

# Celiac Disease:

## Easing Angie's Abdominal Pain



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### Angie's Abdominal Pain

- Angie, 37, presents with a several-year history of mild cramping, abdominal pain and intermittent, non-bloody diarrhea.
- She has two to three loose stools a day, alternating with one to two formed stools a day.
- Angie's symptoms have recently become more frequent and she has increasing fatigue.
- She works as an accountant and states she has recently been under stress.
- Her weight has been gradually increasing, having gained 10 pounds in the last year.
- There are no particular foods that seem to precipitate her symptoms.
- Angie's physical examination is unremarkable.



For the details of Angie's initial blood tests, go to page 24.

Celiac disease is an immune-mediated, malabsorptive disorder of the small bowel mucosa, caused by exposure to dietary gluten in genetically predisposed individuals.

### How common is celiac disease?

Celiac disease is an under-recognized entity that is more prevalent than previously thought. Population-based studies indicate a prevalence of 1:300 in Denmark, 1:184 in Italy and 1:152 in Ireland.<sup>1,2</sup> In a study of asymptomatic blood donors, the prevalence is 1:133 in the US.<sup>2</sup> Historically, celiac disease was considered restricted to individuals of Northern European background. However, studies from different parts of the world have demonstrated similar high-prevalence rates in South America, India, parts of Africa and Asia.

Family members of an affected individual have an increased risk for the disease. The prevalence of celiac disease is 1:100 in first-degree relatives.

Celiac disease can affect children younger than two years of age. Children with the more classic gastrointestinal symptoms of diarrhea, weight loss, malabsorption and failure to thrive. Older children and adults may present with these classic symptoms, but they more frequently have non-specific GI symptoms, non-GI symptoms or they can be asymptomatic.

The symptoms of celiac disease can be similar to irritable bowel syndrome (IBS) and recent studies have shown an increased prevalence of celiac disease in patients diagnosed



## More on Angie

### Initial blood work:

- **Hemoglobin:** 112 g/L (N=120 g/L to 160 g/L); mean cell volume 75.6 fl (N=90 fl to 60 fl)
- **White blood cell count:** 6.6  $\mu$ l
- **Platelets:** 284  $\mu$ l
- **Ferritin level:** 4  $\mu$ l (N=20  $\mu$ l to 120  $\mu$ l)
- **Stools for occult blood:** Negative

### Further investigations:

- **Tissue transglutaminase antibody:** 120 units/L (positive > 20)
- **Antiendomysial antibody:** Positive 1:64
- **Small bowel biopsy:** Partial villous atrophy and crypt hypertrophy consistent with celiac disease.

Angie was started on a gluten-free diet and was referred to a clinical dietitian. She was advised to join the local chapter of the Canadian Celiac Association.

To find out what happened to Angie, go to page 27.

N: Normal

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with IBS.<sup>3</sup> The presence of a symmetrical, pruritic papular or vesicular rash on the elbows, knees, buttocks and scalp is suggestive of *dermatitis herpetiformis*, which is associated with celiac disease in the majority of cases.

Non-GI presentations include fatigue, arthritis/artralgias, osteoporosis and dental enamel defects, as well as neuropsychiatric symptoms, such as depression, seizures, peripheral neuropathy or ataxia. Biochemical abnormalities, often in the absence of symptoms, include iron deficiency anemia, folate deficiency, persistent elevation of liver enzymes or, rarely, B12 deficiency.<sup>1,4</sup> Celiac disease has also been associated with infertility.

## What is the best way to diagnose celiac disease?

The clinician should have a high index of suspicion for patients with classic and atypical symptoms, as well as for patients with a positive family history. An initial complete blood count, electrolytes, liver function tests, iron studies and B12 are recommended. Serologic testing is the best method to screen for celiac disease.

While there are several antibody tests that have been used in the past, the immunoglobulin A (IgA) endomysial and IgA tissue transglutaminase antibodies have high sensitivities (90% to 100%) and specificities (95% to 100%).<sup>5</sup> There is an increased prevalence of IgA deficiency in patients with celiac disease. Therefore, IgA deficiency should be excluded as a cause of a false negative result.

Small bowel biopsy remains the gold standard diagnostic test and should be undertaken if the endomysial or tissue transglutaminase antibodies are positive or if there remains a strong clinical suspicion in the absence of positive serology.

There is no role for a diet trial pending investigation. Investigations should be done after a gluten challenge in patients who have already been started on a gluten-free diet, as both serologic tests and histology normalize on a gluten-free diet.

Human leukocyte antigen (HLA) DQ2 and DQ8 are found in more than 95% of individuals with celiac disease. Unfortunately, approximately 30% of the general population possesses these alleles, thus limiting the use of HLA typing as a diagnostic test.

## What is the treatment?

Once the diagnosis of celiac disease has been confirmed, the conventional treatment is a life-long, gluten-free diet. Dietary therapy should be initiated in conjunction with a dietitian experienced in this area. The diet involves the absolute avoidance of wheat, rye and barley. Oats

## Is celiac disease associated with other diseases?

- Individuals with Down's syndrome have a 10% prevalence of celiac disease.
- Celiac disease is also associated with autoimmune disorders including Type 1 diabetes mellitus (prevalence 2.6% to 7.8%).
- Autoimmune thyroid disease, primary biliary cirrhosis, autoimmune hepatitis and immunoglobulin A deficiency are other autoimmune associations.<sup>7</sup>
- Celiac disease is associated with microscopic colitis, which may be a cause of persistent diarrhea after starting a gluten-free diet.

## Angie's Follow-up

- Angie's iron deficiency has resolved on a gluten-free diet.
- Her gastrointestinal symptoms have normalized and she now has one formed stool per day.

appear to be safe, but because oat products available in North America are not guaranteed to be free of cross-contamination with other grains, consumption of oats is not recommended.

Patients should be encouraged to join a celiac support group that provides information on gluten-free products and education regarding celiac disease. In Canada, the Canadian Celiac Association has chapters in most major centres and several rare publications of great assistance to individuals with this disorder.

Because manufacturers in Canada are not required to list gluten on food labels, individuals should be encouraged to check with manufacturers when they are consuming products that may have gluten in them. Treatment failure is usually based on unrecognized ingestion of gluten or non-compliance.

## What are the complications?

Refractory celiac disease refers to the persistence of symptoms and intestinal inflammation despite adherence to a gluten-free diet. The causes of refractory celiac disease include lymphoma, ulcerative jejunitis and collagenous

sprue.

Manifestations of lymphoma include diarrhea refractory to a gluten-free diet, weight loss and intra-abdominal lymphadenopathy. Ulcerative jejunitis is characterized by multiple, chronic, small bowel ulcers and strictures and can be associated with lymphoma. Patients with persistent symptoms who have had their diet reviewed and do not have evidence of gluten ingestion should be further evaluated by a gastroenterologist.

Refractory celiac disease (which is rare) may respond to immunosuppressive therapy. In addition to lymphoma, there is an increased risk of small bowel adenocarcinoma and squamous cell carcinoma of the esophagus.<sup>6</sup> Osteoporosis is also a recognized complication.

The importance of adherence to a gluten-free diet has been underscored by demonstrating that, on such a diet, the risk of intestinal lymphoma can decrease to levels similar to the general population.<sup>6</sup>

Bone density improves in a large percentage of celiac patients in the first two years after starting a gluten-free diet.

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