



Acute Mesenteric Vein Thrombosis: A Case Report and Comprehensive Review

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Article History

Received: 14.10.2024

Accepted: 20.11.2024

Published: 22.11.2024

Abstract: Acute mesenteric venous thrombosis (MVT) is a rare but potentially life-threatening condition, with the superior mesenteric vein (SMV) being the most frequently affected site of thrombosis. It is commonly observed in patients with underlying disorders that disrupt Virchow's Triad, which includes hypercoagulability, stasis, and endothelial injury [1]. In its acute form, SMVT is frequently associated with intestinal ischemia, complicating its clinical management and treatment [2]. The thrombotic occlusion of the mesenteric veins leads to impaired venous return, bowel ischemia, and in some cases, infarction, significantly impacting patient prognosis [3, 4]. We present a case of acute superior mesenteric venous thrombosis (SMVT) in a 42-year-old man who presented to our emergency walk-in clinic with acute onset of severe abdominal pain. He was referred to secondary care, where his contrast-enhanced abdominal Computerized Tomography (CT) scan revealed thrombosis of the superior mesenteric vein, splenic vein, and partial thrombosis of the intrahepatic part of the right portal vein. However, the CT scan showed no evidence of small bowel infarction or ischemia. He was subsequently managed with conservative measures.

Keywords: Superior Mesenteric Venous Thrombosis, Superior Mesenteric Vein, Intestinal Ischemia, Computed Tomography Angiography, Portal Vein Thrombosis, Splenic Vein Thrombosis, Acute Abdominal Pain, Vascular Imaging, Thrombotic Occlusion, Conservative Management.

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INTRODUCTION

Acute superior mesenteric venous thrombosis (SMVT) is a relatively uncommon cause of mesenteric ischemia, accounting for approximately 6%-9% of all cases of mesenteric ischemia, with arterial thrombosis being the predominant cause [1, 2]. SMVT is often discovered incidentally during abdominal imaging or as part of the diagnostic workup for unexplained abdominal pain [3]. The acute presentation of SMVT is typically marked by persistent, severe abdominal pain, which may

progress to peritonitis and sepsis in more severe cases [4].

CASE PRESENTATION

A 42-year-old man presented to the walk-in clinic of our health center with one-day history of sudden onset severe upper abdominal pain, without associated symptoms such as nausea, vomiting, fever, diarrhea, or constipation. He reported a past medical history of phlebotomy for Polycythemia Vera in his home country a few years ago. He was otherwise

Citation: Muhammad Ashraf Sajid, Misbah Ul Haque, Zahid Habib, Abdelwahed Samir Abougazia (2024). Acute Mesenteric Vein Thrombosis: A Case Report and Comprehensive Review. *Glob Acad J Med Sci*; Vol-6, Iss-6 pp- 308-312.

healthy, although he a heavy smoker. On examination, his heart rate was 72/min, regular; temperature was 36.7°C; blood pressure was 117/72 mmHg; and SpO₂ was 99% on room air. Abdominal examination revealed a soft, non-distended abdomen, with tenderness in the left upper quadrant but no signs of peritonitis. Urine dipstick and blood glucose levels were within normal limits, with the latter recorded at 4.6 mmol/L. He was administered 1 gram of paracetamol intravenously (IV) and 500 ml of normal saline IV before being referred to the emergency department of a nearby hospital. In the emergency department, his vital signs remained stable. Laboratory tests revealed a normal white blood cell count (WCC) and a C-reactive protein (CRP) level of

37.1 mg/L. The abdominal radiograph showed only distension of the intestinal loops, without evidence of subdiaphragmatic free air (Fig. 1).

As the patient's abdominal pain persisted, a Computed Tomography Angiography (CTA) was performed using a 64-slice multidetector scanner. The images were analyzed with a slice thickness of 1.2 mm and Multiplanar Reconstruction (MPR) in axial, sagittal, and coronal views. The CTA revealed an extensive hypodense thrombotic intraluminal filling defect at the mesenteric-portal venous confluence, extending into the right intrahepatic portal branch (Fig. 2 a, b, c, d, e, f).

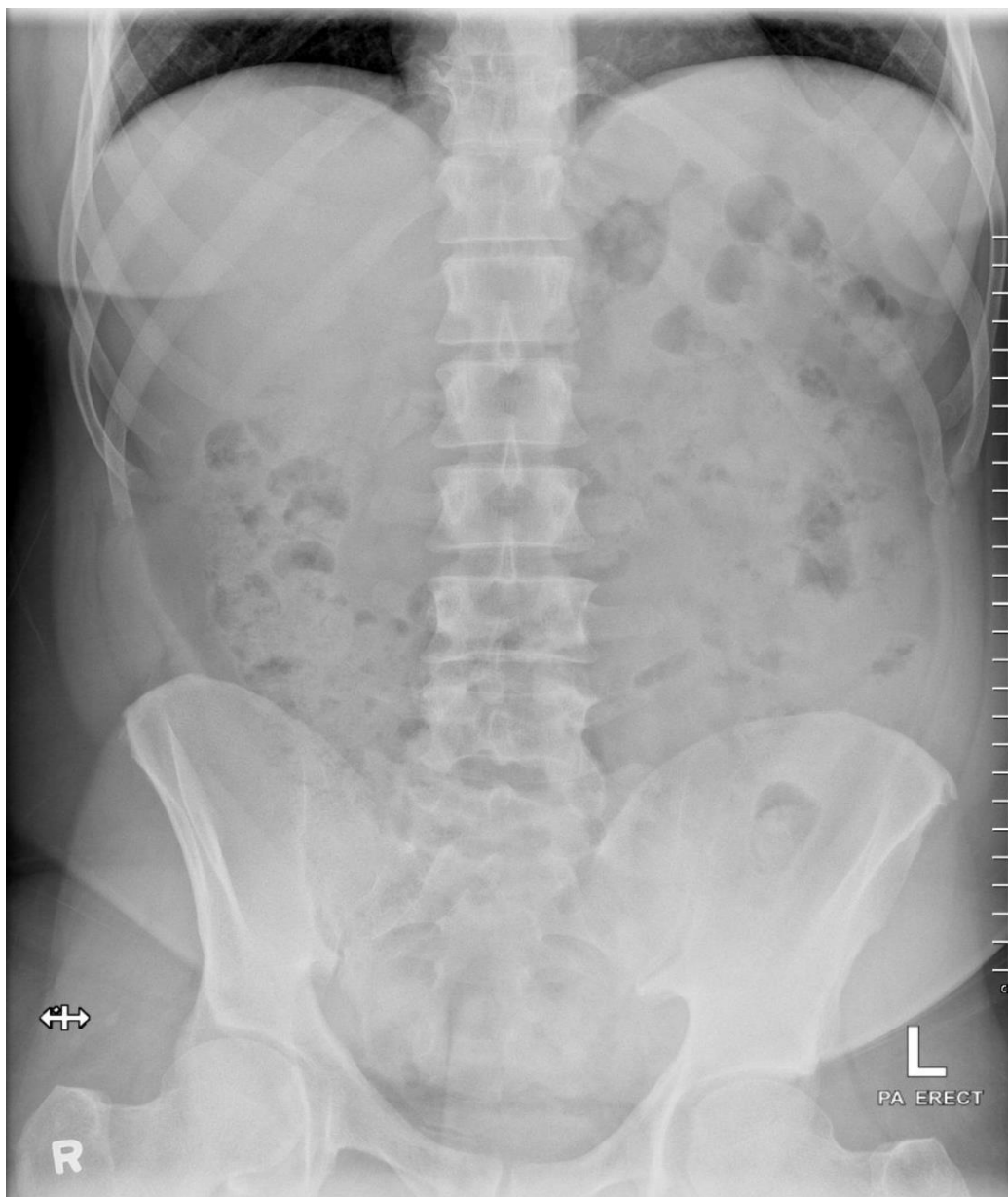


Fig. 1: Abdomen radiography had documented only a distension of the intestinal loops, without any signs of sub-diaphragmatic free air

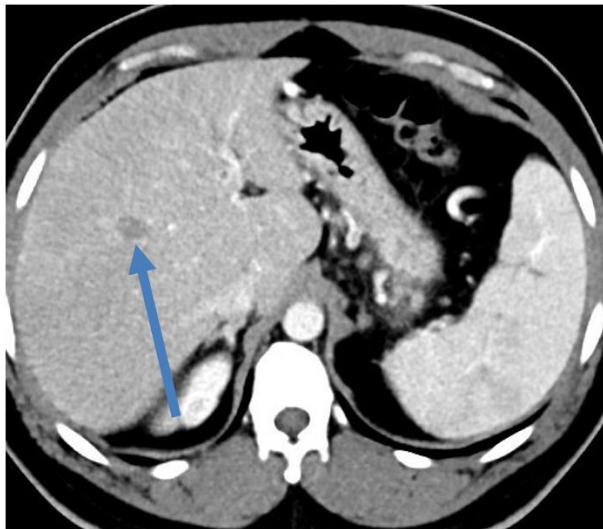


Fig. 2: (a) Thrombosis of the right branch of Portal vein

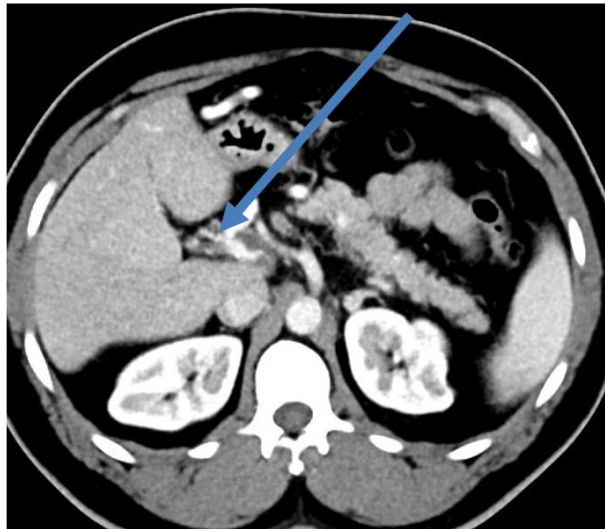


Fig. 2: (b) Partial thrombosis of the main Portal Vein

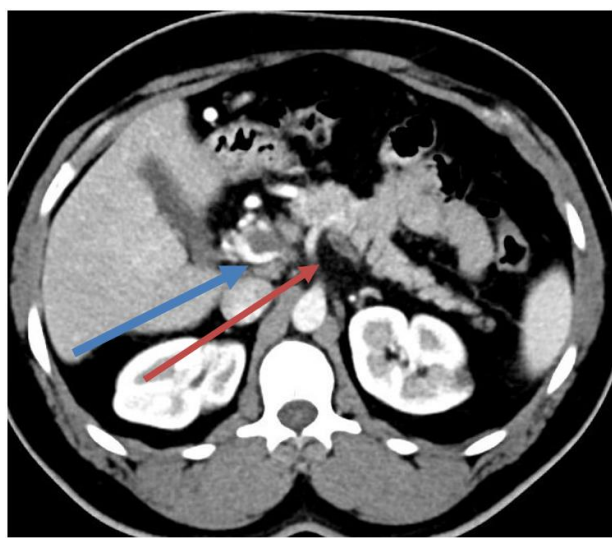
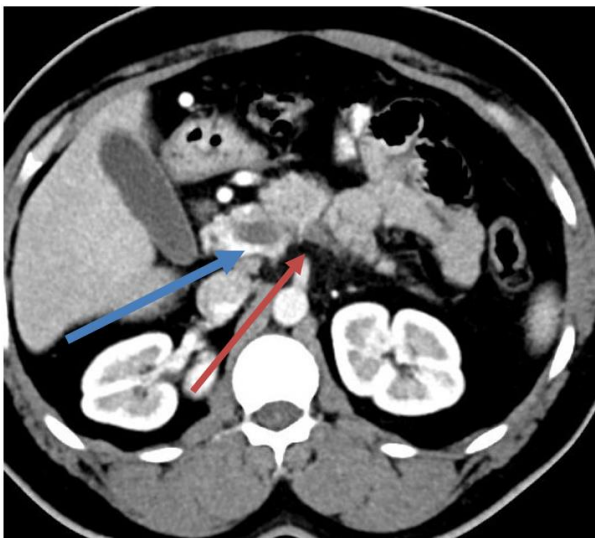


Fig. 2: (c, d) Thrombosis of the portal (blue arrow) and splenic (Orange arrow) veins

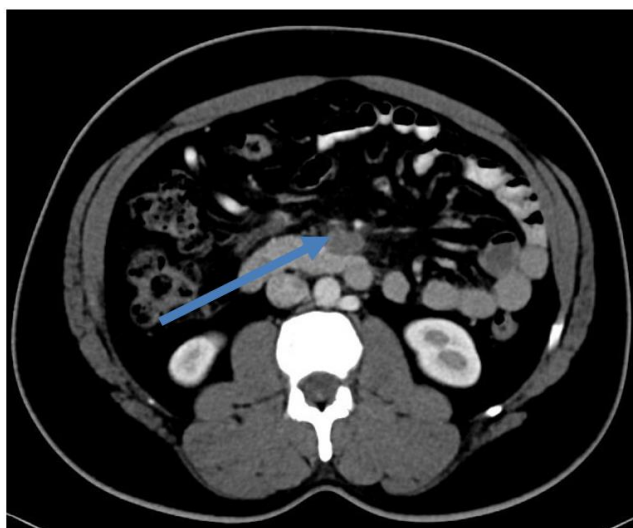
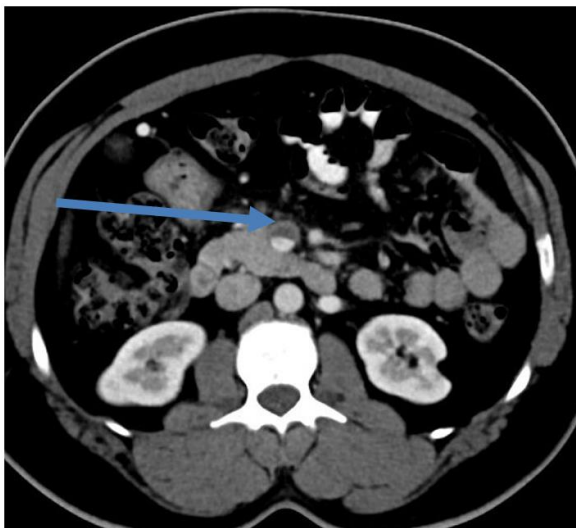


Fig. 2: (e, f) Thrombosis of the SMV

(a, b, c) Computed Tomography Angiography (CTA) with Multiplanar Reconstruction (MPR) in axial and coronal views revealed an extensive hypodense thrombotic intraluminal filling defect at the mesenteric-portal venous confluence, extending into the right intrahepatic portal branch, as indicated by yellow arrows in the images (Fig. 2). Acute superior mesenteric venous thrombosis (SMVT) was diagnosed, and management options were considered. Given that the CTA did not show any signs of intestinal ischemia, and the patient exhibited no peritoneal signs, conservative management was initiated. This included heparin infusion, insertion of a nasogastric tube, central venous line, arterial line, and urinary catheter along with analgesia.

DISCUSSION

The incidence of SMVT is 3 per 100,000 patient-years [1], and accounts for 5-15% of mesenteric ischemia [2]. Superior mesenteric vein is the most common site of thrombi formation, resulting in impaired venous return and subsequent venous engorgement and bowel ischemia [3]. Ileum and jejunum are by far the most commonly involved bowel regions [4]. Acute SMVT presents almost universally with abdominal pain, often out of proportion with physical examination. Occult fecal blood is present in about 40% of cases. Increasing abdominal tenderness, distention, and ascites are pointers of bowel ischemia, while progression to fever, peritonitis, and hemodynamic instability are concerning for bowel infarction and perforation. Interestingly, mesenteric venous thrombosis with portal vein involvement has a lower risk of developing transmural infarction compared to isolated mesenteric vein alone. And MVT of the more distal mesenteric veins tend to produce higher rates of bowel infarction versus MVT of the more proximal SMV and portal vein [5, 6]. Comparable to venous thrombosis in general, Virchow's triad is crucial in the pathogenesis of mesenteric vein thrombosis [7]. The mainstay of diagnosis is Computed Tomography Angiography of abdomen. Findings on contrast-enhanced abdominal CT fall into three categories: circumferential bowel wall thickening, vascular changes, and nonmural/nonvascular signs. Circumferential wall thickening is the most common CT finding in acute MVT. Hypoattenuated thickened bowel wall is highly suggestive of venous bowel infarction. A "halo sign" indicates stratification of the bowel wall into layers of attenuation by a central zone of edema. Pneumatosis intestinalis may also be visualized in cases of advanced ischemia. Venous filling defects are apparent in over 90% of cases. Venous enlargement around the clot is more suggestive of acute MVT, while venous atrophy is more suggestive of chronic MVT. Mesenteric fat edema and ascites are particularly prominent in

SMVT as opposed to arterial thrombosis due to the congestive nature of the disease. Bowel dilatation secondary to ischemic ileus is also seen [8,9]. The prognosis of patients with mesenteric venous thrombosis who responded to conservative management has been reported to be as high as 93% at 3 years. However, it is often limited by the severity of the underlying disease. Long term complications such as recurrence of thrombosis and intestinal ischemic strictures can also develop with variable reported incidences in small studies [10].

CONCLUSION

This is a case of acute superior mesenteric venous thrombosis that is notable for its idiopathic origin that had required an urgent clinical management of the patient. Acute mesenteric venous thrombosis is a rare but important cause of intestinal ischemia. Early diagnosis requires a high index of clinical suspicion. Computed Tomography had an important key-role for the diagnosis and evaluation of the severity of the mesenteric venous thrombosis, and for the best outcome/management of the patients.

Competing Interests: There is no conflict of interest to declare.

Acknowledgement: None.

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