

Management of Intestinal Ischemia Secondary to Superior Venous Thrombosis: A Case Report

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Abstract

Introduction: Acute mesenteric venous thrombosis is a rare and potentially fatal condition with superior mesenteric vein being the most common site of thrombosis development. This potentially fatal condition results from a systemic hypercoagulable state “Virchow’s Triad” or abdominal infection draining into the portal venous system and often requires an emergency intestinal resection, with not rare postoperative complications.

Presentation of Case: We present a case of acute superior mesenteric venous thrombosis resulting in jejunal ischemia in a 64-year-old male with an history of cardiovascular and cerebrovascular diseases in family, was admitted to a local hospital, a few days of onset of diffuse abdominal pain. A computed tomography (CT) scan showed a massive thrombosis of the portal, splenic and inferior and superior mesenteric veins and their branches. On suspicion of an advanced intestinal infarction, we made the decision to perform an emergency operation.

Discussion: We hope to emphasise that although radiology plays a crucial role in modern medicine, it is important to make therapeutic decisions based on clinical findings.

Conclusion: Acute mesenteric venous thrombosis has non-specific clinical characteristics can make an early diagnosis difficult. A multidisciplinary team approach to plan for the tailored treatment strategy suitable for each patient as all options are associated with significant risks.

Keywords: *Extremely Preterm (EPT); Postnatal Nutrition; Extremely Preterm Infants*

Introduction

The superior mesenteric vein is a common thrombus formation site. Acute mesenteric venous thrombosis is not frequent but potentially fatal condition results from a systemic hypercoagulable state “Virchow’s Triad” or abdominal infection draining into the portal venous system. Mesenteric venous thrombosis can lead to bowel ischemia or infarction unless treated [1]. Upper mesenteric vein thrombosis has an incidence of 2.7/100,000 patients/year, but only 5 - 15% causes intestinal ischemia. The patient with intestinal ischemia associated with venous thrombosis of the superior mesenteric vein, often requires an emergency intestinal resection, with not rare postoperative complications [2,3].

Case Report

A 64-years-old man, with an history of cardiovascular and cerebrovascular diseases in family, was admitted to a local hospital, a few days of onset of diffuse abdominal pain. He showed marked abdominal distention and tenderness with blood pressure 140/95 mmHg and pulse rate of 94/min. Blood test showed Hb 14.5 g/dL, WBC 18.77×10^3 /uL, albumin 2.8 g/dL, Ast 250 UI/L, Alt 120 UI/L, LDH 618 UI/L, PCR 143 mg/l, fibrinogen 608 mg/dl, PT 66%, INR 1,28, PCR 350 mg/L. Arterial blood gas analysis revealed severe acidosis pH 7.31, partial pressure of oxygen 82 mmhg, partial pressure of carbon dioxide 42 mmHg, bicarbonate 9, base excess -7 lactate level 4.

Contrast enhanced computer tomography showed a massive thrombosis of the portal, splenic and inferior and superior mesenteric veins and their branches. In addition, abundant abdominal effusion is found with thickening and stratification of the loops of the small intestine, some with reduced enhancement and, in a stretch, total absence of enhancement, as from intestinal infarction (Figure 1).

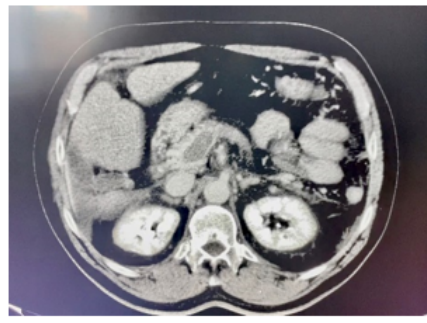


Figure 1

On suspicion of an advanced intestinal infarction, we make the decision to perform an emergency operation.

Laparotomic exploration revealed considerable amount of exudate with necrosis of the small intestine of the middle tract, about 160 centimeters from the Treitz.

A segmental resection, about 70 centimeters, at the middle tract of the small intestine and a terminal ileostomy was performed. The distal ileal stump was placed like as a mucous fistula. The operating time was 135 minutes.

According to the team of anesthetists, it was not necessary to transfer the patient to intensive unit care (ICU).

During the postoperative period, the ileostomy had a daily production of approximately one liter/day of enteric material. This caused frequent hydroelectrolytic imbalances in the patient, with important potassium losses that were promptly corrected.

This condition resulted in metabolic alkalosis and dehydration that was not well responsive to medical therapy with intestinal antipropulsants. Therefore, it was decided to carry out the surgery in the same hospital in the 18th gpo.

A terminal ileostomy recanalization was performed with aniso-peristaltic lateral-lateral mechanical anastomosis and suture reinforcement with 4-0 PDs.

The postoperative was regular and the patient was discharged in XXI gpo.

The patient was followed up in the outpatient clinic four months after discharge. He had returned to his baseline function with no gastroenterological symptoms. Extensive investigations were performed to assess for underlying causes of the patient's SMV thrombosis. These included thrombophilia and myelodysplasia screens, malignancy screens and an echocardiogram.

Unfortunately, no specific causes were detected. A follow up colonoscopy was performed which showed no evidence of mucosal inflammation or features to suggest inflammatory bowel disease.

Results and Discussion

Superior mesenteric vein is the most common site of thrombi formation, resulting in impaired venous return and subsequent venous engorgement and bowel ischemia [1]. The incidence of mesenteric venous thrombosis is 2.7 per 100,000 patient-years and accounts for 5 - 15% of mesenteric ischemia [2,3].

The most common sites involved are ileum and jejunum [4]. The potential to develop transmural infarction is of concern, as the loss of bowel integrity can lead to bacterial translocation and potential fatal sequelae. Interestingly, mesenteric venous thrombosis with portal vein involvement has a lower risk of developing transmural infarction compared to isolated mesenteric vein alone [5].

Mesenteric ischemia can be classified into acute 90% and chronic 10%. The acute one can have different etiology, from arterial occlusion from emboli or from the formation of thrombi (60 - 70%), from non-occlusive forms linked to hypo-inflow conditions (20 - 30%) or from venous thrombosis (5 - 10%) [6].

In the latter case, any predisposing basic conditions involving a hypercoagulable condition, responsible for more than 50% of cases, must be investigated, including inflammatory abdominal diseases, cirrhosis neoplasms, pregnancy, use of estrogen-progesterone therapy, coagulopathies [7,8].

So, among coagulopathies, Virchow's triad is crucial in the pathogenesis of mesenteric vein thrombosis. The most frequent is given by the Leiden factor V mutation which is present in 20 - 40% of patients [9].

Intra-abdominal inflammatory processes are also important risk factors to consider.

A study by Hatoum, *et al.* in 2005 have analysed 545 patients with inflammatory bowel disease of which 6 (1.1%) have developed mesenteric venous thrombosis. In the 6 patients, all had underlying hypercoagulability, low flow state, uncontrolled inflammation or was post-operative [10].

The diagnosis of mesenteric ischemia is very complex, especially that with venous etiology, where the symptomatology is very nuanced and non-specific and blood chemistry tests often do not find high levels of lactates and leukocytosis, which are non-specific. A remote family and pathological anamnesis that can show states of hypercoagulability can be helpful [11].

Once the diagnostic suspicion has been posed, the computed tomography of the three-phase abdomen is necessary to make a diagnosis [12-14], identifying arterial and venous thrombosis/embolism, anomalies of the contrast assumption of the intestinal wall, free abdominal fluid, intestinal pneumatosis and thrombo-embolic changes of others organs [15-17]. In particular, some parameters will be assessed such as the alteration of the intestinal wall thickness (present in 26-96% of cases) which normally ranges from 3 to 5 mm, but which is thickened or thinned according to the etiological mechanism. In venous occlusion the wall thickness can exceed 15 mm due to edema, hemorrhage and superinfection. There is the typical target sign due to parietal edema and to the modest assumption of contrast only by the mucous and serous tunas [18] (Figure 1).

Another feature present in 56 - 91% of cases of intestinal ischemia from venous occlusion is the dilation of the loops due to the paralytic ileum highlighting loops of the small intestine full of liquid, which together with the exudate in the peritoneal cavity create the picture of gasless abdomen [19]. The pathognomonic sign is intestinal pneumatosis which already shows an advanced stage of hemorrhagic infarction and parietal destruction up to perforation [20].

Multiple options are available for the management of mesenteric venous thrombosis. If mesenteric venous thrombosis is diagnosed, adequate treatment should be promptly initiated including surgical removal of the infection source, broad-spectrum antibiotics, and anticoagulation therapy [21,26].

Initially the treatment of vascular occlusion involves the use of LMWH and subsequently the use of oral anticoagulants. The role and duration of anticoagulation therapy in patients with mesenteric venous thrombosis is still controversial [5-22], but anticoagulation therapy is reported to lower the recurrence of thrombosis and the mortality rate [22,26]. The recommended total duration of anticoagulant therapy is at least 3 to 6 months [23,24,26], although a longer duration is suggested if a thrombophilic condition is identified [25].

In patients with peritoneal signs to suggestive bowel infarction or perforation or those who failed to progress with conservative management, operative intervention may be necessary. It is possible to perform surgical thrombectomy, local surgical or interventional thrombolysis but data in the literature show that there are morbidity and mortality rates higher than medical treatment alone [27].

For intestinal ischemia, conservative treatment is successful in terms of morbidity and mortality. Recent cohort studies show that 46% of patients do not need of surgical treatment. Moreover, in the surgical approach, the risk of anastomotic leak and related complications are frequent (55%) [28].

It is not easy even for the radiologist to be able to identify the early stages of intestinal ischemia and this entails the assumption of a high risk for the surgeon who decides the type of treatment, both in one case and another.

Long-term complications such as recurrence of thrombosis and intestinal stenosis are possible with a very variable incidence in the various studies. The prognosis for mesenteric vein thrombosis ranges from 20 to 50% according to a recent review, but in other studies the patient who responds to anticoagulant therapy is good, 93% at 3 years [29].

Conclusion

Mesenteric venous thrombosis has non-specific clinical characteristics can make an early diagnosis difficult. It should be considered when prolonged unexplained abdominal pain, fever, or elevated liver enzyme levels. Therefore, clinical awareness and concern for mesenteric venous thrombosis is warranted for physicians.

Conflict of Interest

Declare if any financial interest or any conflict of interest exists.

Bibliography

1. Clavien PA, *et al.* "Venous mesenteric infarction: a particular entity". *British Journal of Surgery* 75.3 (1988): 252-255.
2. Acosta S, *et al.* "Mesenteric venous thrombosis with transmural intestinal infarction: a population-based study". *Journal of Vascular Surgery* 41.1 (2005): 59-63.
3. Grendell JH and Ockner RK. "Mesenteric venous thrombosis". *Gastroenterology* 82.2 (1982): 358-357.

4. S Abu-Daff, *et al.* "Mesenteric venous thrombosis and factors associated with mortality: a statistical analysis with five-year follow-up". *The Journal of Gastrointestinal Surgery* 13 (2009): 1245.
5. AK Singal and PS Kamath. "Tefferi A: mesenteric venous thrombosis". *Mayo Clinic Proceedings* 88 (2013): 285-294.
6. Reinus JF, *et al.* "Ischemic diseases of the bowel". *Gastroenterology Clinics of North America – Journal* 19.2 (1990): 319-343.
7. Abu-Laban RB, *et al.* "Acute mesenteric ischemia in a middle-aged patient: case report and discussion". *The Journal of Emergency Medicine* 13.6 (1995): 857-861.
8. Golino A, *et al.* "Recurrent small bowel infarction associated with antithrombin deficiency". *The American Journal of Gastroenterology* 92.2 (1997): 323-325.
9. Ozturk G, *et al.* "Acute mesenteric ischemia in young adults". *Wiener Medizinische Wochenschrift* 162.15-16 (2012): 349-353.
10. OA Hatoum, *et al.* "Mesenteric venous thrombosis in inflammatory bowel disease". *Journal of Clinical Gastroenterology* 39 (2005): 27-31.
11. Demir IE, *et al.* "Beyond lactate: is there a role for serum lactate measurement in diagnosing acute mesenteric ischemia?" *Digestive Surgery* 29.3 (2012): 226-235.
12. Yikilmaz A, *et al.* "Value of multislice computed tomography in the diagnosis of acute mesenteric ischemia". *European Journal of Radiology* 80.2 (2011): 297-302.
13. Barmase M, *et al.* "Role of multidetector CT angiography in the evaluation of suspected mesenteric ischemia". *European Journal of Radiology* 80.3 (2011): e582-587.
14. Schieda N, *et al.* "Triphasic CT in the diagnosis of acute mesenteric ischaemia". *The European Radiology* 23.7 (2013): 1891-1900.
15. Furukawa A, *et al.* "CT diagnosis of acute mesenteric ischemia from various causes". *American Journal of Roentgenology* 192.2 (2009): 408-416.
16. Lee SS and Park SH. "Computed tomography evaluation of gastrointestinal bleeding and acute mesenteric ischemia". *Radiologic Clinics of North America* 51.1 (2013): 29-43.
17. Cudnik MT, *et al.* "The diagnosis of acute mesenteric ischemia: A systematic review and meta-analysis". *Academic Emergency Medicine* 20.11 (2013): 1087-1100.
18. Desai RK, *et al.* "CT evaluation of wall thickening in the alimentary tract". *Radiographics* 11.5 (1991): 771-783.
19. Rajesh S, *et al.* "Imaging Diagnosis of Splanchnic Venous Thrombosis". *Gastroenterology Research and Practice* (2015): 101029.
20. Wiesner W, *et al.* "CT of acute bowel ischemia". *Radiology* 226.3 (2003): 635-650.
21. Lee KW and Choi YI. "Superior mesenteric vein thrombosis accompanied with severe appendicitis". *Korean Journal of Hepato-Biliary-Pancreatic Surgery* 18 (2014): 101-103.
22. Condat B, *et al.* "Recent portal or mesenteric venous thrombosis: increased recognition and frequent recanalization on anticoagulant therapy". *Hepatology* 32 (2000): 466-470.
23. Brandt LJ and Boley SJ. "AGA technical review on intestinal ischemia. American Gastrointestinal Association". *Gastroenterology* 118 (2000): 954-968.
24. Malec L and Young G. "Treatment of venous thromboembolism in pediatric patients". *Frontiers in Pediatrics* (2017): 5.

25. Kumar R and Kerlin BA. "Thrombosis of the abdominal veins in childhood". *Frontiers in Pediatrics* 5 (2017): 188-188.
26. Singal AK., *et al.* "Mesenteric venous thrombosis". *Mayo Clinic Proceedings* 88 (2013): 285-294.
27. Guglielmi A., *et al.* "Transhepatic fibrinolysis of mesenteric and portal vein thrombosis in a patient with ulcerative colitis: a case report". *World Journal of Gastroenterology* 11.13 (2005): 2035-2038.
28. Oldenburg WA., *et al.* "Acute mesenteric ischemia: a clinical review". *Archives of Internal Medicine* 164.10 (2004): 1054-1062.
29. Florim S., *et al.* "Acute mesenteric ischaemia: a pictorial review". *Insights Imaging* 9.5 (2018): 673-682.

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