

Research Note

**Detection of Type X Larva of the Suborder Spirurina from a Patient with a Creeping Eruption**

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Several creeping diseases due to nematode larvae have recently been reported in Japan. While most have been caused by *Gnathostoma* larvae, some are due to larvae which have never been reported to be the causative parasite of creeping disease. Based on morphological characteristics, the larvae were clearly distinguished from *Gnathostoma* spp. in pathological sections. Some investigators pointed out that these morphological features closely resembled the "type X larva of the superfamily Spiruroidea" of Hasegawa (1978) (Fujihira *et al.*, 1992; Takahashi *et al.*, 1992; Tanaka *et al.*, 1992). This type of spirurid nematode larva now belongs to the suborder Spirurina (Ando *et al.*, 1992a). Ileus has been shown to be caused by "type X" larvae boring into the intestinal walls of humans (Otsuru *et al.*, 1974; Kagei *et al.*, 1992) and rabbit (Hasegawa, 1978).

Hasegawa (1978) noted that the most important characteristic of "type X" larvae was two tubercles at their posterior end. The whole larva of "type X" has detected from the left anterior chamber of a patient (Chuang *et al.*, 1990). However, the tail of the larva has not previously been obtained from patients with creeping eruptions. In this report, we successfully detected the tail end of the larva in a patient.

*Case:* A 48-year-old man was admitted to the dermatology clinic of Kurobe Civil Hospital, Toyama Prefecture, on March 25, 1992, because of a creeping eruption on his right upper abdomen. He noticed the lesion one day before his admission. Hematological examinations revealed that his white cell count was 6,300/mm<sup>3</sup> with 9% eosinophils. Skin biopsy was performed on April 4, 1992, and some transverse sections of the worm were found in the upper dermis (Fig. 1). He had eaten raw firefly squid, *Watasenia scintillans* 9 days and 2 days before the onset.

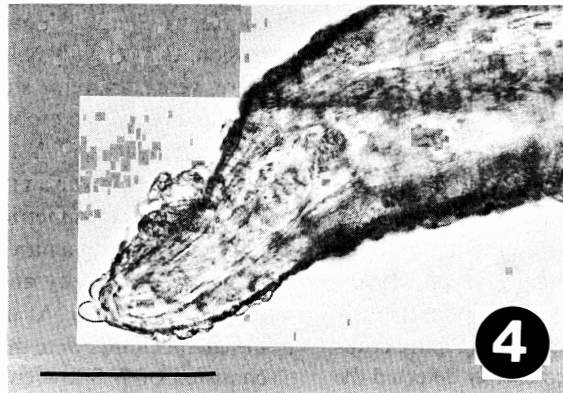
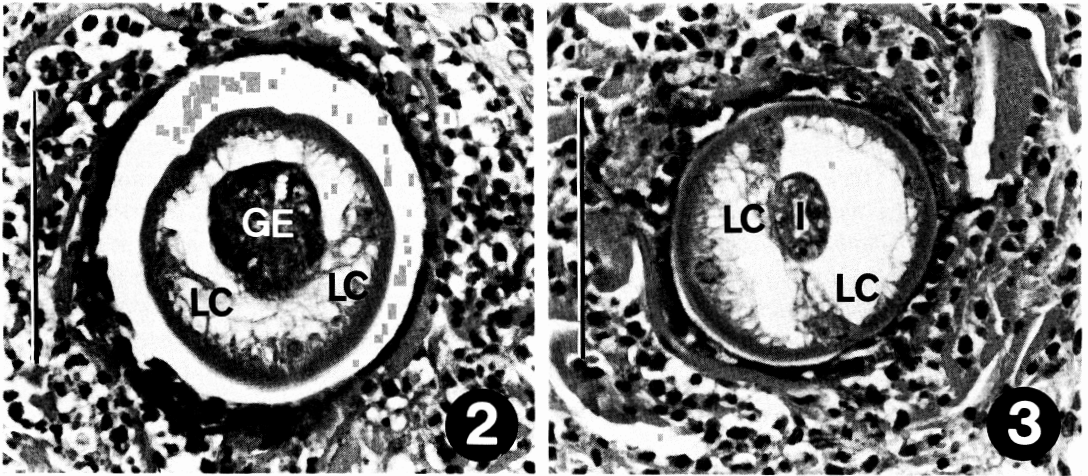
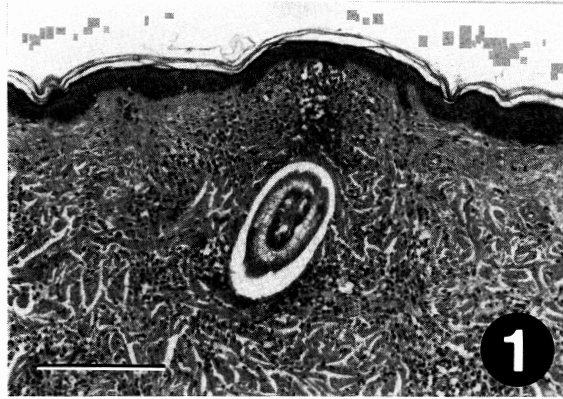
*Larva in the pathological section:* The diameter of the worm was 95 to 100  $\mu$ m. The cuticle was 2  $\mu$ m thick, and had no ridge or protrusion. On a slightly oblique section of the larva, there were transverse striations on the surface. At the level of the esophagus, the muscle layer was polymyarian (12–14 muscle bundles in a quadrant) coelmyarian type. The lateral chords, which were unsymmetrical and bilobular, were tall and wide with a narrow base. They extended into the body cavity and were attached to the esophagus (Fig. 2). At the level of the intestine, the lateral chords were thin and tall. The intestine consisted of 7–8 low cuboid mononuclear cells (Fig. 3).

*Larval tail in the skin:* Specimens embedded in paraffin were soaked in xylene for 18 hrs. A descending series of alcohol solutions was used to remove the xylene. We succeeded in recovering the larval tail from one of the paraffin blocks (Fig. 4). At the end of the tail, two tubercles were

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- Fig. 1 Slightly oblique section of the larva in the upper dermis of patient with creeping eruption. Bar indicates  $200\ \mu\text{m}$ .
- Fig. 2 Transverse section of the larva at the level of glandular esophagus. Bar indicates  $100\ \mu\text{m}$ . LC: lateral chord, GE: glandular esophagus.
- Fig. 3 Transverse section of the larva at the level of intestine. Bar indicates  $100\ \mu\text{m}$ . LC: lateral chord, I: intestine.
- Fig. 4 Anterior end of the "type X larva of the superfamily Spiruroidea" of Hasegawa (1978) detected from patient with creeping eruption. Note two tubercles at the end of the tail. Bar indicates  $100\ \mu\text{m}$ .

clearly visible. The distance from the anus to the tubercles was 139  $\mu$ m.

These morphological features were identical with those of the “type X larva of the superfamily Spiruroidea” described by Hasegawa (1978). Therefore, the report described here is the first confirmed case of a creeping eruption due to the “type X larva of the superfamily Spiruroidea” of Hasegawa (1978).

Firefly squid was the suspected food in this case, because the patient had eaten it twice as “sashimi” before the onset. Ando *et al.* (1992b) reported that 4 larvae were recovered from 162 firefly squids purchased from city markets in Tsu city, Mie Prefecture. Our preliminary survey also revealed that 3.0% of the firefly squid and a sagittate calamari, *Ommastrephes sloanei pacificus*, which were landed at Namerikawa port in Toyama Prefecture, harbored “type X” larvae, while other fish and shrimp did not (Okazawa *et al.*, Proceeding of 48th annual meeting of western division of the Japanese Society of Parasitology, 1992). In Japan, people often eat raw firefly squid from March to June. Almost all of the cases in which spirurid nematode larva has been detected have occurred during this period. Further investigation is needed to understand the prevalence of this larva in marine animals.

There are two types of clinical features in spirurid nematode infection. One is ileus-type and the other is creeping eruption-type. Otsuru *et al.* (1974) described two cases of acute abdomen due to spirurid nematode larva which did not show any dermatologic changes. Recently, Kagei *et al.* (1992) reported a patient with ileus caused by spiruroid nematoda. On the other hand, recent cases, including ours, have shown dermatologic lesions without digestive disorder. It is still unknown whether a single species of spirurid nematode larva can develop both clinical symptoms or more than two species of spirurid larvae are involved in the etiology of these diseases.

Morphology and taxonomy of larval spirurids have been poorly studied. Hasegawa (1978) noticed 13 types of larvae of the superfamily Spiruroidea from various hosts, including cod fish. Those types were definitely assigned to the

superfamily, but further classification to lower taxonomic levels could not be conducted. Thus, he tentatively gave the name, “type X larva of the superfamily Spiruroidea”, to the larva with two tubercles at the tail tip. The precise status of the taxonomic level of the larva is still uncertain (Ando *et al.*, 1992b). Further extensive and intensive studies on morphology and taxonomy of spirurid larvae are necessary to understand the pathogenicity of this larva.

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