

# Histoplasmosis With Diffuse Granulomatous Peritonitis in Crohn's Disease: A Mimic of Peritoneal Carcinomatosis

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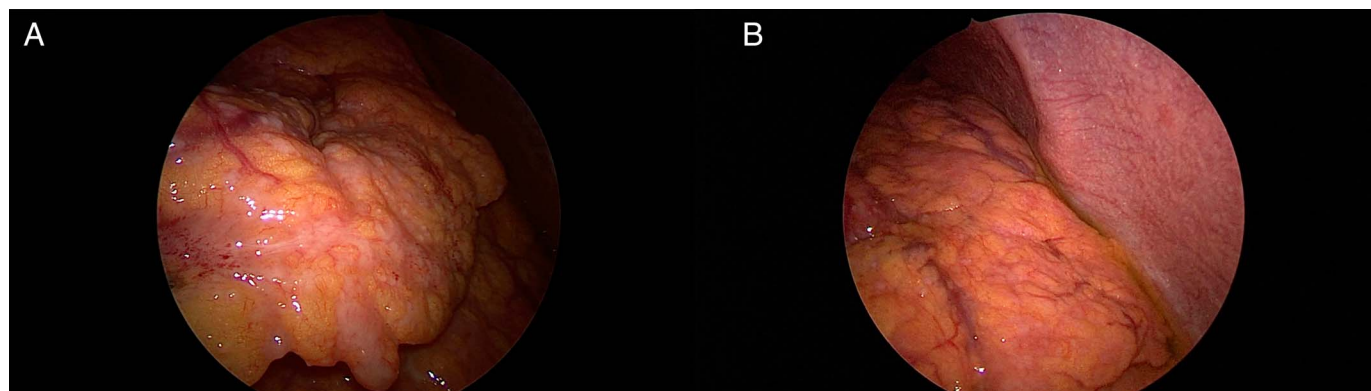
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## CASE REPORT

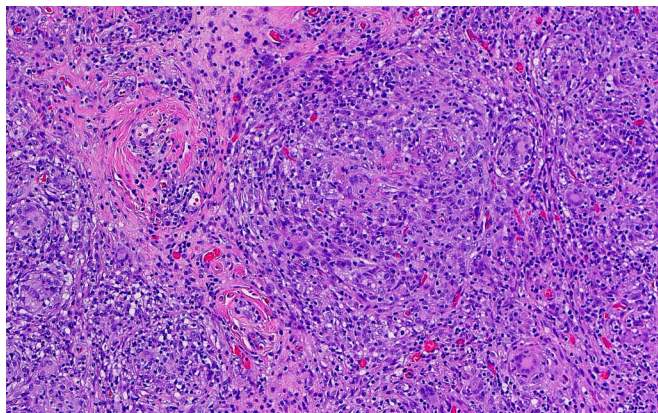
Anti-tumor necrosis factor (TNF) therapy has revolutionized management of several inflammatory disorders. However, infectious complications associated with these agents remain serious, although uncommon, concern. Anti-TNF therapy-associated *Histoplasma* infections may present with small bowel thickening and ulceration. Ascites with peritoneal involvement mimicking peritoneal carcinomatosis or malignant peritoneal mesothelioma is rare. It is important for clinicians to be aware of rare presentations of these opportunistic infections to allow for timely diagnosis and management. Anti-TNF therapy has revolutionized the management of chronic inflammatory disorders but can be associated with serious infections such as histoplasmosis.<sup>1,2</sup>

A 76-year-old man with distal small bowel Crohn's disease (CD) and rheumatoid arthritis presented with ascites. He was on adalimumab weekly with good control of gastrointestinal and joint symptoms. He denied recent travel, contact with ill individuals, and alcohol use but had travelled internationally in the past and resided in Southern California.

Physical examination revealed moderate ascites. Serum albumin was 2.9 g/dL. No proteinuria was found. Echocardiogram showed normal right- and left-sided cardiac function. A paracentesis revealed yellow, hazy fluid with 3,098 nucleated cells (3% neutrophils, 40% monocytes, and 54% lymphocytes), total protein 4.8 g/dL, albumin 2.3 g/dL, and glucose 102 mg/dL. Fluid bacterial culture, acid-fast bacillus smear, and cytology were negative. A computed tomography scan demonstrated diffuse peritoneal thickening and enhancement with scattered nodularity. Laparoscopy showed nodules throughout the abdomen including the parietal peritoneum, liver surface, small bowel, colon, and omentum (Figures 1A–1B).



**Figure 1.** Intraoperative images highlighting peritoneal nodules and omental caking.

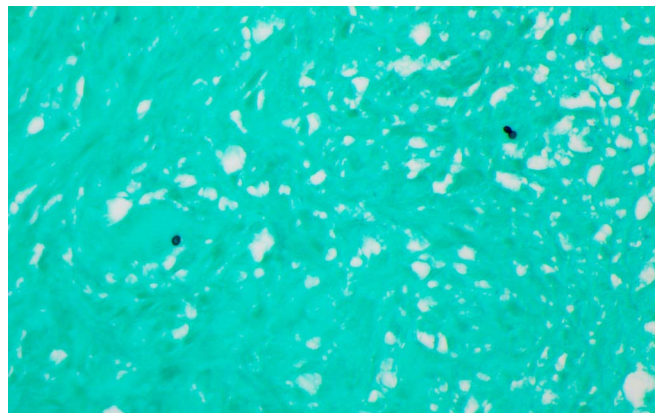


**Figure 2.** Non-necrotizing granulomatous inflammation present in omental adipose tissue. Granulomas were poorly formed and consisted of histiocytes, lymphocytes, and giant cells (hematoxylin and eosin stain, 100× magnification).

Omental and peritoneal biopsies demonstrated diffuse non-necrotizing, granulomatous inflammation with poorly formed granulomata distributed in omental adipose tissue (Figure 2). Gomori methamine silver stain performed on formalin-fixed paraffin-embedded tissue sections identified scattered small budding yeast in granulomata (Figure 3). *Histoplasma capsulatum* DNA was detected by polymerase chain reaction assay on paraffin-embedded tissue, with 28S and ITS primer sets (testing at University of Washington Molecular Microbiology Laboratory, Seattle, WA). Urine and serum *Histoplasma* antigen assay were positive at 4.98 ng/mL and 0.22 ng/mL, respectively. He received intravenous amphotericin B for 14 days and will be on itraconazole for 1 year. Dramatic improvement in ascites was noted after starting therapy. Gastrointestinal involvement occurs in 70%–90% of cases of disseminated histoplasmosis, the small bowel and colon being most commonly involved and esophagus and peritoneum rarely involved.<sup>2</sup> Instances of anti-TNF- $\alpha$  therapy-associated histoplasmosis have been well-documented in CD.<sup>3</sup> Ascites in CD is rare being reported either 2as an initial presentation or secondary to associated conditions, such as malignancy and portal hypertension.<sup>4</sup> Our case is unique because of the finding of extensive peritoneal involvement and omental caking mimicking peritoneal carcinomatosis. We illustrate the critical importance of peritoneal biopsies in differentiating between these etiologies and highlight the role of polymerase chain reaction testing for rapid identification of *Histoplasma* in paraffin-embedded tissue, especially valuable when cultures are not available.<sup>5</sup>

## DISCLOSURES

**Author contribution:** Z. Ahmed was involved in study concept and design; acquisition of data; drafting of the manuscript; and



**Figure 3.** Budding yeast forms identified within granulomatous inflammation (Gomori methenamine silver stain, 600× magnification).

critical revision of the manuscript for important intellectual content. ZM El-Zaatari, MR Schwartz, L. Morris, and MY Al-Safadi were involved in critical revision of the manuscript for important intellectual content and material support. EMM Quigley MACG was involved in study concept and design, critical revision of the manuscript for important intellectual content and study supervision, and is the article guarantor.

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