

## **Diagnostic Endoscopy of Intestinal Candidiasis in an Adult by Single Balloon Enteroscopy**

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### **Abstract**

Candidiasis is caused by infection with species of the genus *Candida*, predominantly with *Candida albicans*. The growing problem of mucosal and systemic candidiasis reflects the enormous increase in the number of patients at risk and the increased opportunity that exists for *Candida* species to invade tissues normally resistant to invasion (granulocytopenia, bone marrow transplantation, solid organ transplantation (liver, kidney), parenteral hyperalimentation, Hematologic malignancies, Foley catheters, solid neoplasms, recent chemotherapy or radiation therapy, corticosteroids, broad-spectrum antibiotics, burns, prolonged hospitalization, severe trauma, recent bacterial infection, recent surgery, gastrointestinal tract surgery, central intravascular access devices, premature birth, hemodialysis, acute and chronic renal failure, mechanical ventilation [1].

**Keywords:** *Candidiasis; Single Balloon Enteroscopy; Candida*

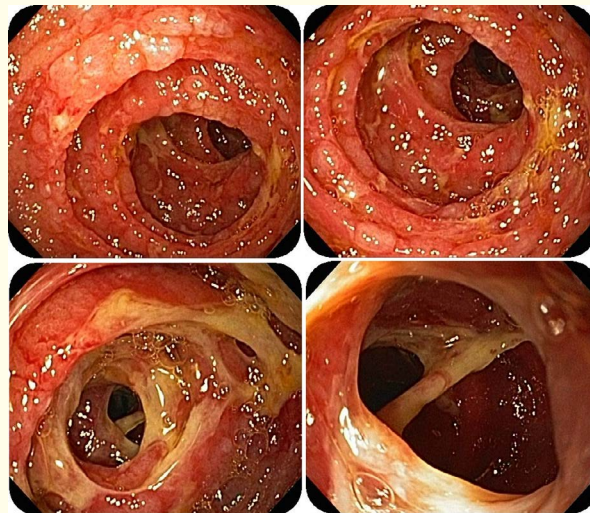
*Candida* species are the most common cause of fungal infection in immunocompromised persons and this condition is very rarely recognized ante mortem. Oropharyngeal colonization is found in 30 - 55% of healthy young adults, and *Candida* species may be detected in 40 - 65% of normal fecal flora [1].

In this report, we describe a case of intestinal candidiasis in a diabetic patient diagnosed by single balloon enteroscopy and report successful outpatient treatment of small bowel *candida*.

### **Case Report**

A 65 years old man presented with a three weeks history of vomiting, abdominal pain, loss of appetite, fever, watery diarrhea and weight loss. The symptoms had significantly deteriorated 7 days prior to admission. Her past medical history included diabetes. Her usual medications were oral hypoglycemic agents and anti-hypertensives. On examination, his pulse rate 94 pul/minute and blood pressure was 128/89 mmHg. Her abdomen was painful in epigastric and mesogastrium region, abdominal distention, absent bowel sounds, rebound tenderness. Investigations showed a leucocytosis of 13.200 mm<sup>3</sup> due to neutrophilia with a C-reactive protein (CRP) concentration of 72 mg/dL. Hemoglobin was 11 gr/dl. Urea was raised at 52 with a creatinine value 1.5 mgrs/dl. A fecal sample and stool culture did not report alterations. The patient was initially treated with intravenous fluids for dehydration and antibiotic therapy. EGD and colonoscopy had normal results. Twenty four days after admission, a anterograde single balloon enteroscopy with ESB Olympus SIF Q-180 at about 320 cms from the ligament of Treitz was performed and CO<sub>2</sub> insufflation pump (Olympus) was used. In jejunum was seen to have a edematous mucosa, thickened folds, submucosal hemorrhage, a raised plaque of granular mucosa and ulcerations. Histological examination demonstrated dense infiltrate of the submucosa with acute and chronic inflammatory cells. Pseudohyphae were seen. Cultures of the same

material confirmed the organism to be *Candida albicans*. The patient was treated with Antifungal therapy. During the next several weeks, his fevers, abdominal pain and diarrhea gradually resolved, and he gained weight. He continues to do well 12 months later resulted in complete recovery.



Video

### Discussion

Candidiasis of the gastrointestinal tract is a relatively uncommon entity. Most commonly, it occurs in individuals with decreased host resistance to opportunistic infections due to underlying disorders [1]. There are limited descriptions of *Candida* infection of the GI tract outside of the esophagus. Minoli, *et al.* [2] found that 15% of 149 outpatients with negative endoscopies had unsuspected gastric *Candida* colonization. He concluded that *Candida* was an uncommon gastric commensal in non-immunocompromised patients.

Thorpe J, *et al.* reported a case of Intestinal perforation with invasive candidiasis in an immunocompetent adult. Laparotomy was performed. At operation, three perforations were identified in the ileum with no identifiable cause. Histological examination of the resected bowel confirmed the presence of focal ulceration of the resected small bowel, which had perforated the wall in three places. Candidal hyphae were seen in the ulceration with the use of a PAS stain [3].

Fischer, *et al.* reported other case who developed candidiasis of the small bowel associated with intestinal perforation. The diagnosis was established by pathological examination of a surgically resected specimen of small bowel at the time of surgery. A complete work-up failed to disclose any predisposing condition to digestive candidiasis. Antifungal therapy resulted in complete recovery [4].

*Candida* involving the small bowel is uncommon, with only a few reports [1,5-8]. Enteroscopy provides direct examination of small bowel and allows direct bowel sampling.

We report a case of primary proximal small bowel candidiasis in a diabetic patient. Intestinal candidiasis in the majority of cases is an incidental finding. Enteroscopy may confirm the diagnosis. Its detection and treatment can provide significant symptomatic relief to patients.

### Conclusions

Enteroscopy single balloon may play an important role in the diagnosis of intestinal candidiasis. This should be included within the diagnostic algorithm. The early diagnosis of intestinal candidiasis allows the introduction of antifungal therapy with complete recovery without need for surgery.

## Disclosure

All authors disclosed no financial relationships relevant to this publication.

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