

Research Note

**Morphological Features in Cross Section of larva of the
Suborder Spirurina (Nematoda) Suspected as the Causative Agent of
Creeping Eruption**

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In Japan, the number of cases of creeping eruption due to larval nematodes of the suborder Spirurina other than *Gnathostoma* spp. has increased recently (Kagei, 1991; Akao *et al.*, Ando *et al.*, Okazaki *et al.* and Yoshimura *et al.*, unpublished data). The patients seem to have acquired the infection by eating raw marine fish or squids. The morphological appearance of the sectioned worms in these human cases closely resembles the “type X larva of the superfamily Spiruroidea” of Hasegawa (1978). This type larva was first noticed in the etiological study of two larva migrans due to spirurin larvae in Akita Prefecture (Otsuru *et al.*, 1974). Hasegawa (1978) found by animal experiments that the type X larva from the cod, *Theragra chalcogramma*, had the strongest tissue migrating activity among 13 types of larval spirurins tested. More recently, the type X larva was detected in the anterior chamber of the eye of a man (Chuang *et al.*, 1990) indicating that this type larva actually causes larva migrans in humans.

Hasegawa (1978) described the type X larva in detail giving line drawings of cross sections. However, it is often easier to compare photographs of sectioned worms rather than line

drawings with those from human cases for identification. In this report, cross sections of the type X larva are presented to facilitate the identification of larva in human tissue. Fourteen type X larvae were collected by artificial digestion from the stomach and intestinal wall of 51 cods, *T. chalcogramma*, caught off Hokkaido in July 1991. They were 6.7–8.0 mm long and 80–100 μm wide, with 2 lateral pseudolabia at the anterior extremity and with 2 tubercles at the tail tip as described by Hasegawa (1978). The larvae were fixed in 10% formalin solution, inserted in slits made on a mouse kidney block fixed in formalin and then embedded in paraffin as in the usual manner. Serial sections were cut at 5 μm , and stained with haematoxylin and eosin.

At the level of the middle part of the intestine (Fig. 1A), width of cuticle was about 2.0 μm without lateral alae and spines. Musculature consisted of 28–31 muscle cells of polymyarian coelomyarian type in 1 quadrant. Dorsal and ventral chords were small but clearly visible. Lateral chords consisted of 2 unequal large lobes, projected conspicuously into the pseudocoelom and attached to each other. A nucleus existed mainly at the base of each lobe. Intestine was small and was pushed dorsally by lateral chords. Intestinal wall consisted of one layer of 5 to 6 epithelial cells. These cells were so small that nuclei in the cells was indistinguishable. At the level of glandular esophagus (Fig. 1C), extremity of lateral chords attached to esophagus whose lumen was triradiate. Other morphological

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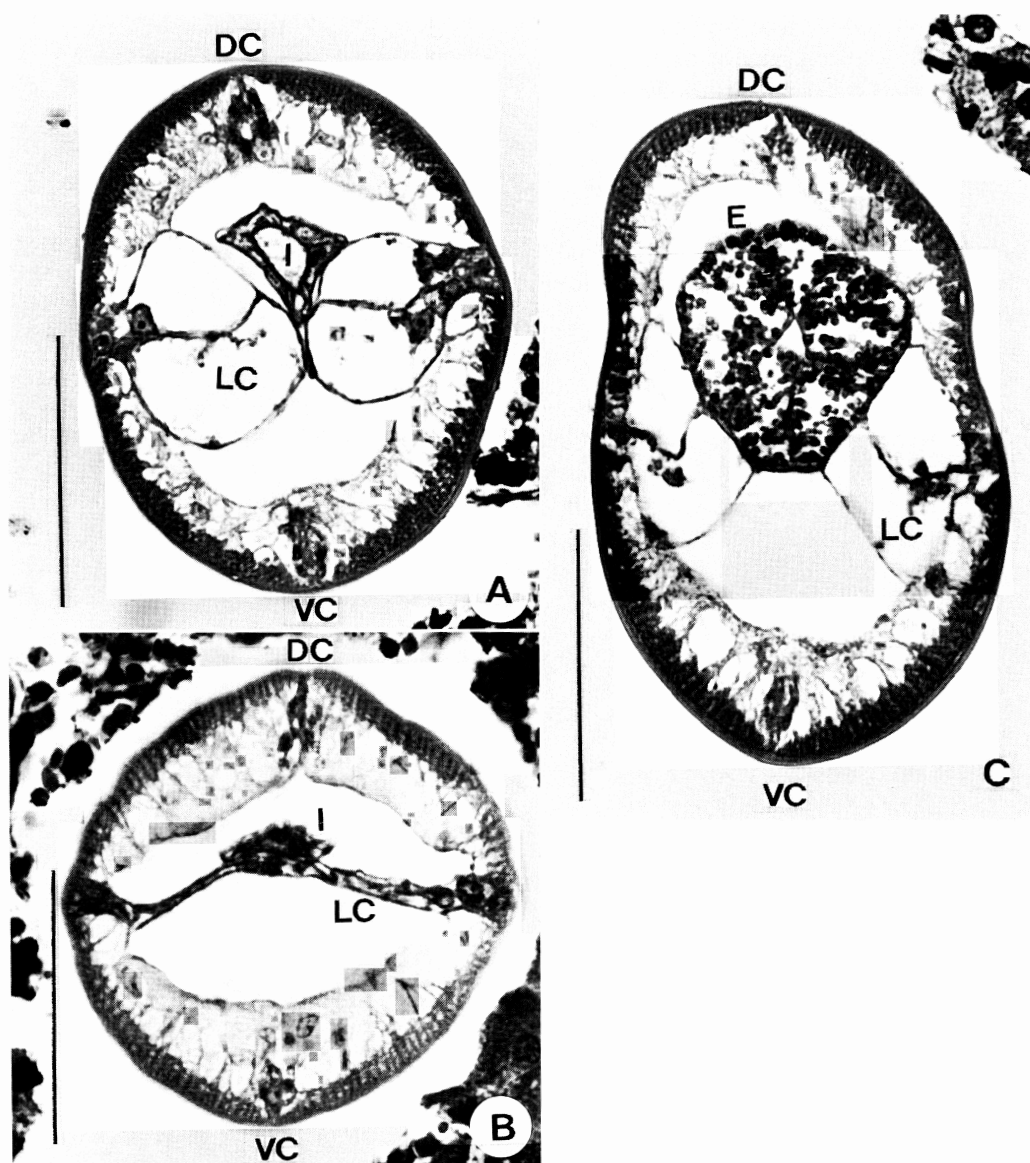


Fig. 1 Transverse section through intestine (A and B) and a slightly oblique section through glandular esophagus (C) of spirurid larva. Note broken and withered lateral chords of B. Bar indicates 50 μ m. DC: dorsal chord, VC: ventral chord, LC: lateral chord, I: intestine, E: esophagus.

appearances were the same as those of the intestine. These features were identical with the description by Hasegawa (1978). However, in one larva, lateral chords of both sides were not expanded, only extended almost straight, and joined each other near the center of the pseudocoelom, leaving wide spaces dorsally and

ventrally (Fig. 1B). Such features were not mentioned in Hasegawa (1978), but sometimes observed in worm sections in human tissue (Akao *et al.* and Nakamoto *et al.*, unpublished data).

On the other hand, worm sections of new species of the suborder Spirurina which were not found in Japan to date were also detected from

patients (Kagei, 1991). These findings indicate that two or more species may be acting as the causative worms of creeping eruption. We intend to study to clarify these points.

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