

AMSER Case of the Month

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A 65 year old man presents with acute-on-chronic abdominal pain and bloating

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Patient Presentation

- **HPI:** A 65 year old man reports diffuse abdominal pain, loose stools, and significant bloating. He also reports fatigue and gassiness. His symptoms are not clearly associated with meals, bowel movement, or position.
- **PMH:** Hypertension, Hyperlipidemia, GERD. No prior abdominal surgeries.
- **Physical Exam:** Vital signs are normal. Physical exam showed a non-tender, distended abdomen with normoactive bowel sounds, and no rebound or guarding.

Pertinent Labs

- WBC: 9.1 k/microL (normal 4.0-12.0 k/microL)
- Hemoglobin: 12.7 g/dL (normal 13.5-17.5 g/dL)
- Complete metabolic profile is normal

(Performed at separate visit)

- Tissue transglutaminase Antibodies (IgA): **156 U/mL** (normal <15 U/mL)

What Imaging Should We Order?

Acute Abdominal Pain - ACR Appropriateness Criteria

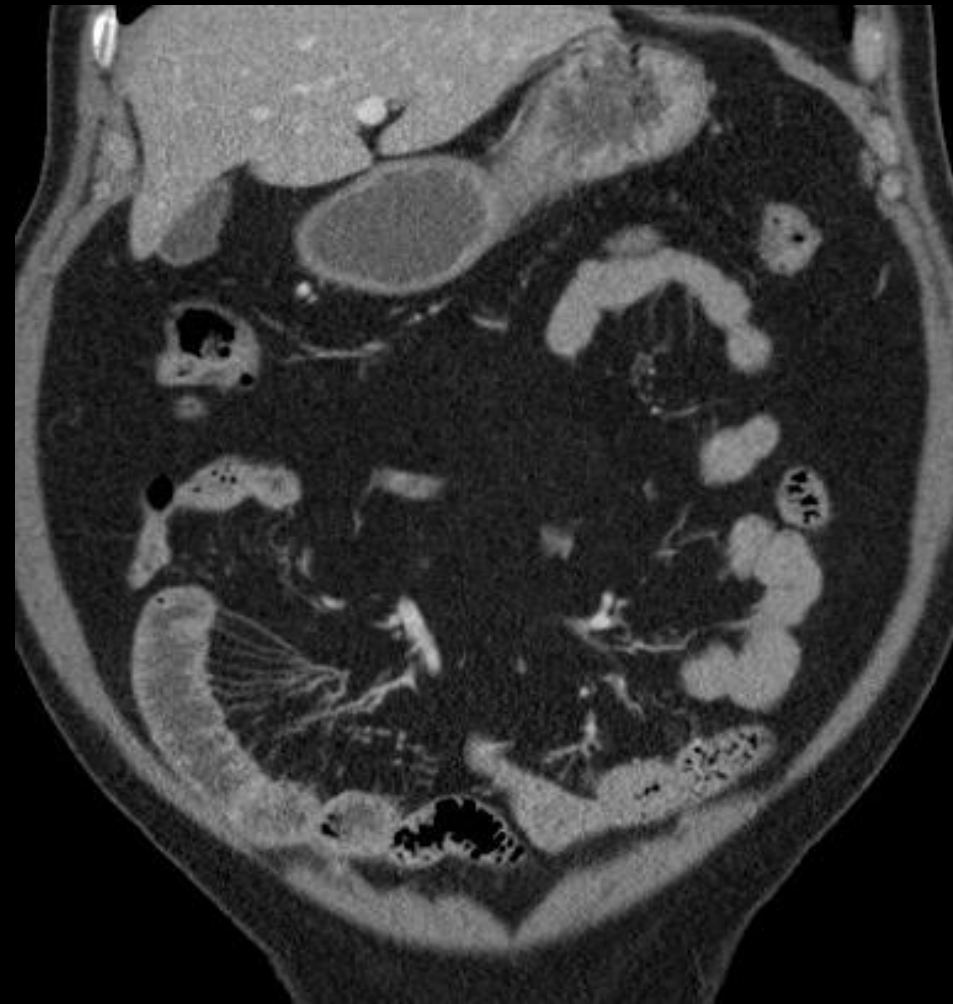
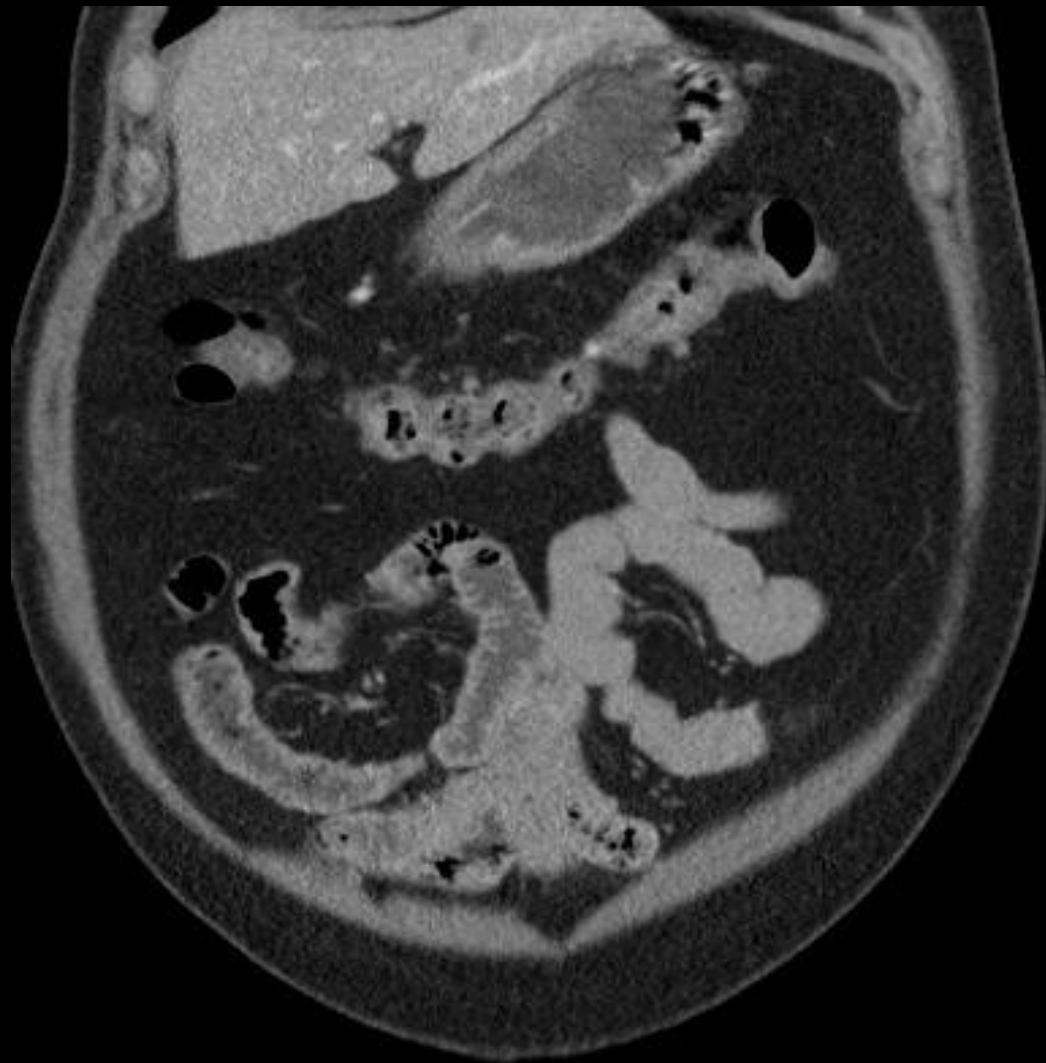
Variant 4: Acute nonlocalized abdominal pain. Not otherwise specified. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
CT abdomen and pelvis with IV contrast	Usually Appropriate	☼☼☼
CT abdomen and pelvis without IV contrast	Usually Appropriate	☼☼☼
MRI abdomen and pelvis without and with IV contrast	Usually Appropriate	○
US abdomen	May Be Appropriate	○
MRI abdomen and pelvis without IV contrast	May Be Appropriate	○
CT abdomen and pelvis without and with IV contrast	May Be Appropriate	☼☼☼☼
Radiography abdomen	May Be Appropriate	☼☼
FDG-PET/CT skull base to mid-thigh	Usually Not Appropriate	☼☼☼☼
WBC scan abdomen and pelvis	Usually Not Appropriate	☼☼☼☼
Nuclear medicine scan gallbladder	Usually Not Appropriate	☼☼
Fluoroscopy upper GI series with small bowel follow-through	Usually Not Appropriate	☼☼☼
Fluoroscopy contrast enema	Usually Not Appropriate	☼☼☼

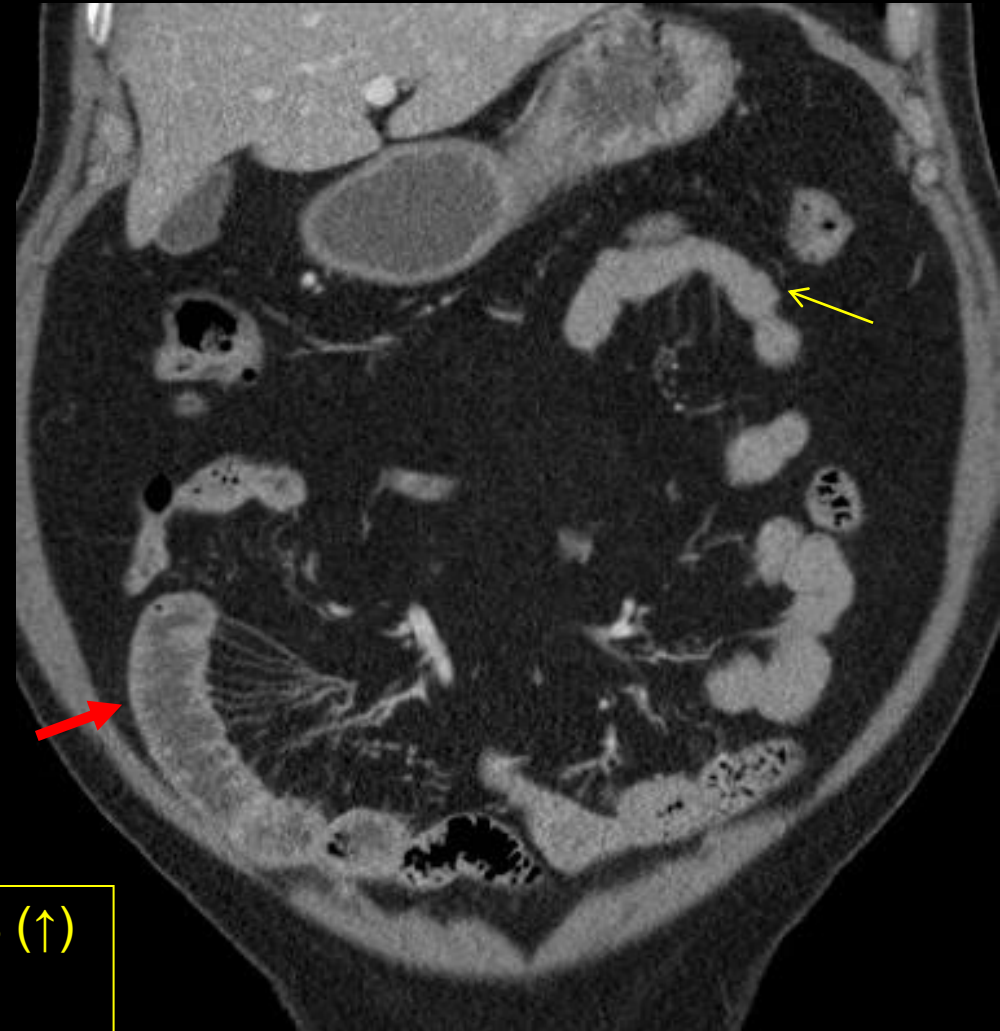
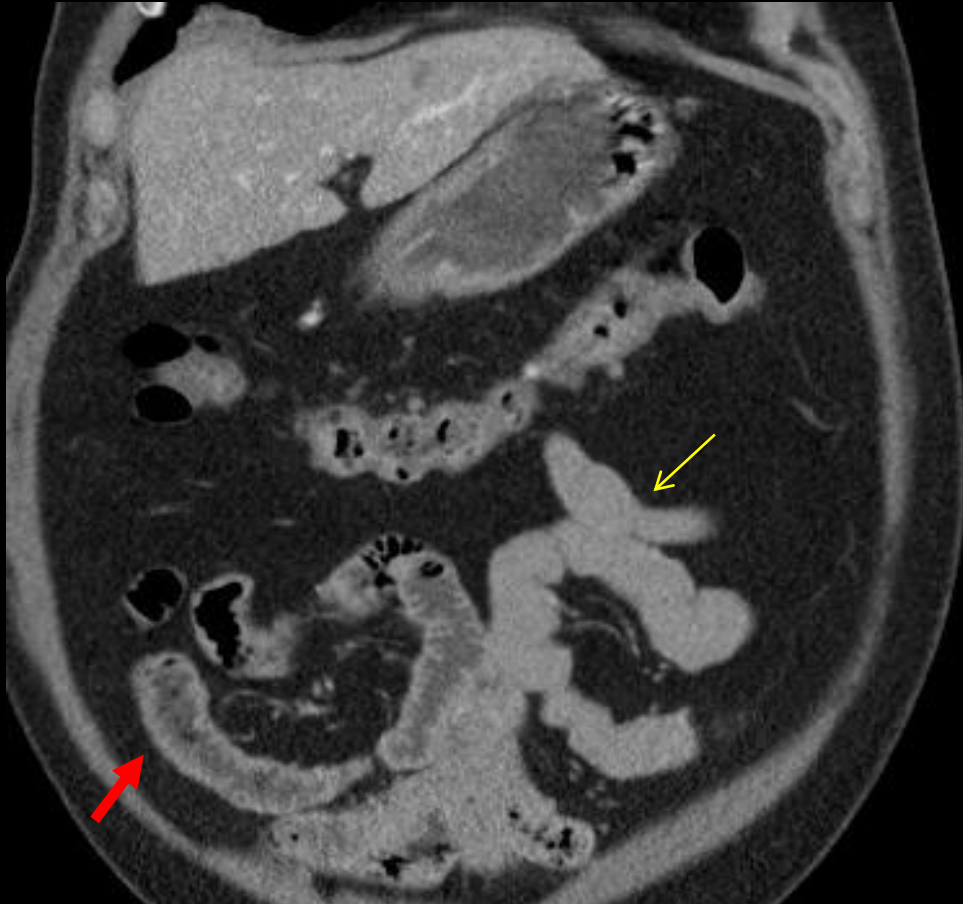
This imaging modality was ordered by the ER physician



Findings (unlabeled)



Findings: (labeled)



- Featureless jejunum with decreased folds (↑)
- Increased folds within the ileum (↑)
- No other acute abnormality

Final Diagnosis:

Celiac Disease Exacerbation

Case Discussion

- Once thought to be a uncommon condition of those with European ancestry, Celiac disease is now known to have a worldwide and increasing incidence¹. Despite a prevalence of 1% in the general population, less than 10% of cases of Celiac disease are currently diagnosed².
- Celiac disease is caused by a delayed-type hypersensitivity reaction to gliadin, a gluten protein, mediated by T-lymphocytes². If unrecognized, Celiac disease causes chronic inflammation, leading to loss of villi in the mucosa of the duodenum/jejunum.
- Clinically, patients will present with crampy abdominal pain and symptoms of malabsorption such as diarrhea, anemia, osteoporosis, and neurologic abnormalities¹.

Case Discussion

- Celiac disease can be diagnosed by serology (tissue transglutaminase antibodies), small bowel biopsy, or trial of gluten avoidance.
- However, due to its prevalence in the setting of abdominal pain and emergency visits, CT has an increasing role in suggesting the possibility of Celiac disease and prompting more direct confirmatory tests.
- Fluoroscopy/CT/MR Imaging Features^{2,3}:
 - Reversal of jejunoileal fold pattern, with atrophic/featureless jejunal bowel loops
 - Dilated small bowel loops with precipitation of administered barium (flocculation)
 - Bowel telescoping/enteroenteric intussusceptions
 - Enlarged mesenteric lymph nodes which may be low-density (cavitary mesenteric lymph node syndrome)
 - Absence of features of Crohn's disease, scleroderma, or acute inflammatory conditions

Case Discussion

- Endoscopic findings in celiac disease are nonspecific, with the most common patterns of scalloping of mucosa with fissures and decreased duodenal folds/villi¹.
- Small intestinal biopsy confirms the diagnosis and establishes the severity according to the Marsh classification, demonstrating intra-epithelial lymphocytes and various degrees of villous atrophy¹.



Endoscopic image of the duodenum in this patient, showing scalloped mucosa with an area of fold thickening

Case Discussion

Management

- The mainstay of management is strict adherence to a gluten-free diet¹. Compliance can be monitored through serologic testing with tissue transglutaminase immunoglobulin. Novel therapies, such as transglutaminase inhibitors, are in development⁴.
- Imaging surveillance is not warranted in celiac disease. However these patients are at overall increased risk of cancer, specifically T-cell lymphoma believed to related to chronic lymphatic stimulation/inflammation¹. Further imaging such as abdominal CT is beneficial when concern for malignancy arises, and can help to identify mesenteric lymph node enlargement².

References:

1. Green PHR, Lebwohl B, Greywoode R. “Celiac Disease.” *Journal of Allergy and Clinical Immunology* 2015;135(5):1099–1106. <https://doi.org/10.1016/j.jaci.2015.01.044>
2. Scholz FJ, Afnan J, Behr SC. “CT Findings in Adult Celiac Disease.” *RadioGraphics* 2011;31(4):977-92. <https://pubs.rsna.org/doi/10.1148/rg.314105215>.
3. Mimish R, Reinhold C. “Reversal of the Jejunoileal Fold in Celiac Disease.” *Radiology* 2018;288(2):342. <https://doi.org/10.1148/radiol.2018180504>
4. Schuppan D, Maki M, Lundin KEA, et al. “A Randomized Trial of a Transglutaminase 2 Inhibitor for Celiac Disease.” *N Engl J Med* 2021; 385:35-45. <https://doi.org/10.1056/NEJMoa2032441>