A previously well, 62-year-old woman was referred to our emergency department with a 1-week history of fever, abdominal pain, and passing loose stool. On arrival, she was found on physical examination to have tenderness in the upper abdomen. The results of her laboratory tests showed a white blood cell count of 11.3 × 10⁹/L (normal 3.5–11.0 × 10⁹/L) with eosinophils of 5.6% (normal 1%–5%). Abdominal ultrasound and computed tomography (CT) scans revealed diffuse wall thickening in the ascending and transverse colon (Fig. 1). Colonoscopy showed diffuse hyperemic patches extending from the cecum to the transverse colon (Fig. 2). Esophagogastroduodenoscopy revealed multiple tiny whitish nodules in the second portion of the duodenum (Fig. 3). Histopathological examination of biopsy specimens taken from the abnormal areas of the colon showed intact mucosa with filariform larvae of Strongyloides stercoralis in the lamina propria (Fig. 4a). Biopsy specimens from the duodenum revealed adult female worms (Fig. 4b,c) and rhabditiform larvae (Fig. 4b,d) of S. stercoralis in the crypts of the duodenal mucosa. Larvae of S. stercoralis were also found on examination of the stool. The patient was therefore diagnosed as having gastrointestinal strongyloidiasis and she was treated with a single dose of ivermectin (200 μg/kg). Follow-up endoscopy 1 month later showed normal-looking mucosa in both the duodenum and colon, and histopathological examination of repeat biopsy specimens taken from duodenum and colon revealed no evidence of parasites.

The most common gastrointestinal symptoms of strongyloidiasis include nausea, vomiting, abdominal pain, and diarrhea [1, 2]. The right-sided colon is involved in most patients. Endoscopic findings in strongyloidiasis are numerous and include loss of vascular pattern, erythema, erosions, ulcerations, and the presence of yellowish-white nodules [1, 3].

In the normal life cycle, free-living filariform larvae enter the skin and the parasitic life cycle begins. The larvae enter the venous circulation, are transported to the lungs, penetrate the alveolar spaces, and are expectorated and swallowed. They arrive at the duodenum, where they mature into adult females and become embedded in the small-bowel mucosa. Here they lay embryonated eggs, from which rhabditiform larvae are released. The rhabditiform larvae migrate into the bowel lumen and travel down the intestines, passing out in the feces [4].

However, one important feature of some nematodes, including Strongyloides spp., is their ability to cause autoinfection. This means that the parasite never reaches the soil. Instead, the rhabditiform larvae develop into “infectious” filariform larvae in the bowel and directly infect the mucosa of the bowel, specifically the colon (endoautoinfection) and perianal skin area (exoautoinfection) [4].

Depending on its life cycle, different stages of S. stercoralis can be found in different parts of gastrointestinal tract [5]. As shown in this case, adult worms and rhabditiform larvae can be found in biopsy specimens of the duodenum and filariform

**Gastrointestinal strongyloidiasis**

**Fig. 1** Abdominal computed tomography (CT) scan showing diffuse wall thickening in the ascending and transverse colon (arrows).

**Fig. 2** Colonoscopy revealed diffuse hyperemic patches extending from the cecum to the transverse colon.

**Fig. 3** Esophagogastroduodenoscopy revealed multiple tiny whitish nodules in the second portion of the duodenum (arrow).
larvae can be found in biopsy specimens of the colon. Here, we have clearly demonstrated both the different endoscopic features and the different stages of the life cycle of S. stercoralis in a single case.

Endoscopy_UCTN_Code_CCL_1AC_2AG

Competing interests: None

Chi-Jen Chen1, Jen-Wei Tsai2, Chi-Ming Tai1

1 Department of Internal Medicine, E-Da Hospital, I-Shou University, Kaohsiung, Taiwan
2 Department of Pathology, E-Da Hospital, I-Shou University, Kaohsiung, Taiwan

References

Bibliography
DOI http://dx.doi.org/10.1055/s-0034-1365386

Corresponding author
Chi-Ming Tai, MD
Department of Internal Medicine
E-Da Hospital
1, E-Da Rd.
Jiau-Shu Village
Yan-Chau District
Kaohsiung 824
Taiwan (ROC)
Fax: +886-7-6155352
chimingtai@gmail.com

Fig. 4 Histopathological images of the hematoxylin and eosin (H&E)-stained biopsy specimens taken from: a the involved colon showing filariform larvae of Strongyloides stercoralis (arrow) in the lamina propria (original magnification ×400); b–d the duodenum showing adult female worms (black arrow) and rhabditiform larvae (white arrow) of S. stercoralis in the crypts of the duodenal mucosa (original magnification: b ×40; c, d ×400).