Celiac Disease: Gastrointestinal Features

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Celiac disease, also called gluten-sensitive enteropathy, is estimated to affect up to 1% of the U.S. population. However, it is thought that only 10–15% of those with disease have been diagnosed. The diagnosis is often made by the fifth decade [1].

The most common gastrointestinal (GI) symptoms of celiac disease are [1]:

- Diarrhea (50%)
- Lactose intolerance
- Bloating
- Abdominal distension
- Weight loss
- Steatorrhea
- Dyspepsia
- Heartburn

The clinical signs and findings in celiac disease are often nonspecific [1, 2]:

- Abnormalities in motility of GI tract, gastroesophageal reflux disease (GERD)—like symptoms
- Rarely may see axonal neuropathy and cerebellar ataxia
- Osteoporosis, iron/folate deficiency, and short stature due to malabsorption
- T-cell lymphoma due to chronic inflammation
- Untreated, celiac disease increases mortality four to fivefold over general population
- Refractory celiac disease: unresponsive to 6–12 months of gluten-free diet (continued malabsorption symptoms and/or villous atrophy); increased risk of ulcerative jejunitis and T-cell lymphoma (the latter particularly with type II)
- Associated with type I diabetes, autoimmune thyroiditis, hepatobiliary disorders (primary biliary cirrhosis [PBC], autoimmune hepatitis), inflammatory bowel disease (IBD), Down's syndrome, Turner's syndrome, connective tissue autoimmune disease (Sjogren's, rheumatoid arthritis, systemic lupus erythematous), dermatitis herpetiformis, immunoglobin A (IgA) deficiency, IgA neuropathy

The pathogenesis is thought to be related to host immunological abnormalities [1, 3]:

- Inappropriate T-cell–mediated immune response to ingested gluten that causes inflammatory injury to small intestine in genetically predisposed persons resulting in malabsorption
- Increased in persons who eat gluten in first 3 months of life
- Inherited HLA-DQ2 and HLA-DQ8 are necessary but not sufficient for disease; occurs in 5–10% of children with affected parents and 10–20% of children with affected siblings
- Motility changes and other GI tract symptoms are thought to be due to decreased nutrient absorption, GI hormonal disorders due to absorption changes, and inflammation with inflammatory fragments being released into the GI lumen

The diagnosis can be difficult to make and may require evidence from several different tests [1, 3]:

- Endoscopic appearance—scalloping or notching of the mucosal folds is characteristic of the disease (see Fig. 17.1)
- Screen persons with an affected first-degree relative
- Consider HLA-DQ2/DQ8 testing in individuals with close relatives that have the disease (can avoid repeated antibody testing), patients already on a gluten-free diet without disease confirmation who may want a gluten challenge to confirm the disease, and those with histologic/serologic findings that are equivocal; this test is useful as a negative test eliminates the disease (only used to rule out disease)
- The disease is defined as villus atrophy with crypt hyperplasia and intraepithelial lymphocytosis while on a gluten-containing diet that normalizes on a gluten-free diet; endoscopic biopsy is used to confirm the disease (see Figs. 17.2 and 17.3)
- Serologic tests (serum IgA antibody to tissue transglutaminase and to transglutaminase 2), and antiendomysial antibody can be used to determine those who need a biopsy; consider anti-deamidated gliadin peptide anti-

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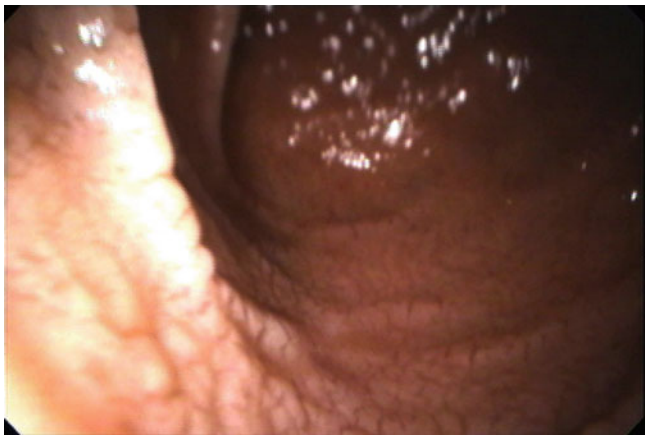

Fig. 17.1 An endoscopic view of the duodenum showing typical "scalloping" of the mucosa in celiac disease

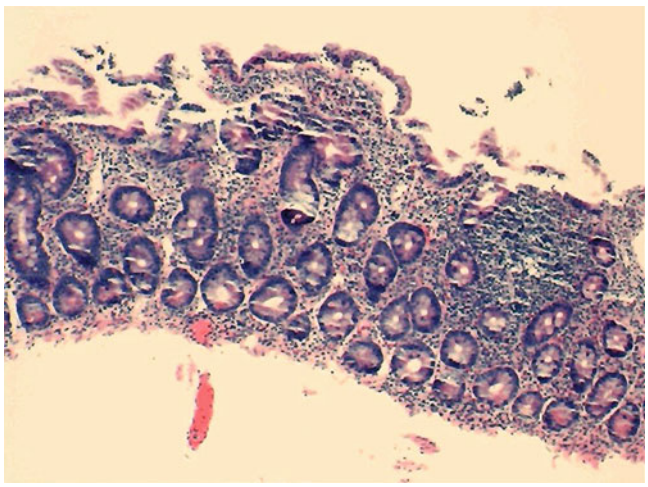

Fig. 17.2 A low-power photomicrograph of a duodenal biopsy showing submucosal inflammation. Hematoxylin and eosin (H and E)

body test although this is perhaps less sensitive and is more expensive; if patient has an IgA deficit, IgG antibodies must be checked
- Also check for vitamin deficiencies, anemia, iron deficiency, electrolyte imbalances, coagulopathies, and liver aminotransferase elevations
- In refractory celiac disease, T-cell immunohistochemistry and genetic staining for gene rearrangement must be checked; type I disease, no gene rearrangement, CD3 and CD8 positive; type II disease has gene rearrangement, only CD3 positive

Because of the protean nature of the presentation of celiac disease, the differential diagnosis is broad [1, 3]:
- Irritable bowel syndrome
- Inflammatory bowel disease
- Microscopic colitis
- Lactose intolerance

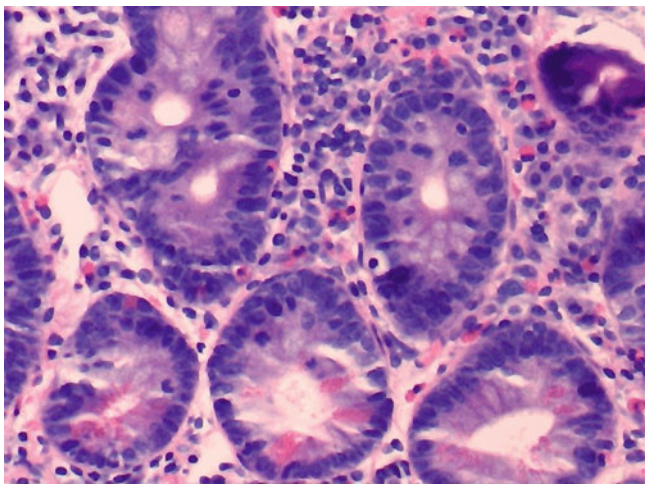

Fig. 17.3 A photomicrograph of a duodenal biopsy showing details of the intraepithelial inflammation characterized by a primarily mononuclear infiltration with eosinophils. H and E, high power

- Other carbohydrate intolerances
- Eosinophilic esophagitis [4], gastroenteritis
- Food protein-induced enteropathies
- Small intestinal bacterial overgrowth
- Giardia infection
- Intestinal lymphoma
- IgA deficiency
- Common variable immunodeficiency
- Autoimmune enteropathy
- Zollinger-Ellison syndrome

The fundamental basis of treatment is to remove the offending antigens [1, 3]:
- Important to treat early to reduce complications from disease
- Gluten-free diet: needs to be lifelong (can have continued asymptomatic inflammation even with minimal gluten intake); a nutrition consult can be very helpful
- Vitamin replacement (particularly fat soluble vitamins) as needed
- Failure of diet: first confirm adherence to diet and ensure no unknown gluten ingestion; in truly refractory celiac disease, steroids, azathioprine, 6-mercaptopurine, cyclosporine, and other immunosuppressants may be useful

References

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