversity. Its taxonomical status as well as potential damage has been studied. Its existence in two different species focusing on the fact that all parasite are not host specific. The present Acanthocephalan, *Pseudorhadinorhynchus* is found out to be new to Science. It differs from all the known species described previously in the presence of genital species.*

Key words: *Pseudorhadinorhynchus, Acanthocephala, Homaleptera, Discognath.*

Introduction:

Acanthocephalans are common parasites of marine and fresh water fishes, including many species that are exploited commercially and fishes are frequently seriously damaged or killed by them. The principal effect on the final hosts due to thorny headed worm includes mechanical damage to the intestinal wall and in deprival of nourishment of the host specially during severe infection. The tissue lacerated by the proboscis causes necrosis and when the worm establish themselves along the length of the intestine, the intestinal tissue get damaged. Mass attack of Acanthocephala causes considerable damage to fishery. The longer proboscis of *Pseudorhadinorhynchus* causes principal damage to the fish at the beginning of the infection. In the course of surveying the helminth parasites of brackish water fish, a careful examination of intestine of fish yielded interesting male and female nematodes. The specimens are assigned to the genus *Pseudorhadinorhynchus* Achmerow et. Dombrovskaja achmerova, 1941 and is proposed.

Materials and Methods:

Fishes procured for the present investigation were mostly collected from fishing sites of Chilka Lake, Orissa during the month of February caught by nets. The fish examined for the parasitic infection & all the internal organs including alimentary canal, liver, spleen, gonads, heart, eyes, swim bladder & kidney etc. were examined.

Collection, preservation, staining & mounting of Acanthcephala parasites :

The specimen collected from the lumen of intestine were freed of mucus & debris by vigorous shaking in normal saline, the parasites were then placed in tap water & chilled in a refrigerator until the proboscis became fully everted. The specimens were flattened under slight pressure of cover glass & preserved in 70% alcohol. For study of hooks the specimens were cleared in lactophenol. For whole mounts the parasites were dehydrated stained in acetoalum carmine or Ehrlich's haematoxylin, cleared in clove oil & mounted in Canada balsam

Description:

Body elongated, cylindrical, spinose, broad at middle & tapering at both ends. Anterior trunk covered with stout spines more extensive ventrally than dorsally. Males smaller than females. Proboscis elongated, cylindrical, deeply embedded with similar hooks of varying size. Hooks decrease in size gradually towards posterior end of proboscis. Neck short, proboscis receptacle claviform, double walled with a ganglion, a little above base. Lemnisci long, cylindrical, unequal extending up to the middle of the proboscis receptacle.

Male : Body 6.92-7.14 long, 0.76-0.84 wide .Proboscis 0.72-0.77 long, 0.10-0.12 wide with 40-60 longitudinal rows of 6 hooks per row. Larger hooks of anterior region 0.04-0.045 long decreasing towards base, basal hooks 0.02-0.15 wide. Smaller lemniscus 1.20-1.23 long, 0.08 wide. Larger lemniscus 1.70-1.75 long and 0.09 wide. Testes tandem, slightly elongated, slightly overlapping, postequatorial and subequal. Anterior testis 0.50-0.54 long, 0.40 wide at 4.87-4.90 from anterior end. Posterior testis 0.45-0.50 long and 0.37-0.38 wide, 1.17-1.20 from posterior end. Cement glands 6, oval, overlapping each other 0.11-0.14 long, 0.08-0.09 wide. Cement ducts open into globular bursa. Saeftigen's pouch ('Markbeutel of Saeftigen's) elongated 0.42-0.45 long, 0.19-0.22 wide. Bursa globular 0.40-0.45 long, 0.31-0.35 with genital spines.

Female : Body 14.21 long, 1.12 wide. Proboscis 1.28 long, 0.2 wide with 70 longitudinal rows of 6 hooks per row. Hooks of anterior region large 0.05 long decreasing towards base, basal hooks 0.02 long. Proboscis receptacle 4.23 long, 0.28 wide, smaller lemniscus 2.16 long, 0.08 wide and larger lemniscus 3.09 long, 0.09 wide. Uterus 0.45 long, 0.12 wide. Vagina 0.15 long, 0.05 wide with vaginal sphincter. Eggs elliptical with polar prolongation of middle shell 0.04-0.05 long, 0.025-0.03 wide. Genital pore terminal

Host	-	<i>Homaleptera brucei</i> (Day) <i>Discognath lamata</i> (Cuvier)
Location	-	Intestine
Locality	-	Chilka lake, Orissa.
Prevalence	-	3 males and 1 female specimen From 3 hosts out of 248 examined.

The diagrams were made with the aid of camera lucida & measurements were taken through stage micrometer. All measurements are in millimeters.

Discussion and Results:

Due to the presence of long cylindrical proboscis, 6 cement glands and eggs with polar prolongation of middle shell, the present specimens belong to the genus *Pseudorhadinorhynchus* Achmerow et Dombrovskaja Achmerova, 1941 erected the genus *Pseudorhadinorhynchus* with *Pseudorhadinorhynchus markewitchi* as its type species. Subsequently other species have been added. *Pseudorhadinorhynchus neobythitis* (Yamaguti, 1939) syn. *Neoacanthocephaloides* Cable et Quick, 1954, *Pseudorhadinorhynchus pseudaspis* Achmerow et Dombrovskaja, 1941; *P. rhinophagusiae* Yamaguti, 1935 n. comb. Syn. *Acanthocephaloides neoacanthocephaloides* Cable et Quick, 1954 n. comp. *Neoacanthocephaloides*, *P. dussamicitatum* and *P. ernakulensis* Nakajima and Egusa, 1975 *P. cinereus*, *P. mujibi*, *P. cochinchensis* Gupta and Naqvi, 1981; *P. srivastavai* and *P. orissai* Gupta and Fatma, 1985, *P. machidai* and *P. dhari* Kumar, 1993, *P. deeghai* Saxena 2003.

The present forms differ from all the above mentioned species in the presence of genital spines. Further it shows close resemblance to *P. deeghai* in the presence six cement glands in males and presence of saefftigen's pouch but it differs from it in the presence of 40-60 longitudinal rows of hooks in males instead of only 20 longitudinal rows and extension of trunk spines upto the posterior end of body instead of their existence up to proboscis receptacle. Further it differs from *P. deeghai* in the arrangement of cement gland. In the present form cement glands are tandem in arrangement whereas in *P. deeghai* they are present in groups.

All these characters are sufficient to create a new species with specific name *Pseudorhadinorhynchus chilkai* sp.nov. after the name of its locality.

Emended Generic Diagnosis:

Medium sized. Trunk cylindrical, may be slightly swollen anteriorly, where it is armed with spines. These trunk spines are distributed all round anteriorly, but extend further backward than dorsally, sometimes also at posterior end. Proboscis cylindrical. Proboscis receptacle double walled, with ganglion at base. Cement glands claviform to tubular, 6 or 8 in number, genital spines present or absent. Eggs with polar prolongations of middle shell. Parasites of fishes .

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Fig 1 - 6

***Pseudorhadinorhynchus chilikai* sp.nov.**

1. Entire body of male.
2. Proboscis enlarged.
3. Proboscis hooks enlarged.
4. Trunk spines enlarged.
5. Eggs.
6. Posterior end of female.

