საქართველოს მეცნიერებათა ეროვნული აკადემიის მოამბე, ტ. 2, №4, 2008
BULLETIN OF THE GEORGIAN NATIONAL ACADEMY OF SCIENCES, vol. 2, no. 4, 2008

Zoology

Hairworm *Spinochordodes* sp. (Nematomorpha, Gordiidae) from the Fauna of Georgia

Oleg Gorgadze*, Andreas Schmidt-Rhaesa, Nunu Kintsurashvili***

**Institute of Zoology, Tbilisi*
***Biozentrum Grindel / Zoological Museum, Hamburg, Germany*

(Presented by Academy Member I. Eliava)

ABSTRACT. The results of light and SEM microscopic investigations of only one female specimen of the hairworm collected in Georgia are given in the paper. The host is unknown. The described hairworm belongs to the genus *Spinochordodes* by morphology and cuticle structure. Species status is not determined. *© 2008 Bull. Georg. Natl. Acad. Sci.*

Key words: *nematomorpha, hairworm, areole, ultrastructure.*

Introduction.

Hairworms (Nematomorpha) are parasitic worms of invertebrate animals, mainly of insects. The fauna of hairworms of Georgia is less studied. Only several species from the genera *Gordius*, *Chordodes* and *Spinochordodes* are described [1-5]. The hairworm studied by us belongs to the genus *Spinochordodes*. Only one species of this genus - *Spinochordodes baeri* (Camerano, 1896) is described in Georgia by Kirjanova [1]. We studied one more representative of *Spinochordodes* from Georgia and describe it as *Spinochordodes* sp.

Materials and methods. Only one specimen of female hairworm was collected alive in August 2001, in the irrigation channel of the village of Tezami. The host is unknown. Species identification was carried out by using traditional light microscopic [6] and modern SEM methods [7].

Results and discussion. Length of the hairworm body is 315mm, but width on average 1.2mm. Width in every part of the body is almost the same, except in the anterior ending of the head, where it is significantly tapered (Fig.1, A) The width of the body at a distance of 1.5mm from the apical end is 720 mkm; body comparatively narrows to the tail also. At a distance of 1.8 mm from the tail to cloaca width of the body makes 780 mkm. Body of the hairworm ends with flask-like widening, where width is 840 mkm. Cloaca is located in the centre, terminally to the end of the tail. Diameter of the cloaca pore is 15 mkm.

In the apical part of the head a rudimental mouth is noticed, on the extension of which inside the body a rudimental gullet, conic in shape, is located. The length of the gullet is 91 mkm, but width 30 mkm (Fig.1, B).

The exterior color of the hairworm body is dark brown. While examining them under little magnification by microscope, the original ornament of the surface is noticed, it is made of light yellow spots of different size and shape (Fig.1, C). Spots are scattered on the whole body, both on dorsal and ventral parts. Exceptions are the extreme terminal part of the head, which is whitish in color and the tapering part of the tail, where the cuticle is light brown. (Fig.1, C).

During the examination of cuticle under light microscope two types of areoles are noticed: type 1 - low,

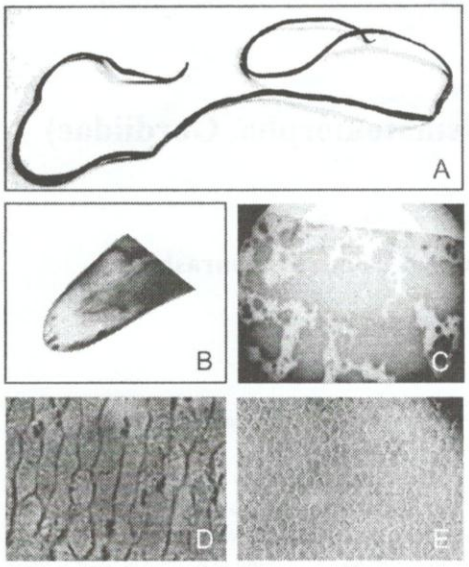

Fig.1. *Spinochordodes* sp. by microscopic examination: A-exterior view of the body; B-anterior end of the body; C-ornaments of body; D,E- cuticle structure.

flat, unequal polygonal shaped areoles with rounded edges. Most of the areoles are elongated, densely located to each other and form parallel rows transversely to the body axis. Wide margins between areoles are mostly not seen, therefore it is impossible to separate single areoles in general. The length of the areoles is 17 mkm. on average and 13 mkm. In width. Areoles of the first type cover the whole surface of the cuticle (Fig. 1, D).

Areoles of the type 2 are located between the areoles of the first type; they are elevated from the body surface, comparatively high areoles. Their shape is the same as the first type. Margins between areoles are sharp and it gives an opportunity to identify separate areoles. Location in clusters is characteristic of the areoles of the second type, though separate areoles are met, too. Number of areoles inside the cluster is different (from 2 to 10 and more). Especially characteristic are such clusters of areoles, where 6-8 small areoles are surround the central areola (Fig. 1, E).

Ultrastructural examination clearly demonstrated fine grooves and some small projections on the surface of type 1 areoles (Fig. 2). Areoles of type 2 are of comparatively big size and height. The limits of areoles are well defined. Rather thick tubercles are located on the circumference of some areoles. The number of tubercles is 10-12 on average (Fig. 2, a). On the surface of some areoles together with tubercles there are strong, spine-like appendages that curve, surrounding the areole margin (Fig. 2, b). In some areoles the spines form flower-shape structures (Fig. 2, c). Between the areoles of the second type are observed big conic (Fig. 2, d) and comparatively small finger-like areoles (Fig. 2, e).

Thin, long body with sharpened head, flask-like ending of the female body, cuticle structure, which is represented by areoles of two types: low, flat and high, elevated (being characteristic unique mark of the genus), we assign the described hairworm to genus Spinochordodes.

By its cuticle structure the investigated hairworm resembles *Spinochordodes tellinii* [8]. Resemblance is in the presence of thin grooves and appendages of small size on the surface of the areoles of the first type. However, it is noticeable that the quantity of appendages in *S. tellinii* areoles is lower. Even if it is possible that the cuticular structures in *S. tellinii* show some variability [8], we cannot judge whether the characters observed in the Georgian specimen lie within this variation.

It would be interesting to compare our specimen with the other species collected in Georgia, *S. baeri* [1]. This species has been synonymised with *S. tellinii* [9], but as the description of the areolar structure of this

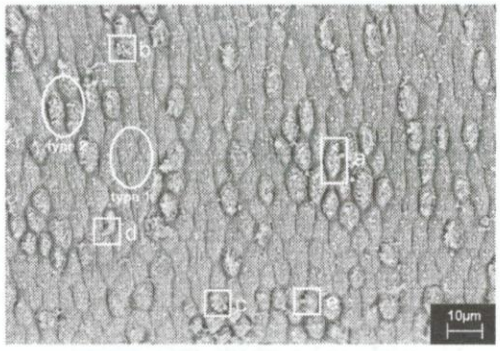

Fig. 2. *Spinochordodes* sp. cuticle structure under SEM

species is sketchy, neither illustrated, it is hard to test this synonymisation with the available material and data.

Owing to this we abstained from the species determination and describe it as *Spinochordodes* sp.

REFERENCES

1. *Е. Кирьянова* (1950), Труды зоолог. инст. АН ГССР, **9**, 1: 256-266.
2. *ე. კირიანოვა* (1953), საქ. მეცნ. აკად. მოამბე, **14**, 2:101-103 [E.Kirianova (1953), Bulletin of GAS, **14**, 2:101-103].
3. *Е. Кирьянова* (1955), Труды зоолог. инст. АН ГССР, 21:152-160.
4. *ო. გორგაძე, ნ. კინწურაშვილი* (2002), საქ. მეცნ. აკად. ზოოლ. ინსტ. შრომები, **21**: 68-70 [*O. Gorgadze, N. Kintsurashvili* (2002), Proc. Inst. Zoology GAS, **21**: 68-70].
5. *ნ. კინწურაშვილი, ო. გორგაძე* (2004), საქ. მეცნ. აკად. ზოოლ. ინსტ. შრომები, **22**: 56-59 [*N.T. Kintsurashvili, O.A.Gorgadze* (2004), Proc. Inst. Zoology GAS, **22**: 56-59].
6. *С.Е.Спиридонов* (1994), Определитель пресноводных беспозвоночных России, **1**: 102-110.
7. *A. Schmidt-Rhaesa* (2002), Zoologica Scripta, Germany, **31**:185-200.
8. *F. Zanca, A. Schmidt-Rhaesa* (2006), Mitt. Mus. Nat. Kd. Berl. Zool. Reihe, **82**: 170-178.
9. *L. Camerano* (1897), Mem. R. Accad. Sci. Torino, **47**: 339-419.

Received September, 2008