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A Case Report of Intestinal Capillariasis – The Second Case Found in Japan

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Abstract

The second case of intestinal capillariasis in Japan was found in Nichinan City, Miyazaki Prefecture. The patient is a 46-year old male laundry worker and often eats raw freshwater fishes. He was admitted to the 2nd Department of Internal Medicine, Miyazaki Medical College in Dec. 1987 because of severe protein-losing gastroenteropathy and intractable diarrhea. Ova, larvae and adult parasites were found in the stool and were morphologically identified as *Capillaria philippinensis*. The patient has been treated effectively with thiabendazole.

Key words: *Capillaria philippinensis*, intestinal capillariasis, protein-losing gastroenteropathy, Miyazaki Prefecture

Introduction

Intestinal capillariasis is a disease caused by an infection with the nematode *Capillaria philippinensis*. Since the first case of this disease was discovered in 1963 in the Philippines (Chitwood *et al.*, 1964), more than 1,700 cases were found in the northern and western coasts of Luzon in the Philippines (reviewed by Cross and Basaca-Sevilla, 1986). In addition to this major endemic area, small new foci were found in other part of the Philippines such as Mindanao and Leyte (Cross and Basaca-Sevilla, 1986). The disease is also endemic in Thailand, with the first report in 1973 (Pradatsundarasar *et al.*, 1973). Since then, more than 100 cases were identified in scattered areas of Thailand (reviewed by Cross *et al.*, 1979; Cross and Bhaibulaya, 1983). In Japan only one adult male case was found in Hiroshima by Tsuji *et al.* (1982). The purpose of this paper is to report the second case of intestinal capillariasis in Japan.

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Case Report

History

A 46-year-old male laundry worker was admitted to the 2nd Department of Internal Medicine, Miyazaki Medical College in Dec. 1987 because of protein-losing gastroenteropathy. He was born in Nichinan City, Miyazaki Pref., Japan and has no experience of traveling overseas. He often eats locally obtained raw freshwater fishes.

At first, in Nov. 1986 he complained of occasional abdominal pain. In Feb. 1987, he was treated as chronic gastritis and pancreatitis but his complaint did not improve. In June 1987, he began to experience abdominal pain and diarrhea after every meal and had lost approximately 10 kg body weight for 4 months. In Oct. 1987, he was admitted to the Nichinan-Chyubu Hospital because of intractable diarrhea and hypoproteinemia (Total protein 3.9 g/dl, Albumin 1.6 g/dl). He was treated with intravenous hyperalimentation and albumin transfusion without any apparent improvement and

had lost further 10 kg body weight. He was admitted to our Medical College for work-up of the protein-losing gastroenteropathy.

Physical Examination on Admission

Height 155 cm, Weight 42 kg, Body temperature 36.9°C, Blood pressure 102/70 mm Hg. The lungs and heart were normal. The abdomen was flat and soft and was diffusely but mildly tender.

Laboratory Findings on Admission

RBC 379 x 10^4/mm^3, Hb 13.1 g/dl, Ht 38%, WBC 5,800/mm^3 (neutrophils 53%, lymphocytes 40%, monocytes 4%, eosinophils 2%, basophils 1%), platelets 40.7 x 10^4/mm^3; Na 139 mEq/l, K 4.3 mEq/l, Cl 106 mEq/l, total protein 4.6 g/dl, albumin 2.29 g/dl, GOT 82 IU/l, GPT 53 IU/l, γ-GTP 135 IU/l, AlP 398 K.A., LDH 373 IU/l; HBsAg (+), HBsAb (−), CRP (−), IgE 444.4 U/ml.

Stool Examination

Watery, greenish yellow in colour, foul odour and voluminous. Occult blood (±). During the first 3 weeks of hospital days in our Medical College, routine examination for parasite eggs was performed twice in the 2nd Department of Internal Medicine. However, neither parasite eggs nor adult worms were detected. One month after the admission, the specimen was brought to the Department of Parasitology for detailed examination. At this stage, large numbers of adult worms (Figs. 1, 8-11), larvae (Figs. 5, 6), and eggs (Figs. 2-4) were found. Based on their morphological appearance, this parasite was identified as *C. philippinensis*. Also found were the Charcot-Leiden crystals (Fig. 5). Although stool examination of the patient's family has been done, they were all negative for parasite eggs.

Other Examinations

The parasites of various developing stages were found in the intestinal fluid collected by duodenal tubing. Many adult and larval *C. philippinensis* were also found in the sections of intestinal biopsy specimen (Fig. 7).

Clinical Course

Currently he has been treated with 25 mg/kg/day of thiabendazole (Mintezole: Merk). Within a week or so, the diarrhea gradually disappeared and he began to gain weight. At the end of the 2nd week of the treatment, only small numbers of eggs and adult worms were found in the stool.

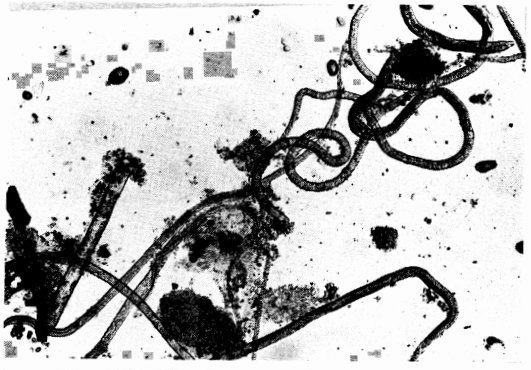
Description of the Parasite and Ova.

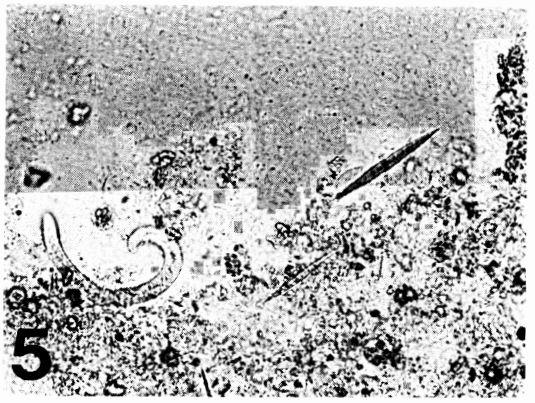
The parasite and ova obtained from the stool just before treatment were served for morphological study. Identification of the parasite species was confirmed by Professor J.H. Cross, Division of Tropical Public Health, Department of Preventive Medicine/Biometrics, Uniformed Services University of the Health Sciences, U.S.A.

Adult Female (Figs. 8, 9): 2.7-3.7 mm in length (mean ± SE 3.07 ± 0.06 mm). The body of female can be divided into two parts of almost equal length; the anterior part containing esophagus and esophageal glands, and the posterior part containing intestine and reproductive system with prominent vulva located immediately behind the end of esophagus. Embryonated eggs were often seen in the uterus.

Adult Male (Figs. 10, 11): 2.3-3.2 mm in length (mean ± SE 2.58 ± 0.07 mm). The males

Fig. 1 Adult parasites found in the stool of the patient.
Fig. 2 Unembryonated fertile unicellular egg of *C. philippinensis*. Note striated thick shells and inconspicuous polar prominences (Interference contrast; Scale bar = 10 μm).
Fig. 3 Unembryonated egg containing three cells (Interference contrast; Scale bar = 10 μm).
Fig. 4 Embryonated thin-shelled egg (Interference contrast; Scale bar = 10 μm).
Fig. 5 Larva found in the stool. Charcot-Leiden Christal is also seen.
Fig. 6 High power view of larva (Scale bar = 10 μm).
Fig. 7 Section of intestinal biopsy specimen from the patient showing *C. philippinensis* worms beneath jejunal epithelium (H.E.).

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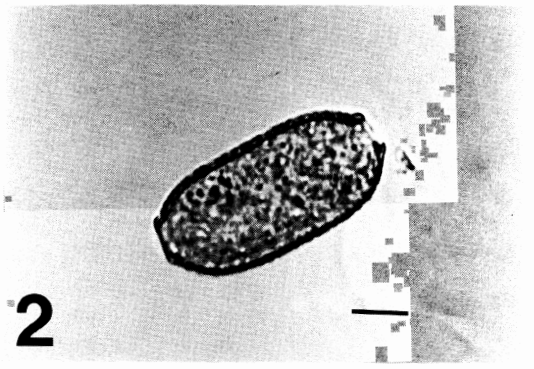
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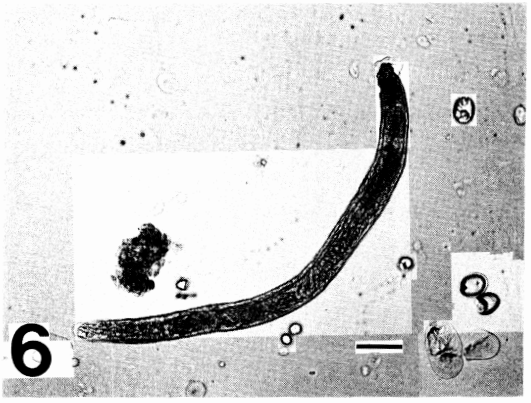
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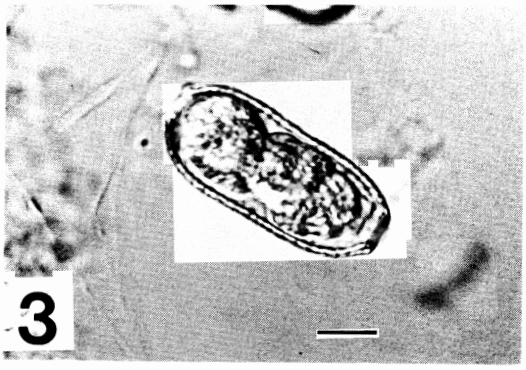
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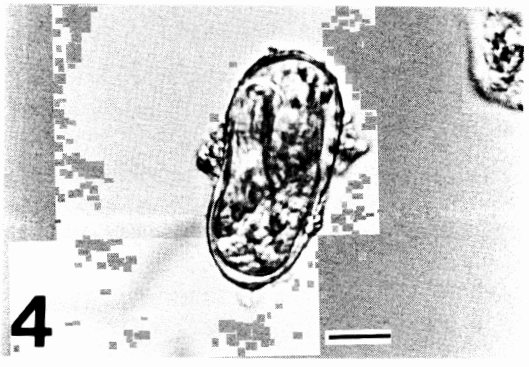
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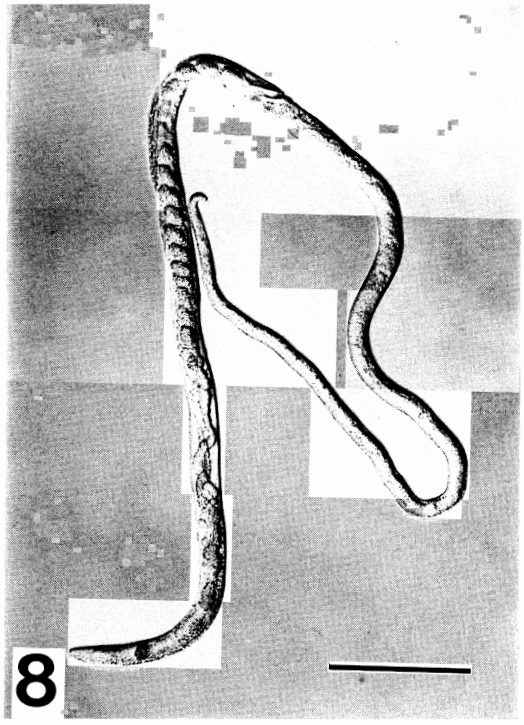
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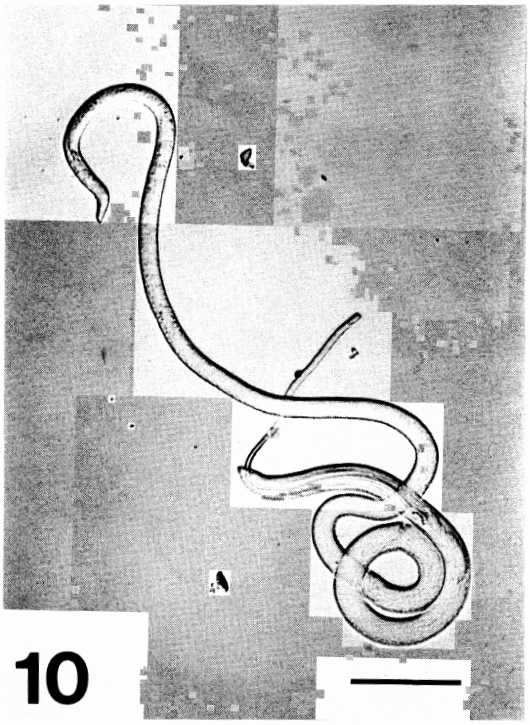
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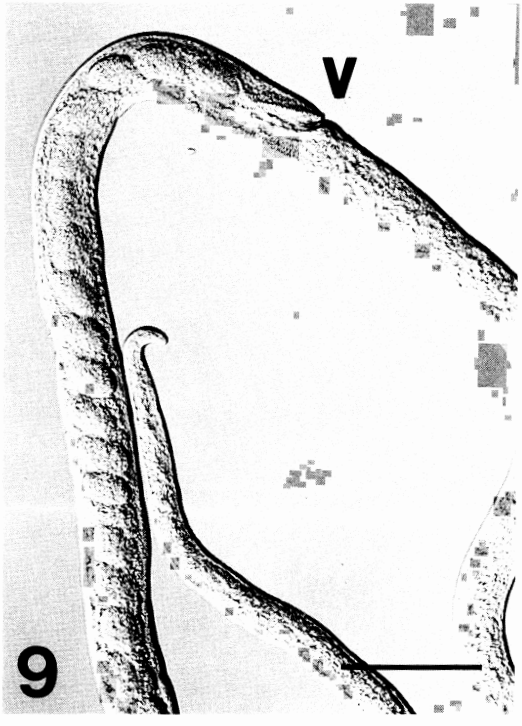
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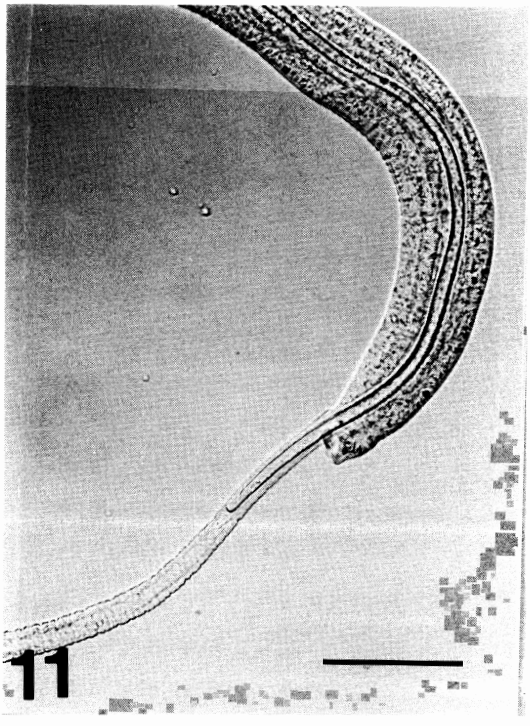
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were characterized by very long, smooth spicular sheath.

Eggs: Two types of the eggs were found in the stool; one type being thick shelled, bioperculate eggs containing one (Fig. 2) or more cells (Fig. 3), and the other type being thin-shelled, embryonated eggs (Fig. 4). The size of eggs were 36-48 μm (mean ± SE 43.9 ± 0.58 μm) x 18-22 μm (mean ± SE 20.1 ± 0.22 μm).

Discussion

C. philippinensis is one of the newer parasites described by Chitwood *et al.* (1968). One of the extraordinary feature of infection with this parasite is that autoinfection is a major part of the life cycle (Cross *et al.* 1978). Therefore, in humans the disease is progressive and patients become critically ill because of severe protein-losing gastroenteropathy with intractable diarrhea. Without appropriate diagnosis and treatment, high mortality rate is reported because of the irreversible effects of the electrolyte loss (Cross and Bhaibulaya, 1983). The clinical manifestation of the present case is typical and similar to those previously reported in the Philippines and Thailand (reviewed by Cross and Basaca-Sevilla, 1986).

The present case, as well as the first case found in Hiroshima (Tsuji *et al.*, 1982), has no experience of traveling overseas. The patient reported here often eats raw freshwater fish which he catches by himself, or sometimes with his brother, at the river (Sakatani R.) close to his home. Although the natural life cycle of *C. philippinensis* is not confirmed, the accumulated evidence presently available indicates that *C. philippinensis* is a parasite of fish-eating birds and that in nature it has a fish-bird life cycle (Cross and Bhaibulaya, 1983; Cross and Basaca-Sevilla, 1986). Thus, one possible route of transmission is that the freshwater fish in the river is accidentally infected by *C. philippinensis*, which is distributed by Asian species of fish-eating migratory birds from the endemic area of the Philippines or Thailand. Alternatively, he might have eaten raw freshwater fish imported from these endemic areas. Careful survey is required to determine whether *C. philippinensis* is now established and is able to complete its life cycle in Japan or is accidentally brought by migratory birds. Furthermore, the possibility that infected freshwater fishes are imported by trading companies should be considered.

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Fig. 8 Adult female (Interference contrast; Scale bar = 0.2 mm).
Fig. 9 High power view of adult female. Note many eggs in the uterus and prominent vulva (V) (Interference contrast; Scale bar = 0.1 mm).
Fig. 10 Adult male (Interference contrast; Scale bar = 0.2 mm).
Fig. 11 High power view showing spicule and sheath (Interference contrast; Scale bar = 0.05 mm).

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