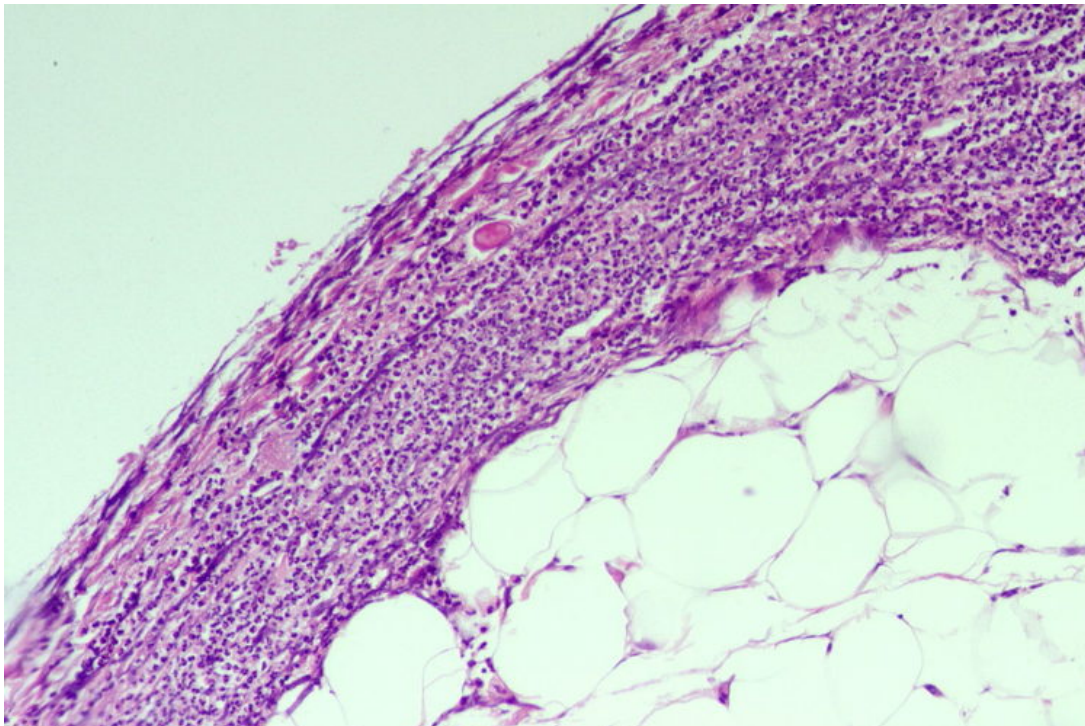


Ischemic Colitis — Physical Examination and Diagnosis

[See online here](#)

Ischemic colitis (ischemic disease of the colon) was first described in 1966. It occurs when there is an occlusion of the branches of the superior mesenteric artery (SMA) or the inferior mesenteric artery (IMA). The vast majority of cases describe the lesion in the splenic flexure and the left colon. This severe illness is very common among the elderly with pronounced cardiovascular disorders. In most cases, the onset of the disease is followed by an acute stabbing abdominal pain and rectal bleeding with diarrhea. Ischemic disease of the colon requires immediate action; the sooner the treatment is administered, the more benign the outcome is.

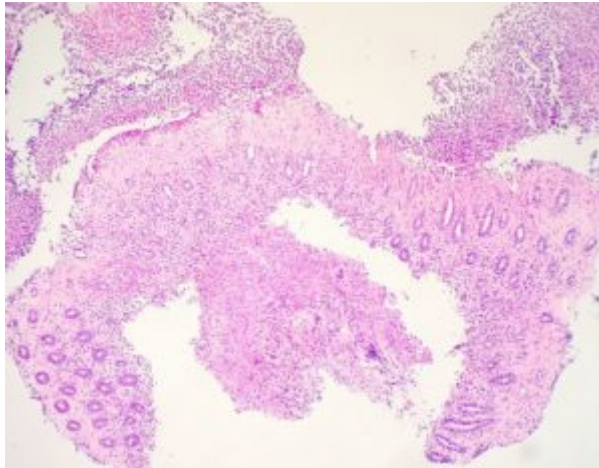


Definition and Background

Ischemic colitis has its pre-conditions, namely, **chronic cardiovascular disorders, thrombophilia, small- and medium-vessel vasculitis**. Women who are prescribed **contraceptive pills** tend to develop this condition. Age plays a pivotal role in the manifestation of the arterial occlusion of the colon as well. There might be a **severe abdominal pain** leading to the shock due to the necrotic process developing on the background of the arterial occlusion and affected nourishment of the colon (inadequate flow of the blood to the bowel) respectively.

Etiology of Ischemic Colitis

- **Chronic constipation** contributes to the development of the condition owing to the **vassal spasm** due to straining. Mature age enhances the incidence of occlusion of the long arteries of the colon, a feature of atherosclerosis. The latter is a disorder that stipulates the narrowing of the arterial lumen, hence, the blood flow does not fulfill the metabolic demand of the intestine.
- **Diffuse disease of the small and medium vessels** makes the colon susceptible to ischemic attacks (vacuities).
- **Heart failure** (decreased cardiac output or [arrhythmias](#)).



[Image](#): "76-year-old woman with rectal bleeding. Right colon biopsy." by Ed Uthman from Houston, TX, USA - Ischemic Colitis
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- **Shock** (hemorrhage, sepsis, and hypovolemia).
- **Abdominal trauma**
- Aorta surgery, gynecological operations, cardiac bypass, and inferior mesenteric artery ligation during colectomy.
- **Hypertension** (cholesterol emboli) and [stroke](#).
- [Diabetes mellitus](#) may predispose the ischemic attack in the intestine.
- The colon is prone to develop ischemia itself (**arterial obstruction**) due to the low blood flow in the organ, in comparison to the rest of the parts of the digestive system; this fact is stipulated by the anatomy of the organ.
- Mechanical obturation of the colonic arteries by [tumors](#) and **blood clots** (hypercoagulation in rheumatic disorders).
- Certain groups of drugs can provoke the colon ischemia (**constipation-inducing drugs, immunomodulator drugs, and illicit drugs**: amphetamines, cocaine, appetite suppressants, chemotherapy, decongestants, [diuretics](#), hormonal therapy, psychotropic drugs and so forth).

Epidemiology of Ischemic Colitis

The cases of ischemic colitis in children are very rare; the risk of incidence of the condition **increases with age**, especially after 49 years. The disease is predominantly seen in women over the age of 69. The rate of occurrence of ischemic colitis is about 163 cases per 100,000 person-years. Men and women are affected equally. Ischemic colitis is considered a disease of the elderly, with over 90% of cases occurring in patients over the age of 60.

Internationally

1 in 1,000 hospitalizations are attributed to ischemic colitis worldwide. This figure is underestimated due to the mild or transient forms of the nature of the disease.

Presentation of Patients with Ischemic Colitis

The condition is sometimes hard to diagnose due to the non-specific symptoms of an '[acute abdomen](#)' featured by an acute onset of pain in the **left iliac fossa**. **Diarrhea** up to 20 times and may bother the patient even at night; stool contains blood and mucus (very common symptom).

- **Rectal pain**, as diarrhea advances.
- **Abdominal pain**, very often stabbing when there is a severe occlusion of the colonic arteries.
- **Constipation** is a more rare symptom compared to diarrhea; manifestation of this symptom depends on the allocation of ischemia.
- **Weight loss** and absence of appetite and nausea (75%).
- **Fever** may occur in complicated cases (when there are large areas of necrotic tissue in the colon).
- Blood in stool and chronic inflammation in the intestine may cause **anemia**.

Acute mesenteric arterial embolism (AMAE): abdominal apoplexy

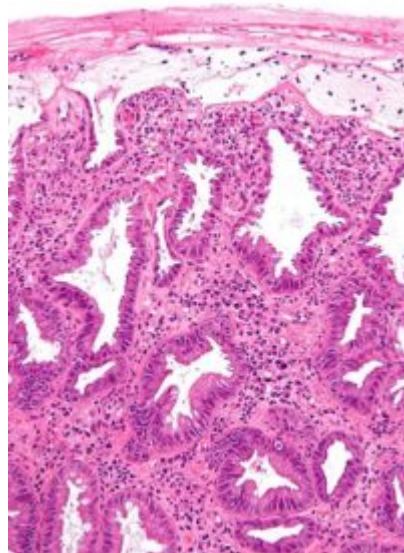


Image: "High magnification micrograph of ischemic colitis. H&E stain." by Nephron - Own Work. License: [CC BY-SA 3.0](#)

AMAE has the most painful onset, followed by **cardiac symptoms** such as [atrial fibrillation](#) and myocardial ischemia (MI). Also, there may be a history of **heart valve disease** or previous incidence of **emboli**. There may also be an 'abdominal attack' that includes nausea and vomiting.

Acute mesenteric arterial thrombosis (AMAT)

This occlusion takes place when **atherosclerotic emboli** block the lumen of the **vessels** in the colon due to acute MI (drop in cardiac output), congestive heart failure, and ruptured plaque. This condition is accompanied by severe diffuse pain which usually occurs after a meal (10-15 minutes after). It can last for several hours: growing nausea, vomiting, altered bowel habits, 'fear' of food and early satiety.

Nonocclusive mesenteric ischemia (NMI)

This is very common in the elderly, and usually represents the after-effect of conditions such as **respiratory failure**, shock (sepsis or MI) followed by **severe hypotension** or intake of **digitalis**.

This type of colonic vessel obstruction typically manifests with vomiting accompanied by pain, dizziness, tachycardia, hypotension, frequent stool with blood.

Mesenteric venous thrombosis (MVT)

This type of ischemic colitis is **more common in younger patients** and features acute or subacute pain. The occlusion affects the small intestine rather than the colon. MVT is very treacherous as the full range of symptoms of occlusion take weeks to develop before being noticed.

Hypercoagulability always presents in the history of such sufferers due to the continuous use of **contraceptive pills**; **pulmonary embolism**; cancer; liver pathology; pancreatitis; intra-abdominal infection; porta-caval surgery.

Physical Examination of Ischemic Colitis

The most prominent symptom of the condition is the pain which manifests in various forms: from moderate to severe, diffuse or localized, persistent or colicky. The pain is **not responsive to painkillers and opioids**. Also, the onset of the disease depends on the allocation of the occlusion in the colon and the stage of the disease.

- **Early stage:** physical signs are not sound and non-specific; some signs are: distended abdomen, stool positive to blood, absence of **peritonitis**, and minor tenderness.
- Later tenderness and pain exacerbate and reflect the allocation of the **ischemic lesion** in the bowel; a tender mass in the abdomen may be palpable. There might be a foul smell from the mouth as the necrosis advances; other signs are: fever, aggravation of the general condition, hypotension, tachycardia, and the patient may be confused (altered mental status).

Differential Diagnosis of Ischemic Colitis

- **Left-sided peritonitis** as the after-effect of perforated hollow viscus or pancreatitis

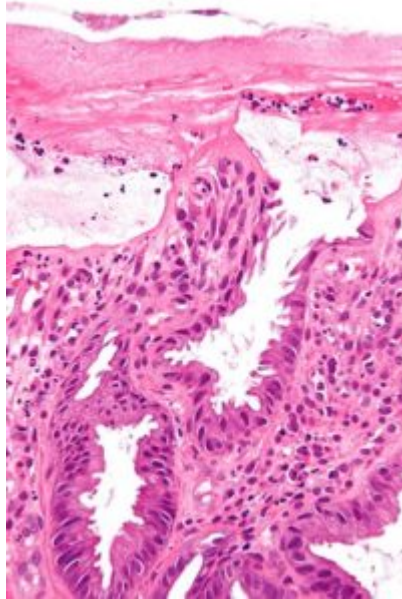


Image: "Very high magnification micrograph of ischemic colitis. H&E stain."
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- Acute inflammatory bowel disease
- Dysentery
- Acute diverticular disease of colon
- [Cancer of colon](#)
- Abdominal trauma
- [Crohn's disease](#)

Diagnosis of Ischemic Colitis

Laboratory studies

In advanced stages of ischemic colitis (infarction and necrosis), an increase of these markers may become significant: lactate, LDH, CPK, amylase levels, leucocytes, alkaline phosphatase, inorganic phosphate, intestinal fatty acid binding protein, and alfa-glutathione S-transferase. It is important to outline that they are not informative in mild forms of ischemia of the colon.

ECG is used for exclusion of MI, [atrial fibrillation](#), [aneurysm of the aorta](#) and so forth.

Imaging studies

Plain abdominal radiography is administered in order to exclude colon infarction. It is very informative as it may indicate particular non-specific findings: 'thumb-printing', a distinguishing feature of the disease (due to mucosal edema/hemorrhage), air-filled loops, colonic aperistalsis, mural thickening and exhausted bowel are detected in up to 21% of patients.

Barium enema: in 90% of cases of ischemic colitis, this study reveals abnormal findings; however, it is rarely used in the diagnostics. There may be: a segmental region of abnormality, 'thumb-printing', ulcerations, spasms; and strictures due to fibrosis.

CT scan: CT reveals thickening of the bowel walls, narrowed lumen of the bowel, 'target

sign' low-density ring bordering lumen due to submucosal edema, mesenteric edema, and visible superior mesenteric artery thrombosis.

Angiography may reveal increased arterial caliber, enhanced arteriovenous transit time and dilated veins.

Ultrasound: This method of examination is not very common due to the presence of bowel gas; however, reduced peristalsis may be observed. Edema produces a hypoechoic wall. In a hemorrhage, there are places of increased echogenicity.

Colonoscopy: It is one of the most informative examinations in ischemic colitis that reflects the intrinsic pathophysiological picture of the bowel walls.

Staging

- Transient ischemia
- Partial thickness ischemia
- Full thickness ischemia

Management of Ischemic Colitis

Pharmacotherapy

Treatment depends on the severity of the condition and complications that may occur if treatment is not prescribed in a timely manner.

The transient stage does not require any serious intervention; these patients are closely observed in the outpatient department and prescribed **antibiotics** and **fluid diets**.

Later stages of the disease require:

- Hospitalization
- IV fluids (adequate fluid resuscitation)
- Bowel rest
- Optimization of cardiac function and oxygenation
- Exclusion of vasopressors
- [Broad spectrum antibiotics](#)
- Heparinization and a papaverine infusion
- Treatment of all underlying medical disorders (especially the cardiovascular group).

Surgical intervention

The indication for surgery is supported by the presence of underlying conditions, such as **hypotension** and **heart disease**. The colon is affected by the occlusion of the arteries leading to ischemia, necrosis and consequently gangrene. The aim of surgery is to :

- Remove tissues severely affected with ischemia (areas of necrosis)
- Mend the hole in the colon
- Provide blood flow through the blocked vessels
- Remove a stricture or narrowed part of the colon due to the scarring that causes vessel blockage.

Complications of Ischemic Colitis

In more severe cases, complications may include:

- Perforation
- Ischemic stricture
- Bowel inflammation
- Gangrene

Prognosis

Nearly all people affected by ischemic colitis improve and recover over a period of several weeks of treatment. The most common complication after surgical intervention is scarring, which can also be treated surgically to remove the scar tissue.

References

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Notes