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STUDIES ON CESTODE LARVAE, *SCOLEX PLEURONECTIS* MUELLER, 1788 FROM THE MARINE FISH *PARACHAETURICHTHYS POLYNEMA* BLEEKER, 1853

C. VIJAYA LAKSHMI, J. VIJAYA LAKSHMI AND M. DAMODARA RAO

DEPARTMENT OF ZOOLOGY, ANDHRA UNIVERSITY, VISAKHAPATNAM-530003, INDIA

Parachaeturichthyspolynema is a marine goby fish. During the survey of cestode larval forms in marine fish, six types of cestode larval forms could be collected from this host alone. They belong to *Scolex pleuronectis* type, *Scolex trilocularis* and *Scolex bilocularis.*

INTRODUCTION

Parachaeturichthys polynema Bleeker, 1853 is a marine teleost fish. This fish belongs to order Persiformes and family Gobiidae. This is a perch like fish. Perches act as intermediate hosts for many cestode parasites.

Knowledge concerning the life cycles of many groups of cestodes is incomplete, though some of the larval stages have been reported from a variety of hosts like copepods, ctenophores, decapod crustaceans, molluscs and teleosts. In the present study of cestode larval forms, the marine fish, *Parachaeturichthys* is found to harbour a number of cestode larvae. These larval forms belong mainly to the order Tetraphyllidea.

MATERIAL AND METHODS

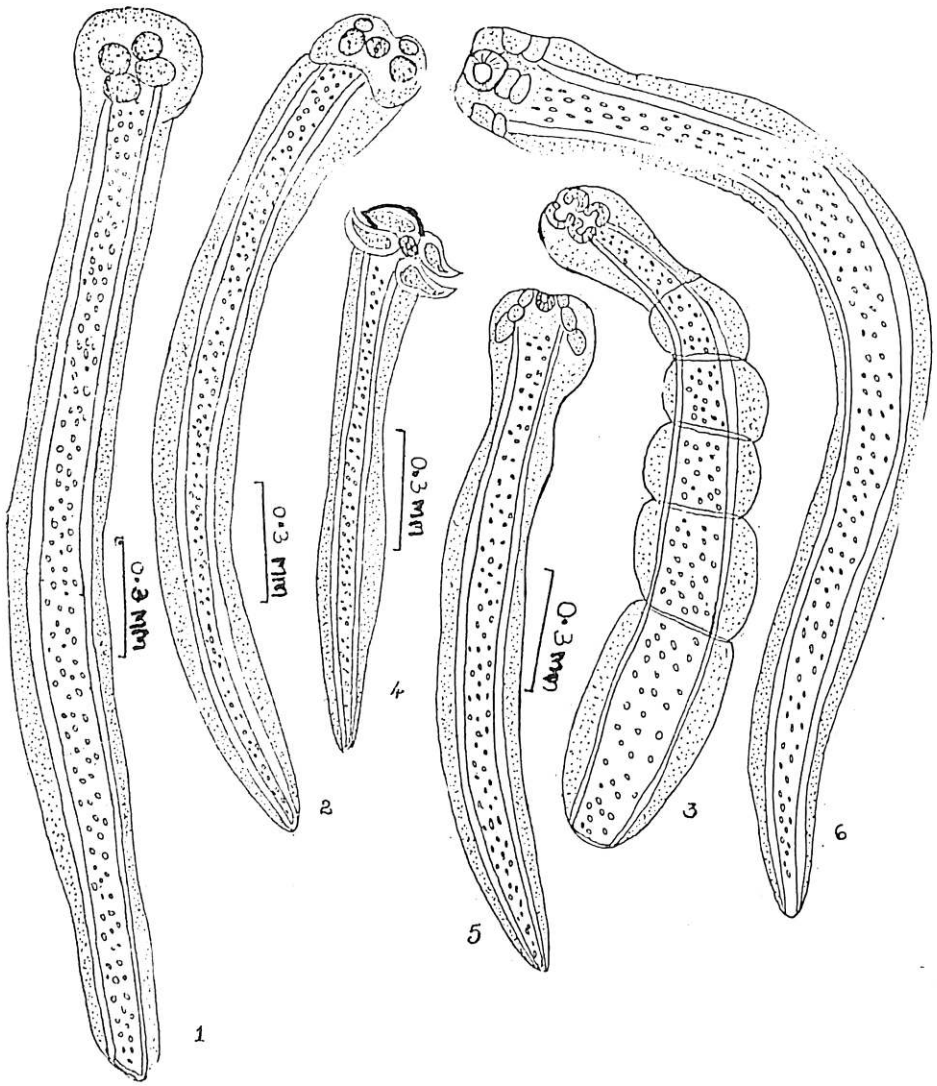
The host fish were collected from fishing harbour, offshore fishing station, Visakhapatnam. Fishes of different sizes were examined. This study was carried out for one year. The fish were brought to the laboratory and examined immediately. The stomach, intestine, gall bladder and liver were examined for the larval forms. The muscles and gills were also examined carefully. The larvae obtained were cleaned in saline water, pressed and fixed in between a slide and a cover glass carefully for flattening, but small and slender forms were fixed directly without coverglass pressure. The fixative used is FAA (90 parts of 70% alcohol, 5 parts formalin and 5 parts glacial acetic acid). They were stained in alum carmine, dehydrated through graded series of alcohols, cleared in carbol xylol and mounted in Canada balsam. All measurements are given in millimeters. Diagrams were drawn with camera lucida.

RESULTS

A number of larval stages have been obtained from the host fish *Parachaeturichthys* during the survey of larval cestodes for one year. A number of larvae belonging to *Scolex pleuronectis* were recovered from the intestine and stomach of fish. These larvae occurred in large numbers and they have shown much variation in structure. So, they have been considered to belong to different types of *Pleuronectis* type.

Scolex pleuronectis I (Fig. 1)

A number of larvae were recovered from the intestine of the fish. The plerocercoid is elongate, filiform and tapers posteriorly. The larvae measure 1. 81-3.30 / 0.16-0.24. The scolex is having four elliptical bothridia with thick margins. Each bothridium measures 0.08-0.14 / 0.06-0.09. The body is translucent and a large number of refringent calcareous granules were observed within the body. Excretory canals could be seen clearly.



Figs. 1-6. 1. *Scolex pleuronectis* I; **2.** *S. pleuronectis* II; **3.** *S. pleuronectis* III; **4.** *S. pleuronectis* IV; **5.** *S. bilocularis;* **6.** *S. trilocularis.*

Scolex pleuronectis II (Fig. 2)

Only three of these larval forms were recovered from the intestine of the host.

the worms are slightly elongate and taper posteriorly. Total length varies from 1. 84-2.32 and 0.19-0.24 in width. The head consists of four oval shaped bothridia. They measure 0.08-0.10 / 0.05-0.06. The pars bothridialis measures 0.16-0.21 in length. At the anterior region, a thick muscular apical sucker is also present, which measures 0.06 in diameter. The body of the larva is translucent filled with large number of refringent, calcareous granules of various sizes. Excretory canals in the lateral sides could be seen clearly.

Scolex pleuronectis III (Fig. 3)

Six larvae of this type were recovered from the intestine of the host.

The larvae are elongate, cylindrical and have segmented body. They measure 1. 44-1.81/0.18-0.19. The pars bothridialis is short, measuring 0.16-0.22 in length. There are four elliptical bothridia in the scolex, each measuring 0.09-0.14/0.06-0.08. There are five segments in the body of which the terminal one is longer. The body is filled with calcareous granules and excretory canals are clearly seen.

Scolex pleuronectis IV (Fig. 4)

Six such larvae were collected from the stomach of the fish.

The larvae are usually short and thick or elongate and cylindrical. They measure 1. 44-1. 92 / 0.13-0.19. The pars bothridialis is short measuring 0.16-0.26 in length. There are four patelliform bothridia in the scolex, each measuring 0.10-0.13 in length and 0.08 in width. The apical sucker measures 0.05-0.08 in diameter. The osmoregulatory canals were also observed running posteriorly along the sides. Calcareous corpuscles are also visible.

Scolex trilocularis Wagener, 1854 (Fig. 5)

This type of worms were obtained from the intestine of the fish. Only four larvae could be collected during the present study.

This larva has somewhat elongated and cylindrical body. The pars bothridialis measures 0.18 in length. Larvae measure 1. 45-1.76/0.19-0.25. The bothridia are triloculate and there is a muscular apical sucker in the centre of the scolex. The upper loculus measures 0.05/0.04. The middle loculus is 0.06/0.08 and the lower or posterior loculus measures 0.07/0.06. The apical sucker is 0.05 in diameter. The body is transparent and filled with calcareous granules.

Scolex bilocularis Wagener, 1854 (Fig. 6)

Three worms were collected from the stomach of the host.

These are elongate and taper posteriorly. They measure 2.16/0.01. The pars bothridialis is 0.24 in length. There are four biloculate bothridia. In each bothridium, the first loculus measures 0.06/0.03, the second loculus measures 0.04/0.05. There is large apical sucker in the centre of the scolex which measures 0.10 in diameter. The body is translucent and is with calcareous granules of different sizes. Excretory canals are conspicuous, running posteriorly along the sides.

DISCUSSION

Encysted larval cestodes of this nature in marine fishes were first noticed by Mueller (1787) and he errected a genus *Scolex* for these un-named species.

Later *Scolex lophi* Gmelin, 1790; *Scolex cylopteri* Fabricius, 1794; and *Scolex pleuronectis* Viborg, 1795 were also named. All these have been recovered from fishes. The doubtful validity of the variable nature and insufficient descriptions of these forms led Rudolphi (1810) to suggest that they all belong to a single species. He designated them to *Scolex polymorphus*. Later Stiles & Hassall (1912) reported the name *Scolex pleuronectis*, Mueller 1788 for such group of tetraphyllid larvae which is followed by many scientists.

There were many reports of different types of *Scolex pleuronectis* from different hosts by Dollfus (1923, 1924, 1929, 1931, 1964 &.1974), Yamaguti (1934), Stunkard (1977), Lauritz *et al.* (1979), Orts *et al.* (1988), Sanmartin Doran *et al.* (1989) and Wojciechowstca (1990). Brooks & Brothers (1974) reported two types of *Scolex pleuronectis* from three species of goby fishes.

In India, Sita Anantaraman & Krishna Swami (1958) reported *Scolex pleuronectis* from the marine pelagic copepod *Eucalanus pseudettinatus* Sewell from Madras Coast. Sita Anantaraman (1963) described seven types of *Scolex pleuronectis* from fishes, gastropods, lamellibranchs, decapoda and ctenophores.

From Waltair coast, Hanumantha Rao & Madhavi (1966) described the occurrence of *S. pleuronectis* from planktonic copepod, *Eucalanus subcrassassus.*

Pois (1976) described two types of larvae *Scolex bilocularis* and *Scolex trilocularis* from *Glyptocephalus* and he suggested *Scolex trilocularis* to be the plerocercoid of *Acanthobothrium.* Avdeeva (1989) also reported 3 different types of larvae as *S. triloculas, S. bilocular* and *S. monoloculas.* All these larvae are without additional suckers.

In the present study it is interesting to collect four types of *S. pleuronectis* and two noted species such as *Scolex trilocularis* and *Scolex bilocularis* from the single genus *Parachaeturichthys polynema.*

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