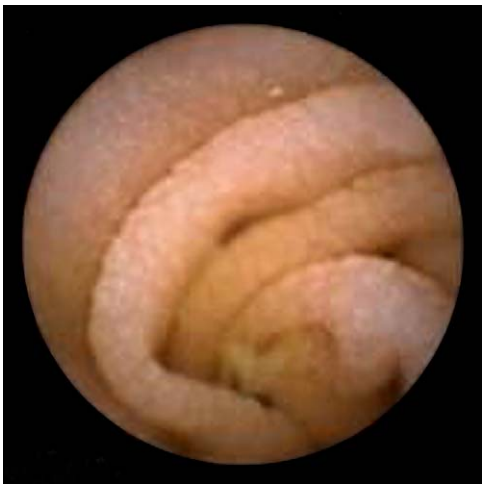

Figure 3. Cobble-stone appearance of the mucosa in the proximal ileum.

the complications in symptomatic patients. Follow-up should be life-long, and this permits reinforcement of the continuing need for strict adherence to the gluten-free diet.

VCE allows for visualization of the areas in the small bowel that was not possible with the conventional methods. There is scarce data on the added value of VCE in assessing the disease extent. Even with identification of the disease extent, there may be little correlation with severity of disease.

VCE can suggest CD, but a biopsy is still required to confirm the diagnosis. Some findings that are seen on VCE include mosaicism, nodularity, visible vessels, and loss of mucosal folds.[5,6] Theoretically, VCE may detect additional complications of CD, such as lymphomas, small-bowel adenocarcinoma, and ulcerative jejunitis. VCE also may be helpful in patients with CD with symptomatic relapse or refractory CD, and in elderly patients with atypical symptoms or chronic iron deficiency anemia.

In conclusion, VCE provides detailed images of the small-bowel mucosa in patients with CD. Further trials regarding the role of VCE and the description of diagnostic VCE findings in CD are necessary. VCE may make the diagnosis of CD a less invasive and a more complete examination, but, as of today, confirmation is by biopsy.

REFERENCES

1. Fine KD. The prevalence of occult gastrointestinal bleeding in celiac sprue. N Engl J Med 1996;334:1163-7.
2. Trier JS. Celiac sprue. N Engl J Med 1991;325:1709-19.
3. Goggins M, Kelleher D. Celiac disease and other nutrient related injuries to the gastrointestinal tract. Am J Gastroenterol 1994;89(Suppl):S2-S17.
4. Bardella MT, Fraquelli M, Quatrini M, Molteni N, Bianchi P, Conte D. Prevalence of hypertransaminasemia in adult celiac patients and effect of gluten-free diet. Hepatology 1995;22:833-6.
5. Gay G, Delvaux M, Rey JF. The role of video capsule endoscopy in the diagnosis of digestive diseases: a review of current possibilities. Endoscopy 2004;36:913-20.
6. Petroniene R, Dubcenco E, Baker JP, Warren RE, Streutker CJ, Gardiner GW, et al. Given capsule endoscopy in celiac disease. Gastrointest Endosc Clin N Am 2004;14:115-27.

Current affiliations: Division of Gastroenterology and Department of Internal Medicine, Veterans Affairs Medical Center, University of Virginia, Roanoke-Salem Program, Salem, Virginia, USA.

Reprint requests: Edward L. Arsura, MD, FACP, Internal Medicine, University of Virginia School of Medicine, Veterans Affairs Medical Center, 1970 Roanoke Blvd, Salem, VA 24153.

0016-5107/$30.00
doi:10.1016/j.gie.2005.06.022

EDITORIAL

Capsule endoscopy in celiac disease

In the case report of Kesari et al,[1] video capsule endoscopy in a patient with celiac disease documented involvement of the entire small intestine. The patient presented with iron deficiency and had diarrhea and hypoalbuminemia, though he did not appear to be severely ill.

The documentation that the entire small intestine was involved is interesting and highlights questions as to the role of capsule endoscopy in celiac disease. Before the use of capsule endoscopy, it was not readily possible to establish the length of involvement of the small intestine in celiac disease. However, it is recognized that villous atrophy may involve a variable length of the small intestine. In the 1960s,

0016-5107/$30.00
doi:10.1016/j.gie.2005.07.034

Trier, Rubin, and colleagues, by using peroral biopsies, documented that the inflammatory, atrophic process can extend a variable distance down the small intestine, not uncommonly involving the ileum.[2] They demonstrated that healing occurred from the distal end up. More recently, Dickey and Hughes[3] identified that ileal inflammatory changes predicted villous atrophy in duodenal biopsy specimens. In a cohort of patients who underwent video capsule endoscopy for the evaluation of complicated celiac disease, a third had ileal involvement.[4]

The significance of the variable length of involvement of the intestine in patients with celiac disease is unclear. It is somewhat intuitive that the more intestine involved, the sicker the patient may be; however, this is not necessarily so. Murray et al[5] presented, in abstract form, the results of a study that mapped the extent of disease by capsule endoscopy for a cohort of patients recently diagnosed with celiac disease. The length of visibly abnormal mucosa did not correlate with the presence of diarrhea.

Celiac disease could be an ideal disorder to use the power of video capsule to diagnose, monitor, and assess for complications.

Celiac disease is considered common, occurring in about 1% of the population.[6] The classic presentation of a patient with diarrhea and malabsorption syndrome is infrequently seen these days. Instead, patients present in a variety of ways, including iron deficiency,[7] osteoporosis,[8] incidentally at endoscopy when performed because of dyspepsia or gastroesophageal reflux symptoms,[9] or because of neurologic problems, especially ataxia or neuropathy.[10,11]

Celiac disease is an inflammatory disease that involves the small intestine. Celiac disease would seem to be an ideal disorder to use the power of the video capsule to diagnose, monitor, and assess for complications. However, there are limited studies, and, currently in the United States, celiac disease is not usually a reimbursable indication for capsule endoscopy. This is one reason that it is important to establish the role of capsule endoscopy in the patient with celiac disease. The issues to be determined include the role in the diagnosis of celiac disease and in the assessment of the patient with an already established diagnosis. These issues were addressed at the Third International Conference on Capsule Endoscopy, and a consensus paper was drafted.[12]

By tradition, celiac disease is diagnosed because of the presence of typical duodenal biopsy findings and clinical improvement on a gluten-free diet.[13] The endoscopic mucosal abnormalities identified in patients with celiac disease at EGD include reduction in mucosal folds, mosaic appearance of the mucosa, and scalloping of folds. These are regarded as highly specific. In view of this high specificity for the diagnosis of celiac disease, it is considered that capsule endoscopy may be of value in the diagnosis of celiac disease for patients with a positive endomysial or tissue transglutaminase antibody and who are unable to or unwilling to undergo EGD.[12] It is recognized that the endoscopic signs of villous atrophy are not sensitive for the lesser degrees of villous atrophy, so patients with only partial villous atrophy may be missed by this approach.[14] Celiac disease also will be diagnosed by capsule endoscopy in patients in whom it was not considered before the procedure.[9,15]

Another group of patients with celiac disease who appear to be ideal candidates for capsule endoscopy is that group of patients that fails to respond to a gluten-free diet or to develop alarm symptoms while on the diet. These patients often undergo extensive radiologic, and sometimes surgical, evaluation, because of the concern for the development of complications, such as lymphoma,[16,17] ulcerative jejunitis,[18] and adenocarcinoma.[19] Among 47 patients with complicated celiac disease, almost 50% had lesions detected by capsule endoscopy.[4] One adenocarcinoma was identified; however, ulceration was common. It is clear that lesions detected by capsule endoscopy in this high-risk population will need to have further evaluation to biopsy these abnormal areas. It is anticipated that double-balloon endoscopy will be increasingly necessary for this task.[20]

The role of screening for malignancies in patients with celiac disease who are stable while on a gluten-free diet needs to be determined.

While the description of the abnormalities detected in the distended duodenum at EGD has been applied to those abnormalities identified at capsule endoscopy, they may not be appropriate because capsule endoscopy is more a physiologic endoscopy than standard EGD. In fact, we have recognized a previously unreported sign of layering, or stacking of folds, in which thin folds appear stacked on each other.[4] This is noted in the images presented by Kesari et al.[1] In addition, we have noted that the descending duodenum is not always visualized at capsule endoscopy.[4] New criteria or terminology may need to be developed.

Because celiac disease is common, those performing capsule endoscopy will need to be familiar with the appearance of the mucosa in this condition. Celiac disease needs to be included in postgraduate capsule courses that have previously concentrated on GI bleeding.

Peter H. R. Green, MD
Moshe Rubin, MD
Department of Medicine
Columbia University College of Physicians and Surgeons
New York, New York, USA

REFERENCES

1. Kesari A, Bobba RK, Arsura E. Video capsule endoscopy and celiac disease. Gastrointest Endosc 2005;62:796-7.

2. MacDonald WC, Brandborg LL, Flick AL, Trier JS, et al. Studies of celiac sprue. IV. The response of the whole length of the small bowel to a gluten-free diet. Gastroenterology 1964;47:573-89.
3. Dickey W, Hughes DF. Histology of the terminal ileum in coeliac disease. Scand J Gastroenterol 2004;39:665-7.
4. Culliford A, Daly J, Diamond B, et al. The value of wireless capsule endoscopy in patients with complicated celiac disease. Gastrointest Endosc 2005;62:55-61.
5. Murray JA, Brogan D, Van dyke C, et al. Mapping the extent of untreated celiac disease with capsule enteroscopy [abstract]. Gastrointest Endosc 2004;59:AB101.
6. NIH Consensus Development Conference on Celiac Disease. Statement [cited 2005 Sep 14]. Bethesda, 2004. Available from: URL: http://www.consensus.nih.gov/cons/118/118celiac.htm.
7. Oxentenko AS, Grisolano SW, Murray JA, et al. The insensitivity of endoscopic markers in celiac disease. Am J Gastroenterol 2002;97:933-8.
8. Meyer D, Stavropolous S, Diamond B, et al. Osteoporosis in a North American adult population with celiac disease. Am J Gastroenterol 2001;96:112-9.
9. Green PH, Shane E, Rotterdam H, et al. Significance of unsuspected celiac disease detected at endoscopy. Gastrointest Endosc 2000;51:60-5.
10. Chin RL, Sander HW, Brannagan TH, et al. Celiac neuropathy. Neurology 2003;60:1581-5.
11. Sander HW, Magda P, Chin RL, et al. Cerebellar ataxia and coeliac disease. Lancet 2003;362:1548.
12. Cellier C, Green PH, Collin P, et al. The role of capsule endoscopy in coeliac disease: the way forward. Endoscopy 2005;37:1055-9.
13. Green PH, Jabri B. Coeliac disease. Lancet 2003;362:383-91.
14. Dickey W, Hughes D. Disappointing sensitivity of endoscopic markers for villous atrophy in a high-risk population: implications for celiac disease diagnosis during routine endoscopy. Am J Gastroenterol 2001;96:2126-8.
15. Kimchi NA, Broide E, Zehavi S, et al. Capsule endoscopy diagnosis of celiac disease and ileal tumors in a patient with melena of obscure origin. Isr Med Assoc J 2005;7:412-3.
16. Green PH, Fleischauer AT, Bhagat G, et al. Risk of malignancy in patients with celiac disease. Am J Med 2003;115:191-5.
17. Cellier C, Delabesse E, Helmer C, et al. Refractory sprue, coeliac disease, and enteropathy-associated T-cell lymphoma. French Coeliac Disease Study Group. Lancet 2000;356:203-8.
18. Green JA, Barkin JS, Gregg PA, et al. Ulcerative jejunitis in refractory celiac disease: enteroscopic visualization. Gastrointest Endosc 1993;39:584-5.
19. Rampertab SD, Forde KA, Green PH. Small bowel neoplasia in coeliac disease. Gut 2003;52:1211-4.
20. Yamamoto H, Kita H, Sunada K, et al. Clinical outcomes of double-balloon endoscopy for the diagnosis and treatment of small-intestinal diseases. Clin Gastroenterol Hepatol 2004;2:1010-6.

CASE REPORTS

Tuberculous mesenteric lymphadenitis involving the gastric wall: case report

Do Young Kim, MD, Seungmin Bang, MD, Byung Kyu Park, MD, Yong Soo Kim, MD, Hoguen Kim, MD, PhD, Sang Hoon Ahn, MD, PhD, Seung Woo Park, MD, Si Young Song, MD, PhD, Jae Bock Chung, MD, PhD, Tae Il Kim, MD, PhD

Seoul, Korea

Abdominal tuberculosis (TB) is one of the most prevalent forms of extra-pulmonary TB disease. The GI tract, peritoneum, lymphatic system, and solid viscera are subject to differing degrees of tuberculous involvement, which can occur alone or in combination.[1] GI tract involvement had been reported in 55% to 90% of patients with active pulmonary TB, but the advent of effective, specific anti-TB drugs has dramatically reduced the rate to approximately 25%.[2] There is a predilection and relatively increased severity of abdominal TB lymphadenopathy in the periportal, peripancreatic, and mesenteric locations compared with the degree of retroperitoneal involvement.[1] TB is rarely found in the stomach compared to the other sites in the GI tract.[3,4] Only a few cases of primary gastric TB have been reported, and to the authors' knowledge, there have been no reports describing mesenteric tuberculous lymphadenitis involving the gastric wall. We present here one case of a patient in whom the enlarged mesenteric tuberculous lymphadenitis caused erosion of the gastric wall; this mimicked an ulcerating gastric submucosal tumor (SMT) or primary gastric TB, and there was no evidence of TB elsewhere.

CASE REPORT

A 43-year-old woman presented to our hospital with a 2-week history of epigastric discomfort. She had no history of fever, anorexia, weight loss, or respiratory symptoms. She had not been exposed to any other ill people, nor had she done any recent traveling. Physical examination revealed no abnormalities except for mild epigastric tenderness. No cervical lymphadenopathy or hepatosplenomegaly was present. Laboratory investigations showed a hemoglobin level of 12.3 gm/dL and a white blood cell count of 6,900/mm^3 with a normal differential count. The liver and