



Gastric Outlet Obstruction Caused by Histoplasmosis in a Nonendemic Region

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ABSTRACT

Histoplasmosis capsulatum is a dimorphic fungus commonly considered endemic in the Mississippi and Ohio River Valley regions. Histoplasmosis can present as asymptomatic in immunocompetent patients or present as a disseminated infection in immunocompromised patients. Diagnosing histoplasmosis can be challenging in nonendemic areas, especially in patients presenting primarily with gastrointestinal symptoms. We describe a case of an immunocompromised 29-year-old man presenting with gastric outlet obstruction caused by disseminated histoplasmosis in a region not commonly considered endemic to *Histoplasmosis capsulatum*.

KEYWORDS: *Histoplasmosis capsulatum*; gastric outlet obstruction; duodenitis; percutaneous endoscopic gastrojejun tube; human immunodeficiency virus; disseminated histoplasmosis

INTRODUCTION

Histoplasmosis capsulatum is a dimorphic fungus present in the soil of the Midwest and commonly considered endemic near the Mississippi and Ohio River Valley regions.¹ Temperature of 22–29°C and yearly rainfall of 35–50 inches have been shown to support the growth of *H. capsulatum*.² Maiga et al evaluated soil environments suitable for this organism and suggests that *H. capsulatum* may be found in a wider geographic region than previously considered endemic including pockets of the western, southeastern, and northwestern regions of the United States.² In immunocompetent patients, histoplasmosis presents with mild symptoms; however, in immunocompromised patients, a more severe infection can manifest. Common symptoms of histoplasmosis include myalgia, fatigue, cough, fever, and chills. Severe infections of histoplasmosis can present with disseminated symptoms including pulmonary, central nervous system, and other systemic manifestations. Early diagnosis of histoplasmosis leads to improved outcomes.³

Owing to the difficulty of isolating *H. capsulatum* from tissue cultures, rapid antigen testing and antibody detection are important modalities used to identify a histoplasmosis infection.¹ For moderately severe-to-severe infections in an immunocompromised host, the treatment consists of amphotericin B, followed by itraconazole for an extended period of time.^{3,4} In 2020, the World Health Organization released guidelines for treatment of disseminated histoplasmosis in the setting of human immunodeficiency virus (HIV); however, evidence for treating this fungal infection in the setting of other immunocompromised states continues to be lacking.^{4,5}

CASE REPORT

A 29-year-old man with no significant medical history presented to a hospital in San Joaquin Valley, California, with chronic diarrhea, fatigue, abdominal distention, nausea, and vomiting. On arrival, the patient was found to have hypotension, tachycardia, and tachypnea. On examination, the patient was noted to have an increased abdominal girth with a protuberant abdomen without rigidity or rebound tenderness.

Laboratory values were remarkable for a white blood cell count of $5.9 \times 10^9/L$ with 93.8% neutrophils, hemoglobin of 10.0 g/dL, sodium of 130 mmol/L, creatinine of 1.32 mg/dL, albumin of 3.7 g/dL, aspartate aminotransferase of 179 U/L, and alanine aminotransferase of 76 U/L. The patient's HIV screen was reactive, and subsequent HIV testing revealed a viral load of 700,000/mL and a CD4 count of 1 cells/mm³.

Computed tomography imaging demonstrated a duodenal stricture with proximal dilation of the stomach, duodenal bulb, and second portion of the duodenum. Also noted on computed tomography were prominent central mesenteric and retroperitoneal lymphadenopathy (Figures 1 and 2). The gastroenterology team was consulted due to concerns for gastric outlet obstruction and subsequently performed an esophagogastroduodenoscopy. On endoscopy, the patient was found to have an 8 mm polypoid lesion located at the gastroesophageal junction (Figure 3) and a fluid filled stomach of which 2.2 L of fluid was extracted. The duodenum was notable for significant edematous duodenitis with stenosis in the third portion (Figure 4), and multiple small round erythematous lesions scattered throughout the mucosa (Figure 5). Biopsies were taken of the lesions, and pathology revealed innumerable small round yeast cells consistent with *Histoplasma capsulatum*.

Highly active antiretroviral therapy was initiated for acquired immunodeficiency syndrome. A nasogastric tube was placed for gastric decompression, and amphotericin B was started after the tissue biopsy revealed *H. capsulatum*. Owing to continued



Figure 2. Coronal computed tomography imaging of the abdomen demonstrating dilation of the second portion of duodenum (orange arrow).

obstruction from duodenal stenosis, a percutaneous endoscopic gastric-jejunal tube was placed to bypass the stenotic portion of the gastrointestinal (GI) tract. After GI access was established, he began tolerating tube feeds. The patient had gradually improved symptoms and was continued on itraconazole for treatment of disseminated histoplasmosis.

DISCUSSION

Though GI involvement of disseminated histoplasmosis is well documented in the literature, significant GI complications are rare.^{6,7} Lamps et al examined the histopathological and gross features of histoplasmosis in the GI tract and noted that obstructive masses were exceedingly rare, while ulcers and nodules were more common.⁷ The most common location of

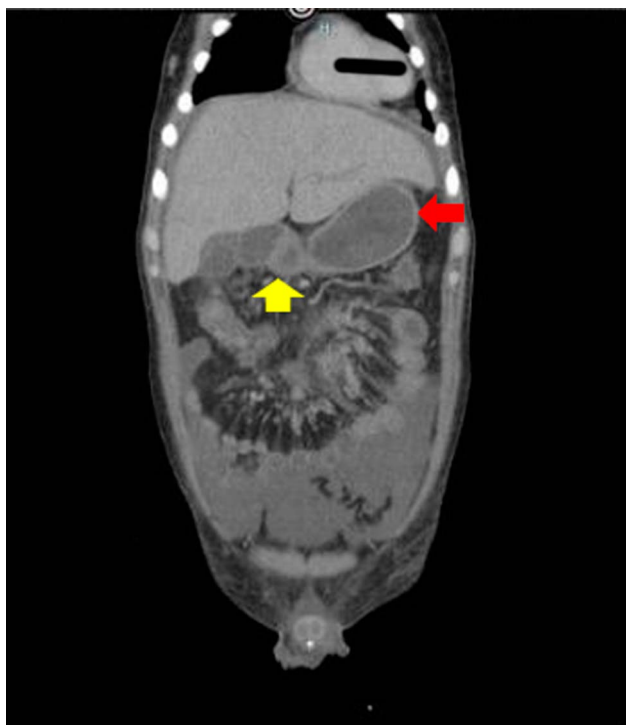


Figure 1. Coronal computed tomography imaging of the abdomen demonstrating dilation of the stomach (red arrow) and duodenal bulb (yellow arrow).



Figure 3. Endoscopic image of polypoid lesion located in gastroesophageal junction.

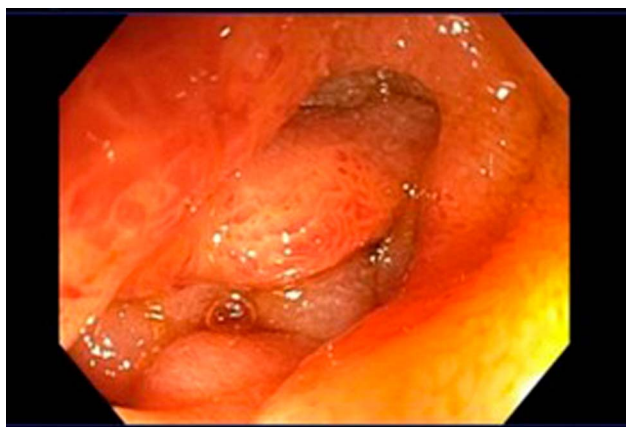


Figure 4. Endoscopic image showing duodenal stenosis.

histoplasmosis-related GI lesions is in the large bowel while small bowel and distal esophagus lesions are more rare.^{6,8} In the small bowel, the terminal ileum is the most common location of histoplasmosis due to an abundance of lymphoid tissue, while few case reports identify an affected duodenum.⁹

We present a rare case with a lower esophageal lesion and duodenal stenosis caused by histoplasmosis, leading to a gastric outlet obstruction. Endoscopic evaluation showing duodenal stenosis, excluding duodenal masses and ulcerations, has only been described in the literature one other time to our knowledge.^{8,9} In addition, only one other case in the literature describes a gastric outlet obstruction caused by histoplasmosis, where the mechanism of obstruction was due to a pancreatic head mass causing mass effect symptoms on the duodenum.⁸ Similar to other cases with clinical manifestations of disseminated histoplasmosis, our patient was immunocompromised.⁹

To our knowledge, our case describes the first presentation of histoplasmosis causing duodenitis, leading to a gastric outlet



Figure 5. Endoscopic images showing multiple, round erythematous lesions in the duodenum.

obstruction. We highlight this unique case to encourage physicians to consider disseminated histoplasmosis in a patient newly diagnosed with HIV/acquired immunodeficiency syndrome, presenting with nausea, vomiting, and a gastric outlet obstruction. Histoplasmosis should remain on the differential in locations not typically considered endemic, as the environmental suitability of *H. capsulatum* may be expanding to cover a wider geographical area.

DISCLOSURES

Author contributions: K. Shepherd conducted the literature review, wrote the manuscript, and approved the final manuscript. G. Obeng contributed, edited and approved the final manuscript. J. Kupec contributed clinical knowledge, edited and approved the final manuscript. W. Hsueh provided the case study and clinical expertise, edited the manuscript, and approved the final draft. K. Shepherd is the article guarantor.

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