

# Microscopic Colitis: Collagenous Colitis and Lymphocytic Colitis

*National Digestive Diseases Information Clearinghouse*



National Institute of  
Diabetes and Digestive  
and Kidney Diseases

## What is microscopic colitis?

Microscopic colitis is an inflammation of the colon that a health care provider can see only with a microscope. Inflammation is the body's normal response to injury, irritation, or infection of tissues. Microscopic colitis is a type of inflammatory bowel disease—the general name for diseases that cause irritation and inflammation in the intestines.

The two types of microscopic colitis are collagenous colitis and lymphocytic colitis. Health care providers often use the term microscopic colitis to describe both types because their symptoms and treatments are the same. Some scientists believe that collagenous colitis and lymphocytic colitis may be different phases of the same condition rather than separate conditions.

In both types of microscopic colitis, an increase in the number of lymphocytes, a type of white blood cell, can be seen in the epithelium—the layer of cells that lines the colon. An increase in the number of white blood cells is a sign of inflammation. The two types of colitis affect the colon tissue in slightly different ways:

- **Lymphocytic colitis.** The number of lymphocytes is higher, and the tissues and lining of the colon are of normal thickness.
- **Collagenous colitis.** The layer of collagen, a threadlike protein, underneath the epithelium builds up and becomes thicker than normal.

When looking through a microscope, the health care provider may find variations in lymphocyte numbers and collagen thickness in different parts of the colon. These variations may indicate an overlap of the two types of microscopic colitis.

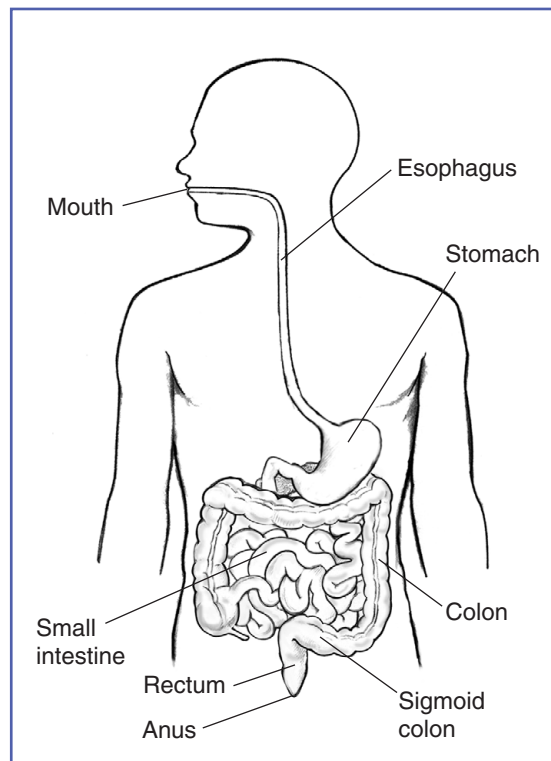
## What is the colon?

The colon is part of the gastrointestinal (GI) tract, a series of hollow organs joined in a long, twisting tube from the mouth to the anus—a 1-inch-long opening through which stool leaves the body. Organs that make up the GI tract are the

- mouth
- esophagus
- stomach
- small intestine
- large intestine
- anus

The first part of the GI tract, called the upper GI tract, includes the mouth, esophagus, stomach, and small intestine. The last part of the GI tract, called the lower GI tract, consists of the large intestine and anus. The intestines are sometimes called the bowel.

The large intestine is about 5 feet long in adults and includes the colon and rectum. The large intestine changes waste from liquid to a solid matter called stool. Stool passes from the colon to the rectum. The rectum is 6 to 8 inches long in adults and is between the last part of the colon—called the sigmoid colon—and the anus. During a bowel movement, stool moves from the rectum to the anus and out of the body.



The colon is part of the GI tract.

## What causes microscopic colitis?

The exact cause of microscopic colitis is unknown. Several factors may play a role in causing microscopic colitis. However, most scientists believe that microscopic colitis results from an abnormal immune-system response to bacteria that normally live in the colon. Scientists have proposed other causes, including

- autoimmune diseases
- medications
- infections
- genetic factors
- bile acid malabsorption

## Autoimmune Diseases

Sometimes people with microscopic colitis also have autoimmune diseases—disorders in which the body's immune system attacks the body's own cells and organs. Autoimmune diseases associated with microscopic colitis include

- celiac disease—a condition in which people cannot tolerate gluten because it damages the lining of the small intestine and prevents absorption of nutrients. Gluten is a protein found in wheat, rye, and barley.
- thyroid diseases such as
  - Hashimoto's disease—a form of chronic, or long lasting, inflammation of the thyroid.
  - Graves' disease—a disease that causes hyperthyroidism. Hyperthyroidism is a disorder that occurs when the thyroid gland makes more thyroid hormone than the body needs.

- rheumatoid arthritis—a disease that causes pain, swelling, stiffness, and loss of function in the joints when the immune system attacks the membrane lining the joints.
- psoriasis—a skin disease that causes thick, red skin with flaky, silver-white patches called scales.

Read more in these publications:

- *Celiac Disease* at [www.digestive.niddk.nih.gov](http://www.digestive.niddk.nih.gov)
- *Hashimoto's Disease* at [www.endocrine.niddk.nih.gov](http://www.endocrine.niddk.nih.gov)
- *Graves' Disease* at [www.endocrine.niddk.nih.gov](http://www.endocrine.niddk.nih.gov)

## Medications

Researchers have not found that medications cause microscopic colitis. However, they have found links between microscopic colitis and certain medications, most commonly

- nonsteroidal anti-inflammatory drugs such as aspirin, ibuprofen, and naproxen
- lansoprazole (Prevacid)
- acarbose (Prandase, Precose)
- ranitidine (Zantac, Zantac)
- sertraline (Zoloft)
- ticlopidine (Ticlid)

Other medications linked to microscopic colitis include

- carbamazepine
- clozapine (Clozaril, FazaClo)
- dexlansoprazole (Kapidex, Dexilant)
- entacapone (Comtan)
- esomeprazole (Nexium)

- flutamide (Eulexin)
- lisinopril (Prinivil, Zestril)
- omeprazole (Prilosec)
- pantoprazole (Protonix)
- paroxetine (Paxil, Pexeva)
- rabeprazole (AcipHex)
- simvastatin (Zocor)
- vinorelbine (Navelbine)

## Infections

**Bacteria.** Some people get microscopic colitis after an infection with certain harmful bacteria. Harmful bacteria may produce toxins that irritate the lining of the colon.

**Viruses.** Some scientists believe that viral infections that cause inflammation in the GI tract may play a role in causing microscopic colitis.

## Genetic Factors

Some scientists believe that genetic factors may play a role in microscopic colitis. Although researchers have not yet found a gene unique to microscopic colitis, scientists have linked dozens of genes to other types of inflammatory bowel disease, including

- Crohn's disease—a disorder that causes inflammation and irritation of any part of the GI tract
- ulcerative colitis—a chronic disease that causes inflammation and ulcers in the inner lining of the large intestine

Read more in these publications:

- *Crohn's Disease* at [www.digestive.niddk.nih.gov](http://www.digestive.niddk.nih.gov)
- *Ulcerative Colitis* at [www.digestive.niddk.nih.gov](http://www.digestive.niddk.nih.gov)

## Bile Acid Malabsorption

Some scientists believe that bile acid malabsorption plays a role in microscopic colitis. Bile acid malabsorption is the intestines' inability to completely reabsorb bile acids—acids made by the liver that work with bile to break down fats. Bile is a fluid made by the liver that carries toxins and waste products out of the body and helps the body digest fats. Bile acids that reach the colon can lead to diarrhea.

## Who is more likely to get microscopic colitis?

People are more likely to get microscopic colitis if they

- are 50 years of age or older
- are female
- have an autoimmune disease
- smoke cigarettes, especially people ages 16 to 44<sup>1</sup>
- use medications that have been linked to the disease

## What are the signs and symptoms of microscopic colitis?

The most common symptom of microscopic colitis is chronic, watery, nonbloody diarrhea. Episodes of diarrhea can last for weeks, months, or even years. However, many people with microscopic colitis may have long periods without diarrhea. Other signs and symptoms of microscopic colitis can include

- a strong urgency to have a bowel movement or a need to go to the bathroom quickly
- pain, cramping, or bloating in the abdomen—the area between the chest and the hips—that is usually mild
- weight loss
- fecal incontinence—accidental passing of stool or fluid from the rectum—especially at night
- nausea
- dehydration—a condition that results from not taking in enough liquids to replace fluids lost through diarrhea

The symptoms of microscopic colitis can come and go frequently. Sometimes, the symptoms go away without treatment.

---

<sup>1</sup>Microscopic colitis. Mayo Clinic website. [www.mayoclinic.com/health/microscopic-colitis/DS00824](http://www.mayoclinic.com/health/microscopic-colitis/DS00824). Updated January 30, 2013. Accessed February 24, 2014.

## How is microscopic colitis diagnosed?

A pathologist—a doctor who specializes in examining tissues to diagnose diseases—diagnoses microscopic colitis based on the findings of multiple biopsies taken throughout the colon. Biopsy is a procedure that involves taking small pieces of tissue for examination with a microscope. The pathologist examines the colon tissue samples in a lab. Many patients can have both lymphocytic colitis and collagenous colitis in different parts of their colon.

To help diagnose microscopic colitis, a gastroenterologist—a doctor who specializes in digestive diseases—begins with

- a medical and family history
- a physical exam

The gastroenterologist may perform a series of medical tests to rule out other bowel diseases—such as irritable bowel syndrome, celiac disease, Crohn’s disease, ulcerative colitis, and infectious colitis—that cause symptoms similar to those of microscopic colitis. These medical tests include

- lab tests
- imaging tests of the intestines
- endoscopy of the intestines

## Medical and Family History

The gastroenterologist will ask the patient to provide a medical and family history, a review of the symptoms, a description of eating habits, and a list of prescription and over-the-counter medications in order to help diagnose microscopic colitis. The gastroenterologist will also ask the patient about current and past medical conditions.

## Physical Exam

A physical exam may help diagnose microscopic colitis and rule out other diseases. During a physical exam, the gastroenterologist usually

- examines the patient’s body
- taps on specific areas of the patient’s abdomen

## Lab Tests

Lab tests may include

- blood tests
- stool tests

**Blood tests.** A blood test involves drawing blood at a health care provider’s office or a commercial facility and sending the sample to a lab for analysis. A health care provider may use blood tests to help look for changes in red and white blood cell counts.

- **Red blood cells.** When red blood cells are fewer or smaller than normal, a person may have anemia—a condition that prevents the body’s cells from getting enough oxygen.

- **White blood cells.** When the white blood cell count is higher than normal, a person may have inflammation or infection somewhere in the body.

**Stool tests.** A stool test is the analysis of a sample of stool. A health care provider will give the patient a container for catching and storing the stool. The patient returns the sample to the health care provider or a commercial facility that will send the sample to a lab for analysis. Health care providers commonly order stool tests to rule out other causes of GI diseases, such as different types of infections—including bacteria or parasites—or bleeding, and help determine the cause of symptoms.

## Imaging Tests of the Intestines

Imaging tests of the intestines may include the following:

- computerized tomography (CT) scan
- magnetic resonance imaging (MRI)
- upper GI series

Specially trained technicians perform these tests at an outpatient center or a hospital, and a radiologist—a doctor who specializes in medical imaging—interprets the images. A patient does not need anesthesia. Health care providers use imaging tests to show physical abnormalities and to diagnose certain bowel diseases, in some cases.

**CT scan.** CT scans use a combination of x rays and computer technology to create images. For a CT scan, a health care provider may give the patient a solution to drink and an injection of a special dye, called contrast medium. CT scans require the patient to lie on a table that slides into a tunnel-shaped device where the technician takes the x rays.

**MRI.** MRI is a test that takes pictures of the body's internal organs and soft tissues without using x rays. Although a patient does not need anesthesia for an MRI, some patients with a fear of confined spaces may receive light sedation, taken by mouth. An MRI may include a solution to drink and injection of contrast medium. With most MRI machines, the patient will lie on a table that slides into a tunnel-shaped device that may be open ended or closed at one end. Some machines allow the patient to lie in a more open space. During an MRI, the patient, although usually awake, must remain perfectly still while the technician takes the images, which usually takes only a few minutes. The technician will take a sequence of images to create a detailed picture of the intestines. During sequencing, the patient will hear loud mechanical knocking and humming noises.

**Upper GI series.** This test is an x-ray exam that provides a look at the shape of the upper GI tract. A patient should not eat or drink before the procedure, as directed by the health care provider. Patients should ask their health care provider about how to prepare for an upper GI series. During the procedure, the patient will stand or sit in front of an x-ray machine and drink barium, a chalky liquid. Barium coats the upper GI tract so the radiologist and gastroenterologist can see the organs' shapes more clearly on x rays. A patient may experience bloating and nausea for a short time after the test. For several days afterward, barium liquid in the GI tract causes white or light-colored stools. A health care provider will give the patient specific instructions about eating and drinking after the test. Read more in *Upper GI Series* at [www.digestive.niddk.nih.gov](http://www.digestive.niddk.nih.gov).

## Endoscopy of the Intestines

Endoscopy of the intestines may include

- colonoscopy with biopsy
- flexible sigmoidoscopy with biopsy
- upper GI endoscopy with biopsy

A gastroenterologist performs these tests at a hospital or an outpatient center.

**Colonoscopy with biopsy.** Colonoscopy is a test that uses a long, flexible, narrow tube with a light and tiny camera on one end, called a colonoscope or scope, to look inside the rectum and entire colon. In most cases, light anesthesia and pain medication help patients relax for the test. The medical staff will monitor a patient's vital signs and try to make him or her as comfortable as possible. A nurse or technician places an intravenous (IV) needle in a vein in the arm or hand to give anesthesia.

For the test, the patient will lie on a table while the gastroenterologist inserts a colonoscope into the anus and slowly guides it through the rectum and into the colon. The scope inflates the large intestine with air to give the gastroenterologist a better view. The camera sends a video image of the intestinal lining to a computer screen, allowing the gastroenterologist to carefully examine the tissues lining the colon and rectum. The gastroenterologist may move the patient several times and adjust the scope for better viewing. Once the scope has reached the opening to the small intestine, the gastroenterologist slowly withdraws it and examines the lining of the colon and rectum again. A colonoscopy can show irritated and swollen tissue, ulcers, and abnormal growths such as polyps—extra pieces of tissue that grow on the lining of the intestine. If

the lining of the rectum and colon appears normal, the gastroenterologist may suspect microscopic colitis and will biopsy multiple areas of the colon.

A health care provider will provide written bowel prep instructions to follow at home before the test. The health care provider will also explain what the patient can expect after the test and give discharge instructions.

**Flexible sigmoidoscopy with biopsy.** Flexible sigmoidoscopy is a test that uses a flexible, narrow tube with a light and tiny camera on one end, called a sigmoidoscope or scope, to look inside the rectum and the sigmoid colon. A patient does not usually need anesthesia.

For the test, the patient will lie on a table while the gastroenterologist inserts the sigmoidoscope into the anus and slowly guides it through the rectum and into the sigmoid colon. The scope inflates the large intestine with air to give the gastroenterologist a better view. The camera sends a video image of the intestinal lining to a computer screen, allowing the gastroenterologist to carefully examine the tissues lining the sigmoid colon and rectum. The gastroenterologist may ask the patient to move several times and adjust the scope for better viewing. Once the scope reaches the end of the sigmoid colon, the gastroenterologist slowly withdraws it while carefully examining the lining of the sigmoid colon and rectum again.

The gastroenterologist will look for signs of bowel diseases and conditions such as irritated and swollen tissue, ulcers, and polyps. If the lining of the rectum and colon appears normal, the gastroenterologist may suspect microscopic colitis and will biopsy multiple areas of the colon.

A health care provider will provide written bowel prep instructions to follow at home before the test. The health care provider will also explain what the patient can expect after the test and give discharge instructions.

**Upper GI endoscopy with biopsy.** Upper GI endoscopy is a test that uses a flexible, narrow tube with a light and tiny camera on one end, called an endoscope or a scope, to look inside the upper GI tract. The gastroenterologist carefully feeds the endoscope down the esophagus and into the stomach and first part of the small intestine, called the duodenum. A small camera mounted on the endoscope transmits a video image to a monitor, allowing close examination of the intestinal lining. A health care provider may give a patient a liquid anesthetic to gargle or may spray anesthetic on the back of the patient's throat. A health care provider will place an IV needle in a vein in the arm or hand to administer sedation. Sedatives help patients stay relaxed and comfortable. This test can show blockages or other conditions in the upper small intestine. A gastroenterologist may biopsy the lining of the small intestine during an upper GI endoscopy.

## How is microscopic colitis treated?

Treatment depends on the severity of symptoms. The gastroenterologist will

- review the medications the person is taking
- make recommendations to change or stop certain medications
- recommend that the person quit smoking

The gastroenterologist may prescribe medications to help control symptoms. Medications are almost always effective in treating microscopic colitis. The gastroenterologist may recommend eating, diet, and nutrition changes. In rare cases, the gastroenterologist may recommend surgery.

## Medications

The gastroenterologist may prescribe one or more of the following:

- antidiarrheal medications such as bismuth subsalicylate (Kaopectate, Pepto-Bismol), diphenoxylate/atropine (Lomotil), and loperamide
- corticosteroids such as budesonide (Entocort) and prednisone
- anti-inflammatory medications such as mesalamine and sulfasalazine (Azulfidine)



- cholestyramine resin (Locholest, Questran)—a medication that blocks bile acids
- antibiotics such as metronidazole (Flagyl) and erythromycin
- immunomodulators such as mercaptopurine (Purinethol), azathioprine (Azasan, Imuran), and methotrexate (Rheumatrex, Trexall)
- anti-TNF therapies such as infliximab (Remicade) and adalimumab (Humira)

Corticosteroids are medications that decrease inflammation and reduce the activity of the immune system. These medications can have many side effects. Scientists have shown that budesonide is safer, with fewer side effects, than prednisone. Most health care providers consider budesonide the best medication for treating microscopic colitis.

Patients with microscopic colitis generally achieve relief through treatment with medications, although relapses can occur. Some patients may need long-term treatment if they continue to have relapses.

## Eating, Diet, and Nutrition

To help reduce symptoms, a health care provider may recommend the following dietary changes:

- avoid foods and drinks that contain caffeine or artificial sugars
- drink plenty of liquids to prevent dehydration during episodes of diarrhea
- eat a milk-free diet if the person is also lactose intolerant
- eat a gluten-free diet

People should talk with their health care provider or dietitian about what type of diet is right for them.

## Surgery

When the symptoms of microscopic colitis are severe and medications aren't effective, a gastroenterologist may recommend surgery to remove the colon. Surgery is a rare treatment for microscopic colitis. The gastroenterologist will exclude other causes of symptoms before considering surgery.

## How can microscopic colitis be prevented?

Researchers do not know how to prevent microscopic colitis. However, researchers do believe that people who follow the recommendations of their health care provider may be able to prevent relapses of microscopic colitis.

## Does microscopic colitis increase the risk of colon cancer?

No. Unlike the other inflammatory bowel diseases, such as Crohn's disease and ulcerative colitis, microscopic colitis does not increase a person's risk of getting colon cancer.

## Points to Remember

- Microscopic colitis is an inflammation of the colon that a health care provider can see only with a microscope.
- The two types of microscopic colitis are collagenous colitis and lymphocytic colitis.
- The exact cause of microscopic colitis is unknown.
- Microscopic colitis is most common in females age 50 years or older.
- The most common symptom of microscopic colitis is chronic, watery, nonbloody diarrhea.
- A pathologist—a doctor who specializes in diagnosing diseases—diagnoses microscopic colitis based on the findings of multiple biopsies taken throughout the colon.
- Treatment depends on the severity of symptoms.
- The gastroenterologist may prescribe medications to help control symptoms.
- Medications are almost always effective in treating microscopic colitis.
- The gastroenterologist may recommend eating, diet, and nutrition changes.

## Hope through Research

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) conducts and supports research into many kinds of digestive disorders, including microscopic colitis and other types of inflammatory bowel disease. The knowledge gained from this research is advancing scientific understanding of why these diseases develop and may lead to improved methods of diagnosing and treating them.

Clinical trials are research studies involving people. Clinical trials look at safe and effective new ways to prevent, detect, or treat disease. Researchers also use clinical trials to look at other aspects of care, such as improving the quality of life for people with chronic illnesses. To learn more about clinical trials, why they matter, and how to participate, visit the NIH Clinical Research Trials and You website at [www.nih.gov/health/clinicaltrials](http://www.nih.gov/health/clinicaltrials). For information about current studies, visit [www.ClinicalTrials.gov](http://www.ClinicalTrials.gov).

You may also find additional information about this topic by visiting MedlinePlus at [www.medlineplus.gov](http://www.medlineplus.gov).

This publication may contain information about medications and, when taken as prescribed, the conditions they treat. When prepared, this publication included the most current information available. For updates or for questions about any medications, contact the U.S. Food and Drug Administration toll-free at 1-888-INFO-FDA (1-888-463-6332) or visit [www.fda.gov](http://www.fda.gov). Consult your health care provider for more information.

The U.S. Government does not endorse or favor any specific commercial product or company. Trade, proprietary, or company names appearing in this document are used only because they are considered necessary in the context of the information provided. If a product is not mentioned, the omission does not mean or imply that the product is unsatisfactory.

## For More Information

### **American College of Gastroenterology**

6400 Goldsboro Road, Suite 200  
Bethesda, MD 20817  
Phone: 301-263-9000  
Fax: 301-263-9025  
Email: [info@acg.gi.org](mailto:info@acg.gi.org)  
Internet: [www.gi.org](http://www.gi.org)

### **Crohn's & Colitis Foundation of America**

733 Third Avenue, Suite 510  
New York, NY 10017  
Phone: 1-800-932-2423  
Email: [info@ccfa.org](mailto:info@ccfa.org)  
Internet: [www.ccfa.org](http://www.ccfa.org)

### **Digestive Disease National Coalition**

507 Capitol Court NE, Suite 200  
Washington, D.C. 20002  
Phone: 202-544-7497  
Fax: 202-546-7105  
Internet: [www.ddnc.org](http://www.ddnc.org)

## Acknowledgments

Publications produced by the Clearinghouse are carefully reviewed by both NIDDK scientists and outside experts. This publication was originally reviewed by Theodore M. Bayless, M.D., the Johns Hopkins Hospital, Baltimore, MD, and William J. Tremaine, M.D., the Mayo Clinic, Rochester, MN. Adam Cheifetz, M.D., Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, reviewed the updated version of this publication.

## National Digestive Diseases Information Clearinghouse

2 Information Way  
Bethesda, MD 20892-3570  
Phone: 1-800-891-5389  
TTY: 1-866-569-1162  
Fax: 703-738-4929  
Email: [nddic@info.niddk.nih.gov](mailto:nddic@info.niddk.nih.gov)  
Internet: [www.digestive.niddk.nih.gov](http://www.digestive.niddk.nih.gov)

The National Digestive Diseases Information Clearinghouse (NDDIC) is a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The NIDDK is part of the National Institutes of Health of the U.S. Department of Health and Human Services. Established in 1980, the Clearinghouse provides information about digestive diseases to people with digestive disorders and to their families, health care professionals, and the public. The NDDIC answers inquiries, develops and distributes publications, and works closely with professional and patient organizations and Government agencies to coordinate resources about digestive diseases.

This publication is not copyrighted. The Clearinghouse encourages users of this publication to duplicate and distribute as many copies as desired.

This publication is available at  
[www.digestive.niddk.nih.gov](http://www.digestive.niddk.nih.gov).



NIH Publication No. 14-5036  
May 2014