Capillaria philippinensis in Upper Egypt: Has It Become Endemic?


Abstract:

Background: Human intestinal capillariosis is a life-threatening disease that is caused by Capillaria philippinensis, which first documented in the Philippines in 1963. In Egypt, the first case of intestinal capillariosis was reported since 1990. Many subsequent cases have been reported from different parts of Egypt. In Upper Egypt, the first reported case was a female patient in the Assiut Governorate in 2000. Aim: This study aimed to provide a more detailed view of the newly emerging human infections with C. philippinensis in Assiut Governorate and in Upper Egypt. Patients and Methods: The study included 21 patients who had been admitted to Assiut University Hospital. Patients suffered from intermittent abdominal pain, borborygmi, chronic diarrhea lasting for several weeks and marked weight loss. A full history was taken from each patient. A physical examination was performed for each patient and chest x-rays and abdominal ultrasonography were also performed for all patients. Laboratory investigations were performed including a urinalysis, a complete blood count, and a serum albumin and serum electrolyte analysis. Stool sample analyses for each patient were carried out. Upper gastrointestinal and endoscopic examinations were performed on all patients and intestinal biopsies were taken from the duodenum and the jejunum for histopathological examination. RESULTS: Twenty-one cases of C. philippinensis were diagnosed in the Assiut Governorate from May 2007 to January 2009. The majority of the cases were of females ranging from 25 to 50 years of age, although two of the cases were of 9-year-old boys. Of these cases, 18 were from the Assiut Governorate, 2 were from the El Menia Governorate, and 1 (a male case) was from the Aswan Governorate. The majority of the female patients were housewives, although one was a schoolteacher. One of the male patients worked in the fishing industry with his father and occasionally, they ate grilled fish on the fishing boat. There was no history of raw fish consumption for any of the patients, and there was no history of traveling abroad, although one patient had a history of traveling to the Fayoum Governorate. The duration of the illness varied from 3 to 18 months and involved chronic diarrhea. Each of the cases showed clinical symptoms suggestive of C. philippinensis infection, including intermittent abdominal pain, borborygmi, chronic diarrhea for several weeks, marked weight loss (up to 10 kg in some patients), and lower leg edema of varying degrees. One patient was comatose. The laboratory findings revealed the presence of eosinophilia in 10 cases and eosinophilia in 11 cases. Hypoalbuminemia and low serum levels of potassium, sodium, and calcium were detected in each of the cases. Abdominal ultrasonography revealed distended small intestinal loops with thickened walls in each of the patients. Ascites and a pleural effusion were present in one female patient and in one male child. The diagnosis was based on the presence of C. philippinensis eggs in the stools of the majority of patients. The macroscopic appearance of the gastroduodenoscopic examination revealed segmented, erythematous, swelling and dilatation of the proximal jejunal mucosa and thickening of the small intestinal folds suggesting malabsorption. The histopathological studies revealed the presence of atrophic flattened villi; a hypertrophic crypt layer with a moderate infiltration of eosinophils, lymphocytes, polymorphonuclear leukocytes, and plasma cells; and eosinophilic granulomata. Numerous worm sections were found in the jejunal mucosa. A transmission electron microscopy examination of the biopsy tissues found adult worms in the epithelial tunnels but they did not penetrate the basal lamina. The cells that were in direct contact with the worms showed evidence of degeneration, including swollen mitochondria and distended rough endoplasmic reticulum. Atrophy of the villous surface of the intestinal wall was also found. An anti-helminthic treatment was administered to all patients (albendazole). The follow-up of the patients included a stool examination every month for 6 months following the anti-helminthic therapy and supportive treatments. After treatment, all of the patients were cured. They returned to their normal weights within a few months, and relapses were not observed within the 3–6 months duration following therapy. Conclusion: this study has produced some crucial results. First, the diagnosis of intestinal capillariosis is commonly delayed and generally requires the experience of medical parasitologists. Therefore, we have emphasized that clinicians in this area should remain highly alert to recognize the signs of this treatable infection. Furthermore, the number of cases of infection with this parasite may far exceed that estimated for the Assiut Governorate and Upper Egypt and middle-aged females are more likely to be infected than males caused by the handling and the cleaning of fish. In addition, this study has described in detail the structures of the adult female worms and the eggs of C. philippinensis using light and SEM. Moreover, this description has provided evidence for autoinfection and hyperinfection, which occur during the life cycle of this species within the host’s intestine and lead to the aggressive pathogenesis and the clinical features of infected patients. Further studies need to be conducted to investigate the routes of infection and the reservoir hosts of C. philippinensis in Upper Egypt and in the Assiut Governorate.
Governate, and proper control measures should be implemented to prevent the spread of intestinal capillariasis.

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