**Fellows’ Corner**

**What Is Your Diagnosis?**

by Sauyu Lin and Michael A. Shetzline

**CASE REPORT**

An 11-year-old girl presents with a five-year history of abdominal pain, iron deficiency anemia, and occult gastrointestinal bleeding. She denies diarrhea or visible blood in her stools, fevers, arthralgias, rash, or weight loss. An extensive evaluation included an upper endoscopy with biopsies, a colonoscopy with biopsies, a Meckel’s scan, an abdominal CT scan, a push enteroscopy, stool cultures, and small bowel enteroclysis, all of which were negative. A sedimentation rate was found to be mildly elevated at 20. After informed consent was obtained from her parents, she underwent capsule endoscopy. The following finding was found in the region of the mid-to-distal small bowel (Figure 1). Captured images included noodles consumed over four hours after the initiation of the study, indicating capsule retention (Figure 2). The capsule did eventually pass within 48 hours.

**Questions**

1. What is the diagnosis?
2. What other serologic markers may be useful in the diagnosis of Crohn’s disease in children?
3. Does capsule endoscopy have a higher diagnostic yield than other modalities, such as push enteroscopy and barium studies, in the evaluation of occult or obscure gastrointestinal bleeding?

![Figure 1. Narrowing and ulcerative changes in the region of the mid-to-distal small bowel.](image1)

![Figure 2. Captured image of noodles consumed over four hours after the initiation of the study by the retained capsule.](image2)
What Is Your Diagnosis?

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**Answers**

1. The narrowing with significant erosive and ulcerative changes in the distal small bowel was most consistent with small bowel Crohn’s disease.
2. Anti-Saccharomyces Cerevisiae antibodies, perinuclear antineutrophil cytoplasmic antibodies, and anti-out membrane protein C.
3. Studies suggest that capsule endoscopy has a yield twice that of push enteroscopy and six times higher than that of barium studies.

Subsequent serologies showed negative anti-Saccharomyces Cerevisiae antibodies (ASCA) and peri-nuclear antineutrophil cytoplasmic antibodies (p-ANCA), but a positive anti-out membrane protein C (anti-Omp C). She was empirically started on mesalamine and prednisone, and had significant improvement in all her symptoms. After one year follow-up, the patient is asymptomatic, off prednisone, and on maintenance mesalamine.

**DISCUSSION**

Although a majority of patients who suffer from Crohn’s disease have both small and large intestinal involvement, up to 30% of patients may have isolated small bowel disease, thus complicating diagnosis. One quarter of all patients with Crohn’s presents before the age of 20, and the annual incidence in this age group has tripled over the past three decades (1). Unfortunately, the diagnosis of Crohn’s disease in children may be more difficult than in the adult population. Children may have nonspecific signs and symptoms such as growth retardation or joint pains, may not be able to express the breadth or severity of symptoms, or may not tolerate diagnostic procedures such as endoscopy. The GIVEN M2A capsule has now moved into clinical practice in the evaluation of gastrointestinal bleeding of unclear etiology. When compared to push enteroscopy (SBE) for the evaluation of obscure gastrointestinal bleeding, capsule endoscopy provided a diagnosis in 55% of the patients, compared to 30% for SBE. The difference was even greater, 31% to 5%, when compared to barium studies (2,3).

Although the diagnosis of small bowel Crohn’s with capsule endoscopy has been reported in adults, capsule endoscopy has only limited use in the pediatric population (4). Because of the difficulty assessing children with non-specific symptoms and the desire to avoid unnecessary invasive testing, the search for noninvasive methods of diagnosis has gained favor. Recent modalities have consisted of leukocyte scintigraphy, serological testing, and contrast radiography. Leukocyte scintigraphy has demonstrated a sensitivity and specificity of 75% and 92%, respectively. The immune markers p-ANCA and ASCA were found to have a sensitivity and specificity ranging from 69–81% and 72–96%, respectively, while preliminary studies suggest anti-OmpC have lower values. Contrast radiography fared worse at 58% and 83% (5–7). Although promising, none of these modalities alone is sufficient to exclude or confirm inflammatory bowel disease. Capsule endoscopy provided valuable information in the care and management of this child, including the avoidance of surgery. Although the diagnosis of Crohn’s disease frequently involves biopsy of the affected area, radiologic studies, and most recently, capsule findings, in the appropriate setting have been sufficient to render a positive diagnosis and initiate treatment for this very debilitating disease (8). With more frequent visualization of the small bowel by capsule endoscopy, clinicians will likely diagnose small bowel Crohn’s disease earlier, provide therapy sooner, and possibly improve clinical outcomes—as in this case.

**References**


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