CASE REPORT

CAPILLARIASIS: CHRONIC WATERY DIARRHEA - NOT ONLY FROM MICROORGANISMS

Teera Kusolsuk¹, Weerapong Phumratanaprapin², Kirana Paohintung³, Somchit Pubampen¹, Surapol Sa-nguankiat¹, Supaporn Nuamtanong¹, Tipayarat Yoonuan¹, Malinee Thairungroj Anantaphruti¹ and Chalit Komalamisra¹

¹Department of Helminthology, ²Department of Clinical Tropical Medicine, ³Hospital for Tropical Diseases, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand

Abstract. A 54-year-old male Thai patient from Prachin Buri Province presented with a history of chronic watery diarrhea for many years. He passed stool five to ten times per day with occasionally colicky pain, abdominal distension, nausea and vomiting. He had visited hospitals and private clinics and received treatment but with no improvement. He presented to the Hospital for Tropical Diseases, Bangkok, Thailand, where on physical examination, he had moderate dehydration, weakness, abdominal distension and a gurgling abdomen. The eggs, larvae and adult worms of Capillaria philippinensis were found on stool examination. The patient was admitted and treated with Mebendazole for 20 days, whereupon his symptoms resolved. Two months previously, he had ingested a raw small fresh-water fish dish called "Phra-Pla Siw/Soi". Small fresh-water fish near the patient's home were collected and examined for Capillaria philippinensis larva. The results were negative for parasitic organisms.

INTRODUCTION

Intestinal capillariasis, a fish-borne parasitic zoonosis, is endemic mainly in the Philippines and Thailand, with sporadic cases reported from Korea (Lee et al, 1993) Taiwan and China (Hwang et al, 1998; Bair et al, 2004; Lu et al, 2006).

Humans become infected with Capillaria philippinensis (Cross et al, 1991) by eating raw or insufficiently cooked freshwater fish. In 1964, the first case of C. philippinensis infection was found on autopsy of a 29-year-old man from Ilocos Norte Province, Northern Luzon, the Philippines, who died from intractable diarrhea (Chitwood et al, 1968). In Thailand, the first case was an 18-month-old child from Samut Prakan Province in 1973 (Pradatsundarasar et al, 1973). In 1974, Saraburi Provincial Hospital reported a second case of C. philippinensis infection (Sanpakit et al, 1974). After the two first cases, intestinal capillariasis cases were found in other provinces in Thailand including Nakhon Phanom, Surin (Mangmanee et al, 1977), Phetchabun (Bhaibulaya et al, 1977) and Maha Sarakham (Prakitrittranon et al, 1980). In 2007, endoscopy revealed intestinal capillariasis in a 27-year-old male Thai patient (Sangchan et al, 2007). In a survey of 25 species of freshwater fish, more than 8,000 specimens were negative for C. philippinensis larvae. Humans contract these parasites by eating infected raw freshwater fish, resulting in an infection of the
small intestine with larvae, causing chronic inflammation and villous atrophy. The patients usually present with watery diarrhea, weight loss, abdominal pain, muscle wasting, weakness and edema. The laboratory investigations have shown low levels of albumin and electrolytes in the blood (Pradatsundarasar et al, 1973; Mangmanee et al, 1977). A definitive diagnosis relies on identification of worm eggs, larvae, or adult worms in the stool. We report here a case of chronic watery diarrhea and weight loss over many years duration and a field investigation examining freshwater fish for *C. philippinensis* larvae.

**CASE REPORT**

A 54-year-old male Thai patient from Prachin Buri Province, Thailand, presented with a four-year history of watery diarrhea. A review of medical records from Simahaphot Hospital found the clinical history began in June/September, 2003, when the case was diagnosed as acute diarrhea and treated with antibiotics. A second visit occurred in September 2006, when he presented with chronic diarrhea and dehydration. He was admitted to Simahaphot Hospital for fluid-replacement therapy. Stool examination was negative for acid-fast bacilli and parasites; antibiotics were administered.

One month before this admission, the patient passed stool 5-10 times daily and took medicines to treat the problem which he procured himself, but without clinical improvement. He then visited a private clinic, which referred him to the Hospital for Tropical Diseases, Faculty of Tropical Medicine, Mahidol University, Thailand. He visited the Hospital on 27 August 2007, and a physical examination showed moderate dehydration, weakness, abdominal distension, and a gurgling abdomen. His body weight was 48 kg (down from 57 kg), his blood pressure was 100/60 mmHg, body temperature was 37.0°C, pulse was 89 beats/minute, and no pretibial edema was noted.

The patient’s history revealed that prior to admission, he had frequently consumed a dish consisting of a raw, freshwater fish called “Phra-Pla Siw/Soi”, which is a common practice in the Prachin Buri area.

The patient was initially treated with intravenous fluid replacement, a high protein/carbohydrate diet, antispasmodics and oral rehydration solution. Initial stool (Fig 1-A) examination was conducted by direct smear method at the Central Laboratory of the Hospital for Tropical Diseases and the Department of Helminthology, Faculty of Tropical Medicine. The results were positive for *Capillaria philippinensis* eggs (Fig 1-B), adult female worms (Fig 1-C), adult male worms (Fig 1-D) and larvae. Complete blood count and blood chemistry investigations showed hypoalbuminemia, while other parameters were normal (Table 1).

Mebendazole (400 mg daily for 20 days) was administered with daily stool examinations. The number of stools, number of adult worms, larvae and eggs decreased daily until complete disappearance (Table 1).

Patient follow-up and field investigation took place from 6 to 8 November, 2007. On physical examination, his blood pressure was normal (110/70), no pallor or jaundice were appreciated. His bodyweight had increased to 57 kg (an increase of 9 kg in 9 weeks). His defecation and urination were normal, and no abdominal disturbances were reported. Laboratory investigations showed a normal complete blood count and increased total protein and albumin levels (7.5 and 4.1, respectively). A stool examination was negative for parasitic organisms (Table 1).

A total of 990 small freshwater fish were studied, with sizes ranging from 0.4 x 1.8 to 0.6 x 2.5 cm for *Rasbora myersi* (Pla siw, n=480), 0.3 x 0.9 to 0.6 x 1.8 cm for *Hemicorhynchus siamensis* (Pla Soy, n=346).
and 2.5 x 7.6 to 3.1 x 8.2 cm for Barbodes gonionotus (Pla Ta-pien Khao, n=168) (Fig 2). These were collected by villagers from a canal “Klong-Pradoo” using bamboo fishing traps and fishing nets. The fish were dissected and the intestines recovered and put into normal saline solution. The intestinal contents were examined under a stereomicroscope, all were negative for *C. philippinensis* larvae.

**DISCUSSION**

Common clinical symptoms in intestinal capillariasis are chronic watery diarrhea, malabsorption, and wasting. A history of raw freshwater fish consumption is an important clue to diagnosing *C. philippinensis* infection. Delayed and incorrect diagnoses are common with *C. philippinensis* infection, leading to delays in treatment and clinical suffering. Not just microorganisms cause chronic watery diarrhea. Physicians suspecting parasitic infections, such as *C. philippinensis*, should take a diet history for eating habits. A careful history along with repeat stool examinations improves the likelihood
Table 1  
Results of laboratory investigations.

<table>
<thead>
<tr>
<th>Laboratory examinations</th>
<th>Date</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBC</td>
<td>27/08/2007</td>
<td>Hb: 15.6, Hct: 45.8, WBC: 10,900 (59.7-34.8-3.9-1.2-0.4), Platelets: 571,000</td>
</tr>
<tr>
<td></td>
<td>30/08/2007</td>
<td>FBS: 141, BUN/Cr: 3.0, Na+: 103, K+: 32, Cl-: 4.1, HCO3-: 1.5</td>
</tr>
<tr>
<td></td>
<td>03/09/2007</td>
<td>FBS: 141, BUN/Cr: 3.8, Na+: 104, K+: 36, Cl-: 4.1, HCO3-: 1.8</td>
</tr>
<tr>
<td></td>
<td>05/09/2007</td>
<td>FBS: 140, BUN/Cr: 4.1, Na+: 101, K+: 24, Cl-: 3.4</td>
</tr>
<tr>
<td>Urinalysis</td>
<td>27/08/2007</td>
<td>Normal findings</td>
</tr>
<tr>
<td>Stool examination</td>
<td>27/08/2007</td>
<td>Watery stool 4 times, Direct smear: positive for C. philippinensis eggs</td>
</tr>
<tr>
<td></td>
<td>28/08/2007</td>
<td>Watery stool 4 times, Direct smear: positive for C. philippinensis eggs, larvae and adult worms</td>
</tr>
<tr>
<td></td>
<td>29/08/2007</td>
<td>Watery stool 5 times, Direct smear: positive for C. philippinensis eggs, larvae and adult worms</td>
</tr>
<tr>
<td></td>
<td>30/08/2007</td>
<td>Watery stool 2 times, Direct smear: positive for C. philippinensis eggs and adult worms</td>
</tr>
<tr>
<td></td>
<td>31/08/2007</td>
<td>Semi-solid stool 2 times, Direct smear: positive for C. philippinensis eggs and adult worms</td>
</tr>
<tr>
<td></td>
<td>03/09/2007</td>
<td>Semi-solid stool 1 time, Direct smear: negative result</td>
</tr>
<tr>
<td></td>
<td>07/11/2007</td>
<td>Normal stool and negative results on direct smear</td>
</tr>
</tbody>
</table>

Note: Hb = hemoglobin, Hct = hematocrit, WBC = white blood cell count, N = neutrophils, L = lymphocytes, M = monocytes, E = eosinophils, B = basophils, PH = platelets, FBS = fasting blood sugar, BUN/Cr = Blood Urea Nitrogen/Creatinine, Na+ = sodium, K+ = potassium, Cl- = chloride, HCO3- = bicarbonate, TP = total protein, A = albumin, G = globulin.

Field investigations and community observation found that eating behavior was a risk factor for C. philippinensis infection, similar to previous reports of raw fresh water fish eating.
behavior associated with intestinal capillariasis in Thailand (Saichua et al, 2008).

The villagers prefer a raw freshwater fish dish call “Phra-Pla Siw” because it tastes sweeter than the cooked dish. Health education is important when making behavioral changes to prevent C. philippinensis and other parasitic infections.

Chronic watery diarrhea is not just caused by microorganisms, but by parasitic infections, such as C. philippinensis. Suspected cases should be interviewed for food consumption history, and repeat stool examinations or panendoscopy done to obtain biopsy specimens for histopathological examination to improve the likelihood of a correct diagnosis. Health education campaigns should promote the consumption of cooked fish and avoid defecation in water resources to prevent C. philippinensis and other parasitic infections.

ACKNOWLEDGEMENTS

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REFERENCES


