

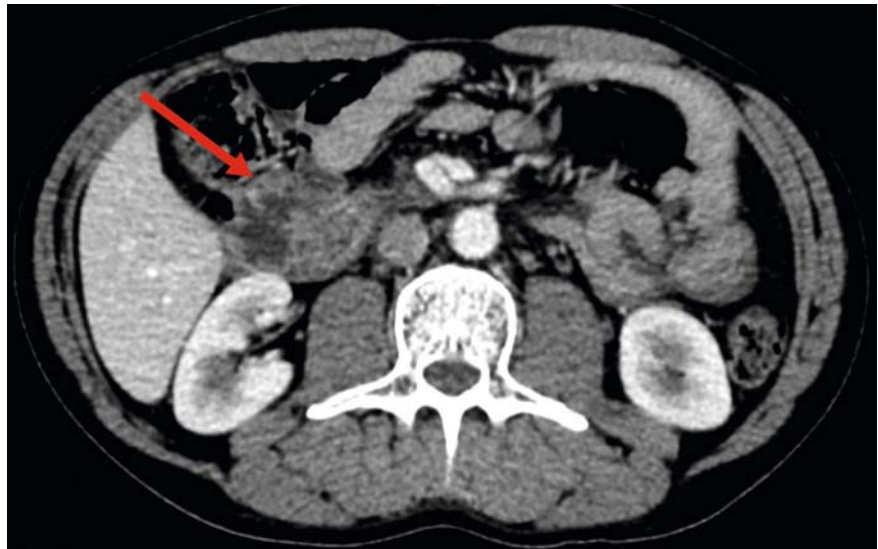
Small-bowel cryptococcosis diagnosed by double-balloon endoscopy in patient without human immunodeficiency virus

A 45-year-old man presented with a 2-year history of diarrhea and anasarca. His work involved opening tunnels and exploding rocks. He had no cardiovascular abnormalities or proteinuria. Celiac disease and human immunodeficiency virus (HIV) serologies were negative. Total protein (2.6 g/dL), albumin (1.5 g/dL), ionized calcium (3.09 mg/dL), vitamin D (6.7 ng/mL), and immunoglobulin (IgM 29 mg/dL, IgG 357 mg/dL, IgA 60 mg/dL) levels were low. Sodium and potassium were normal.

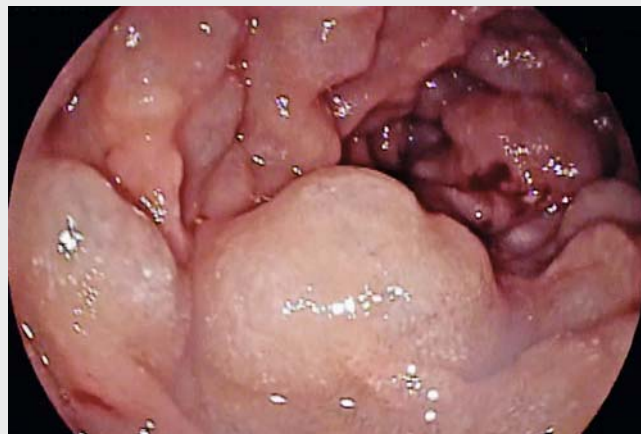
Upper gastrointestinal endoscopy demonstrated erosions and patchy, whitish lesions in the second portion of the duodenum, suggestive of lymphangiectasia. Biopsies showed unspecific duodenitis. Colonoscopy was normal.

Computed tomography (CT) demonstrated thickness and lymphatic cystic lesions involving the duodenum, jejunum, pancreas, and retroperitoneum (► Fig. 1). Owing to suspicion of protein-losing enteropathy, antegrade double-balloon endoscopy (DBE) was indicated. DBE showed whitish spots and nodularity in the second and third portions of the duodenum, and multiple subepithelial cystic lesions with lymphatic fluid extravasation at biopsy in the fourth portion of the duodenum and up to 150 cm of the jejunum (► Video 1). Histopathology revealed lymphomononuclear infiltrate, granuloma (► Fig. 2), and spores on mucicarmine and Grocott stains (► Fig. 3), compatible with *Cryptococcus neoformans*.

The patient was hospitalized with intense headache, reduced visual acuity, and convulsions. He was diagnosed with systemic *Cryptococcus* infection, affecting central nervous system, gastrointestinal tract, and lymphatic system. Amphotericin B was given for 21 days with significant clinical improvement, followed by fluconazole 800 mg/day for 1 year. CT and laboratory tests returned to normal.



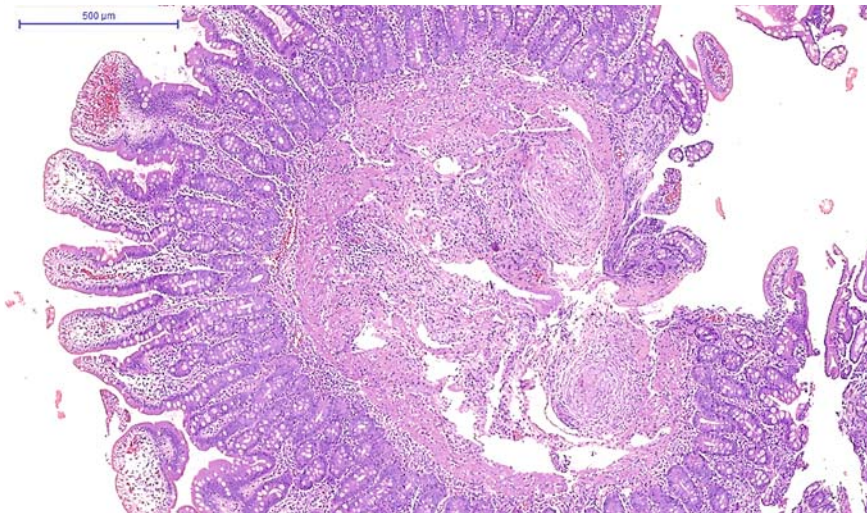
► Fig. 1 Computed tomography demonstrated thickness and lymphatic cystic lesions (arrow) involving the duodenum, proximal jejunum, pancreas, and retroperitoneum.



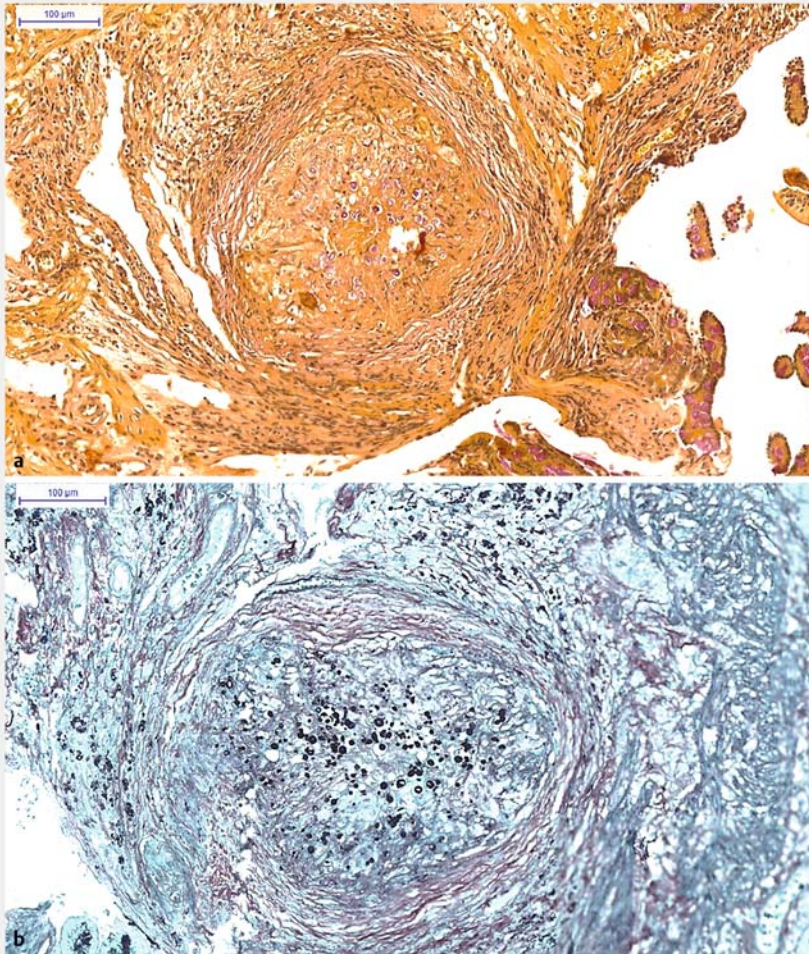
► Video 1 Computed tomography showed lymphatic cystic lesions involving the small bowel, confirmed by double-balloon endoscopy. Subepithelial duodenal and jejunal lesions with lymphatic fluid extravasation were observed, with great improvement after treatment.

DBE showed significant improvement (► Fig. 4), with negative fungal histology. The few reports of disseminated cryptococcosis mostly involve HIV/acquired immunodeficiency syndrome [1, 2]. Gastrointestinal tract symptoms on presenta-

tion are seldom described [3, 4]. In this case of disseminated cryptococcosis in an immunocompetent, non-HIV patient, DBE was valuable in diagnosing and managing the small-bowel involvement [5].



► **Fig. 2** Hematoxylin and eosin staining showed lymphomononuclear infiltrate, with traces of granuloma and round organisms.



► **Fig. 3** Staining was suggestive of *Cryptococcus neoformans*. **a** Mucicarmine staining revealed the presence of the organism's mucopolysaccharide capsule (in pink). **b** Grocott staining highlighted the fungal cell wall (in black).



► **Fig. 4** Double-balloon endoscopy demonstrated reduction of the lymphatic cystic lesions after 1 year of treatment.

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Competing interests

The authors declare that they have no conflict of interest.

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