

# THE ENDOSCOPIC DIAGNOSIS OF INTESTINAL CAPILLARIASIS IN A CHILD: A CASE REPORT

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**Abstract.** A 13-year-old boy was diagnosed as having intestinal capillariasis by gastroduodenoscopy. He presented with a 10-month history of chronic abdominal pain and diarrhea. The boy had stayed in central Thailand and had eaten uncooked fish and raw shellfish. Gastroduodenoscopy showed normal jejunal mucosa although histology revealed flattened villi, crypt proliferation, acute inflammation, and eosinophilic granulomata. An egg of *Capillaria philippinensis* was also seen. The child was treated with mebendazole for 30 days. He had gained six kilograms by the time of his last follow-up.

*Capillaria philippinensis* infection in humans was first reported from the Philippines during the 1960s. In 1968, Chitwood *et al* described the morphological features of the adult forms of this nematode and its larvae and eggs. This nematode is known for its capacity for autoinfection; if left untreated, infections can lead to severe morbidity and may result in death. During an epidemic in the Philippines, the mortality rates were reportedly as high as 35% and 19% in male and female patients respectively (Whalen *et al*, 1969); a correct diagnosis and prompt treatment are crucial. In 1973, Pradatsundarasar *et al* reported the first case of intestinal capillariasis in Thailand. Usually, the patients present with chronic watery diarrhea, malabsorption, abdominal pain, weight loss, protein-losing enteropathy, malnutrition, and edema (Whalen *et al*, 1969; Chunlertrith *et al*, 1992; Cross, 1992). The diagnosis is usually based on a stool examination, autopsy findings, and intestinal capsule biopsy (Whalen *et al*, 1969; Fresh *et al*, 1972; Tesana *et al*, 1983). A correct diagnosis of intestinal capillariasis by endoscopy has not been reported before, although there have been many reports of attempts to diagnose

these patients by endoscopy and intestinal capsule biopsy (Whalen *et al*, 1969; Youssef *et al*, 1989; Benjanuwattar *et al*, 1990). This paper details the histology of intestinal biopsies obtained by upper endoscopy in order to establish a correct diagnosis of intestinal capillariasis in a child.

## Case report

A 13-year-old boy presented with a 10-month history of chronic abdominal pain and diarrhea prior to the onset of his symptoms, the boy and his family stayed in a province of central Thailand for two weeks; the boy has since been bothered by recurrent urticaria, epigastric pain, and chronic diarrhea. He was treated for peptic ulcer without clinical improvement. Two months prior to admission, he developed pitting edema in both legs; his diarrhea persisted (approximately 6-7 bowel movements per day).

Initial investigations revealed hypoalbuminemia without proteinuria. The boy's history of eating raw and uncooked fish and shellfish was noted. He weighed 22 kilograms and looked severely malnourished. Physical examination revealed glossitis, clubbing, and mild pitting edema of the legs. There was no evidence of HIV infection; there was no lymphadenopathy or hepatosplenomegaly.

Further investigations were conducted: he-

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moglobin 13.1 g/dl, eosinophils 417/mm<sup>3</sup>, serum albumin/globulin 2.5/1.8 g/dl, cholesterol 120 mg/dl, alkaline phosphatase 109 IU/l, normal liver enzymes and bilirubin. Urinalysis was normal; there was no evidence of proteinuria. His initial stool examination showed numerous fat globules without any white blood cells, red blood cells, or parasites. The fecal occult blood was negative. The sedimentation rate was 17 mm/hour. The serum electrolytes showed hypokalemia (2.42 mmol/l). Investigations for tuberculosis, including a chest film, sputum AFB, and a tuberculin test were normal. A D-xylose test was abnormal. The immunoglobulin E was elevated (338.1 IU/l; normal 30-100 IU/l).

Endoscopy was carried out to identify the cause of the protein-losing enteropathy. Endogastroduodenoscopy (EGD) showed nothing but mild erythema of the gastric antrum and a thickening of the small intestinal fold; colonoscopy was also normal. While the histopathological study was pending, the stool examinations were repeated seven times: eventually, a *Capillaria philippinensis* egg was found. The histopathology of the small bowel confirmed the diagnosis: there were flattened jejunal villi with crypt proliferation; moderate eosinophilic infiltration was observed in some of the areas in which eosinophilic granulomata had formed. Eggs of *Capillaria philippinensis* were seen in the biopsy sections (Fig 1). The patient was treated with mebendazole for 30 days and his clinical condition gradually improved; he had gained six kilograms by the time of his last two-weeks follow-up.

The eating of raw or uncooked fish is one way in which *Capillaria philippinensis* is transmitted (Cross, 1992). There have been reports of capillariasis from various countries, for instance Indonesia, Thailand, Korea, and Egypt (Pradatsundarasar *et al*, 1973; Youssef *et al*, 1989; Chichino *et al*, 1992; Lee *et al*, 1993). The mortality rate is high if left untreated (Whalen *et al*, 1969). In Thailand, intestinal capillariasis has been reported from every part of the country; our patient probably acquired the infection in Saraburi Province, central Thai-

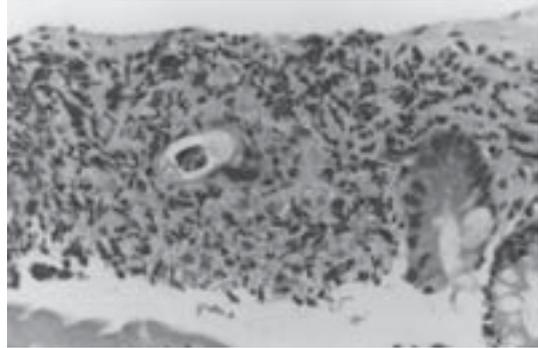


Fig 1—Section of the jejunal biopsy showing a *Capillaria philippinensis* egg. There are numerous eosinophils and histiocytes.

land. Our patient's clinical condition was no different from that described in previous reports (Whalen *et al*, 1969; Chunlertrith *et al*, 1992; Cross, 1992); he developed protein-losing enteropathy and severe malabsorption - he had fatty stools, an abnormal D-xylose test, malnutrition, edema, hypoalbuminemia, and hypokalemia.

The biopsies taken during upper endoscopy showed significant changes to the intestinal villi: flattening, crypt proliferation, acute inflammation, and eosinophilic granulomata. Our biopsies revealed a greater degree of inflammation than had been reported before: previous studies have not found significant reactions and inflammation on biopsy or necropsy (Fresh *et al*, 1972; Tesana *et al*, 1983; Youssef *et al*, 1989; Benjanuwattar *et al*, 1990). The changes to the mucosa were thought to relate to mucosal invasion, lymphatic obstruction, toxin or cytokine release, and changes in the intestinal microflora caused by the parasite (Whalen *et al*, 1969). Sun *et al* (1974) showed ulcerative and degenerative lesions in gerbil jejunal tissue on electron microscopy: this may in part account for the malabsorption.

Apart from the histological changes, eggs of *Capillaria philippinensis* were noted. This is the first report of an endoscopic diagnosis of intestinal capillariasis, although there have been reports of an intestinal capsule biopsy being used for diagnosing this disease (Whalen

*et al*, 1969). We used a small endoscope (7 mm diameter) in order to assess the lower duodenum and upper jejunum. The small endoscope might prove to be of general value in evaluating patients with malabsorption, especially as it can obtain tissue samples that are as good as those recovered by capsule biopsy; moreover, it provides visual guidance for biopsy.

In this case, *Capillaria philippinensis* eggs were also discovered in the stool; Charcot-Leyden crystals might have been helpful but were not noted in the stools (Pradatsundarasar *et al*, 1973). This patient was treated with mebendazole (200 mg twice daily for 30 days) with remarkable clinical improvement. There have been many anthelmintics proposed for treating intestinal capillariasis, including thiabendazole, mebendazole, flubendazole, and albendazole (Whalen *et al*, 1969; Basaca-Sevilla and Cross, 1985; Youssef *et al*, 1989; Dronda *et al*, 1993). Due to the high doses required and the frequent relapses, thiabendazole is seldom used. Basaca-Sevilla and Cross (1985) recommended long-term treatment in order to prevent relapse (20 and 30 days for new cases and relapses respectively).

In summary, the small endoscope can be useful in the investigation of a patient with chronic diarrhea and malabsorption. Upper endoscopy has replaced intestinal capsule biopsy in the diagnosis of celiac disease and our experience suggests that it may be useful in the diagnosis of intestinal capillariasis.

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