

CASE REPORT

# Complicated idiopathic portal and mesenteric venous thrombosis: A case report

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**Introduction:** Acute mesenteric ischemia is a life-threatening condition that can lead to intestinal ischemia, bowel obstruction and peritonitis. It is predominantly caused by arterial occlusion (acute arterial thromboembolism or thrombosis); however, it can rarely be secondary to mesenteric or portal vein thrombosis. **Case presentation:** We present the case of a 61-year-old man admitted to the emergency service for intense abdominal pain and lack of bowel movement. A computed tomography angiography (CTA) was performed, revealing portal and mesenteric vein thrombosis. Anticoagulant treatment was established. To appraise the extension of the necrotic tissue, the surgical team performed exploratory laparotomy, followed by segmental enterectomy. The following day, the patient complained of acute pain in the left lower limb and a CTA was performed indicating acute ischemic phenomenon. The surgical team performed thrombectomy using a Fogarty catheter. The ischemic enteral region extended, and the patient developed an enterocutaneous fistula that required surgical reintervention (enterectomy and right hemicolectomy). **Conclusion:** Conservative treatment with anticoagulants is the first line treatment, followed by surgical treatment only in case of complications. Even though venous thrombosis is an exceptional cause of intestinal infarction, it can be the cause of life-threatening complications such as necrosis, peritonitis and septic shock.

**Keywords:** acute mesenteric ischemia, computed tomography angiography, thrombectomy, enterocutaneous fistula, postoperative atrial fibrillation

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## Introduction

Acute mesenteric ischemia is a life-threatening condition that can lead to intestinal ischemia, necrosis, intestinal obstruction, peritonitis or even septic shock. It can be subdivided into 4 major causes and clinical presentations: nonocclusive mesenteric ischemia, acute mesenteric arterial embolism, acute mesenteric arterial thrombosis, and mesenteric venous thrombosis [1]. The latter is the most uncommon case.

Mesenteric venous thrombosis is also considered to be primary (without a remarkable cause) or secondary when various risk factors and diseases can be identified. Primary venous thrombosis occurs in 40% to 49 % of the cases [2].

Risk factors for this rare condition include hypercoagulability secondary to protein C and protein S deficiency, cirrhosis, pancreatitis, intra-abdominal infection, paraneoplastic syndrome, and abdominal surgery [1].

The diagnosis of portal venous thrombosis and consecutive mesenteric thrombosis is usually delayed because of nonspecific complaints of the patient and can lead to serious life-threatening complications [3,4]. The gold-standard to diagnose this condition is computed tomography angiography (CTA) where the thrombus can easily be visualized.

We present a case of a complicated acute mesenteric ischemia due to portal and mesenteric vein thrombosis.

## Case presentation

We present the case of a 61-year-old man admitted to the emergency service of the Surgical Clinic complaining of intense and diffuse abdominal pain, lack of bowel movement for 2 days and asthenia. Past medical history was unremarkable. At the clinical examination, the following were revealed: abdominal tenderness and hardly noticeable abdominal distension. The laboratory results showed: hypocalcemia, increased levels of C-reactive protein, fibrinogen and creatine-kinase, along with hypoproteinemia. To diagnose this patient, a CTA was performed, revealing partial portal vein thrombosis and completely occlusive superior mesenteric vein thrombosis [figure 1, figure 2]. Additionally, the abdominal computed tomography (CT) disclosed acute ileal ischemia (parietal thickening of 32mm) [figure 2]. The patient was immediately transferred to the intensive care unit where conservative anticoagulant treatment consisting of heparin was established. Later that day, the patient presented signs of bowel obstruction that were confirmed by a CT and he was referred to the surgical ward. The surgical team performed exploratory laparotomy where extended necrotic tissue was identified and proceeded with segmental enterectomy with latero-lateral anastomosis.

The day following the surgery, the patient complained of acute pain in the left lower limb, pallor, pulselessness and paresthesia. A CTA was performed showing acute ischemia due to an arterial embolus located on the left common iliac artery and femoral artery. This complication was

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Fig. 1. Computed tomography angiography aspect of partial portal vein thrombosis.



Fig. 2. Red arrow: Computed tomography angiography aspect of completely occlusive mesenteric vein thrombosis; Yellow arrow: dilated small bowel with hydroaeric levels

caused by postoperative atrial fibrillation visualized on the electrocardiogram (ECG). Consequently, the surgical team performed a thrombectomy with a Fogarty embolectomy catheter. Following these procedures, anticoagulant and antibiotic (tetracycline) treatment was established. However, the antibiotic medication was stopped due to severe side effects such as thrombocytopenia and leukopenia.

Even though the bowel transit was restored two days after the enteral resection, three days after the surgery, the patient developed an enterocutaneous fistula due to the extension of the ischemic region. Alongside the septic ef-

fect of the fistula and the malnutrition, the patient's condition was rapidly aggravating. The surgical team decided to perform an extended segmental enterectomy and right hemicolectomy in order to remove the rampant forming of a parietal abscess and ileo-transverse latero-lateral anastomosis. The bowel transit was restored one day after the last surgery.

After this surgery, the patient was in good health and was discharged 9 days later.

## Discussion

Portal and mesenteric venous thrombosis is a very uncommon cause of acute abdomen contributing only to 5- 15 % of cases of mesenteric infarction [5]. Due to the venous drainage of the small bowel and colon, this pathology mostly involves the ileum (64 to 83 %) and rarely the colon [6].

Patients with acute mesenteric thrombosis present with a sudden onset of nonspecific symptoms such as abdominal pain, vomiting and nausea [2]. Early detection of this condition is crucial as the probability of dangerous complications enhances hour by hour.

The exact location of the venous thrombus is an important predictive factor for gastrointestinal complications such as bowel ischemia. Thrombosis in distal venous branches has a higher risk of bowel infarction [2].

Differential diagnosis for this condition includes lactic acidosis, intestinal infections, hypovolemic shock, volvulus, and septic shock. To make the right diagnosis of mesenteric vein thrombosis, the elective abdominal imaging method is CTA with an accuracy of approximately 90% [2]. Laboratory tests are not relevant to diagnose this condition, but they can be a useful tool in order to exclude thrombogenic mutations [2]. The diagnosis of idiopathic portal thrombosis is a diagnosis of exclusion after thrombophilia (factor V Leiden and JAK2V617F mutations) and malignancy are ruled out [2].

Extensive workup of our case showed no causes for the thrombotic event.

In the first hours, the guidelines indicate a conservative treatment with high doses of heparin to prevent the extension of the thrombus [7]. Invasive procedures are not necessary if the patient's condition improves. If CTs reveal ischemic phenomenon of the small bowel, surgical treatment should not be postponed. Segmental enterectomy is the elective treatment [1]. Postoperative evaluation is essential because the ischemic region can extend, and surgical reintervention is recommended [2]. Long-term anticoagulant treatment consisting of vitamin K-antagonists is indicated for a period of 6 months and should be extended in case of hypercoagulability states [4]. Recurrent laboratory tests should evaluate the INR in order to adjust the anticoagulant treatment.

Since the extension of the ischemic phenomenon depends on the effectiveness of the anticoagulant therapy, it can take a few days to develop serious complications [2].

The ischemic region can affect the intestinal anastomosis and produce enterocutaneous fistulas as presented in our case. Anastomosis fistulas present a high risk of developing intra-abdominal abscesses considering the severe hypoproteinemia and the serious leukopenia presented by our patient. Before surgical reintervention, metabolic disturbances should be corrected. In case of hypoalbuminemia (less than 3mg/dl), administration of albumin is indicated [8]. Surgical treatment should include drainage of the abscess and restoring the continuity of the gastrointestinal tract [8].

Postoperative atrial fibrillation can occur 2-4 days after the surgery due to inflammation and sympathetic activation [9]. This is a very rare complication, and it can lead to severe cardiovascular phenomena such as stroke, myocardial infarction, or acute limb ischemia as emphasized in our report. Prophylactic beta-blocker treatment should be introduced in the therapy to prevent unwanted arrhythmias [9].

This case highlights series of unexpected postoperative evolution such as enterocutaneous fistulas produced by the extension of the ischemic region that may lead to intraabdominal abscesses and atrial fibrillation which can lead to atrial thromboses and arterial occlusion, respectively. The complexity of this report provided important observations into the evolution of mesenteric vein thrombosis including very rare complications that may occur such as bowel ischemia and regarding the proper treatment of this condition.

## Conclusion

Even though venous thrombosis is a very rare cause of intestinal infarction, it can be the cause of life-threatening gastrointestinal dysfunction such as bowel obstruction and septic shock. High doses of heparin should be immediately administered. However, conservative treatment may fail in

some cases with visible signs of bowel obstruction and surgical treatment consisting of enterectomy should not be postponed.

## Author's contribution

DNB (Conceptualization, Data curation, Writing – original draft, Writing – review & editing).

## Conflict of interest

None to declare.

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