

Celiac disease - sprue

Definition

Celiac disease is a condition caused by damage to the lining of the small intestine. This damage comes from a reaction to eating gluten. This is a substance that is found in wheat, rye, barley, and possibly oats. It is also found in food made from these ingredients.

The damaged intestine is not able to absorb nutrients from food.

Alternative Names

Sprue; Nontropical sprue; Gluten intolerance; Gluten-sensitive enteropathy

Causes

The exact cause of celiac disease is not known. The lining of the intestines have small areas called villi which project outward into the opening of the intestine. These structures help absorb nutrients.

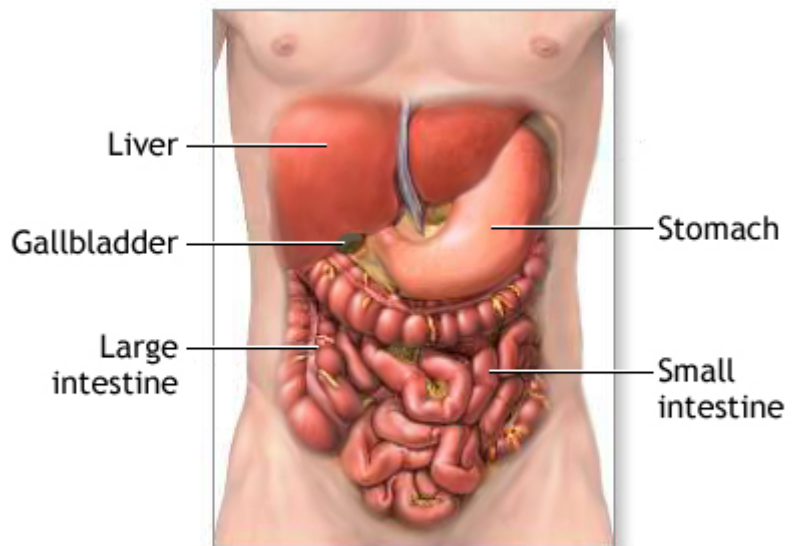
When people with celiac disease eat foods with gluten, their immune system reacts by damaging the villi. Because of the damage, the villi are unable to properly absorb iron, vitamins, and other nutrients. This may cause a number of symptoms and other health problems.

The disease can develop at any point in life, from infancy to late adulthood.

People who have a family member with celiac disease are at greater risk of developing the disease. The disorder is most common in Europeans. Women are affected more often than men.

People with celiac disease are more likely to have:

- Autoimmune disorders such as rheumatoid arthritis, systemic lupus erythematosus, and Sjogren syndrome
- Addison disease
- Down syndrome
- Intestinal cancer
- Intestinal lymphoma
- Lactose intolerance
- Thyroid disease
- Type 1 diabetes



ADAM.

Symptoms

The symptoms of celiac disease can be different from person to person. This can make diagnosis difficult. For example, one person may have constipation, a second may have diarrhea, and a third may have no problem with stools.

Gastrointestinal symptoms include:

- Abdominal pain, bloating, gas, or indigestion
- Constipation
- Decreased appetite (may also be increased or unchanged)
- Diarrhea, either constant or off and on
- Lactose intolerance (common when the person is diagnosed, often goes away after treatment)
- Nausea and vomiting
- Stools that are foul smelling, oily, or stick to the toilet when flushed
- Unexplained weight loss (although people can be overweight or normal weight)

Other problems that can develop over time because the intestines do not absorb key nutrients include:

- Easy bruising
- Depression or anxiety
- Fatigue
- Growth delay in children
- Hair loss
- Itchy skin with a rash (dermatitis herpetiformis)
- Missed menstrual periods
- Mouth ulcers
- Muscle cramps and joint pain
- Nosebleeds
- Seizures
- Tingling or numbness in the hands or feet
- Unexplained short height

Children with celiac disease may have:

- Defects in the tooth enamel and changes in tooth color
- Delayed puberty
- Muscle wasting
- Diarrhea, constipation, fatty or foul-smelling stools, nausea, or vomiting
- Irritable and fussy behavior
- Poor weight gain
- Slowed growth and shorter than normal height for their age

Exams and Tests

The following tests may be performed:

- Bone density
- Cholesterol (may be low)
- Complete blood count (CBC - test for anemia)
- Comprehensive metabolic panel
- Folate level (serum)
- Iron level (serum)
- Ferritin level
- Prothrombin time
- Vitamin B12 level (serum)
- Vitamin D level

Blood tests can detect antibodies, called antitissue transglutaminase antibodies (tTGA) or anti-endomysial antibodies (EMA) which may help detect the condition. The health care provider will order these antibody tests if celiac disease is suspected.

If the tests are positive, upper endoscopy is often performed to sample a piece of tissue (biopsy) from the first part of the small intestine (duodenum). The biopsy may show a flattening or loss of the villi in the parts of the intestine affected in the duodenum.

Genetic testing of the blood can also be done to help detect who may be at risk for celiac disease. Those who test negative for the common genetic variant are unlikely to have celiac disease.

A follow-up biopsy or blood test may be ordered several months after the diagnosis and treatment. These tests assess how well treatment is working. Normal results mean that you have responded to treatment. This confirms the diagnosis. However, this does not mean that the disease has been cured.

Treatment

Celiac disease cannot be cured. Your symptoms will go away and the villi in the intestines will heal if you follow a lifelong gluten-free diet. Do not eat foods, drink beverages, or take medicines that contain wheat, barley, rye, and possibly oats.

You must read food and drug labels carefully to look ingredients that may include these grains. It may be hard to stick to a gluten-free diet because wheat and barley grains are common in the American diet. Over time, most people are able to adapt and get better. You should NOT begin the gluten-free diet before you are diagnosed. Starting the diet will affect testing for the disease.

In most cases, following a well-balanced, gluten-free diet is the only treatment you need to stay well. Your health care provider may need to prescribe vitamin and mineral supplements.

Sometimes, short-term use of corticosteroids (such as prednisone) may be needed if sprue does not respond to treatment.

When you are diagnosed, get help from a registered dietitian who specializes in celiac disease and the gluten-free diet. A support group may also help you cope with the disease and diet.

Outlook (Prognosis)

Following a gluten-free diet heals the damage to the intestines and prevents further damage. This healing most often occurs within 3 to 6 months in children. Recovery may take 2 to 3 years in adults.

Rarely, long-term damage will be done to the lining of the intestines before the diagnosis is made.

Some problems caused by celiac disease may not improve, such as a short height and damage to the teeth.

Possible Complications

You must carefully continue to follow the gluten-free diet. When untreated, the disease can cause fatal complications.

Delaying diagnosis or not following the diet puts you at risk for related conditions such as:

- Autoimmune disorders
- Bone disease (osteoporosis, kyphoscoliosis, fractures)
- Certain types of intestinal cancer
- Low blood count (anemia)
- Infertility or repeated miscarriage
- Liver disease

When to Contact a Medical Professional

Call your provider if you have symptoms of celiac disease.

Prevention

Because the exact cause is not known, there is no way to prevent the development of celiac disease. However, you should try to be aware of the risk factors such as family history. This may increase your chances of early diagnosis and treatment.

References

Ferri FF. Celiac disease. In: Ferri FF, ed. *Ferri's Clinical Advisor*. Philadelphia, PA: Elsevier; 2018: 263-264.e1.

Hogenauer C, Hammer HF. Maldigestion and malabsorption. In: Feldman M, Friedman LS, Brandt LJ, eds. *Sleisenger and Fordtran's Gastrointestinal and Liver Disease*. 10th ed. Philadelphia, PA: Elsevier Saunders; 2016:chap 104.

Kelly CP. Celiac disease. In: Feldman M, Friedman LS, Brandt LJ, eds. *Sleisenger and Fordtran's Gastrointestinal and Liver Disease*. 10th ed. Philadelphia, PA: Elsevier Saunders; 2016:chap 107.

Rubio-Tapia A, Hill ID, Kelly CP, Calderwood AH, Murray JA; American College of Gastroenterology. ACG clinical guidelines: diagnosis and management of celiac disease. *Am J Gastroenterol*. 2013;108(5):656-676. PMID: 23609613 www.ncbi.nlm.nih.gov/pubmed/23609613.

Semrad CE. Approach to the patient with diarrhea and malabsorption. In: Goldman L, Schafer AI, eds. *Goldman-Cecil Medicine*. 25th ed. Philadelphia, PA: Elsevier Saunders; 2016:chap 140.

Review Date: 1/12/2018

Reviewed By: Michael M. Phillips, MD, Clinical Professor of Medicine, The George Washington University School of Medicine, Washington, DC. Also reviewed by David Zieve, MD, MHA, Medical Director, Brenda Conaway, Editorial Director, and the A.D.A.M. Editorial team.