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CASE REPORT: A CASE OF SUPERIOR MESENTERIC VENOUS THROMBOSIS

Internal Medicine

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ABSTRACT

We present a case of superior mesenteric venous thrombosis, where the subject presented with non-specific symptoms of abdominal pain and fever. The diagnosis was made with the help of contrast-enhanced computed tomography scan of the abdomen. The patient required anti-coagulation therapy for life because of the predisposition to blood clots.

KEYWORDS

MVT, abdominal pain, anti-coagulation therapy, CECT

Introduction:
Mesenteric venous thrombosis (MVT) is a disorder in which a local blood coagulation impairs the venous return of the bowel. Primary mesenteric venous thrombosis is considered spontaneous and idiopathic, while secondary mesenteric venous thrombosis arises from an underlying disease or risk factor.[1]

MVT can present as acute, sub-acute or chronic thrombosis of superior or inferior mesenteric vein or may be an incidental finding. It is a very rare condition and accounts for 1:5000 to 15000 in-patient admissions and 1:1000 emergency surgical laparotomies for acute abdomen. Incidence has increased over last 40 years. Age at presentation varies, common is 5th and 6th decade of life with slight male predominance. Known risk factors for MVT are hypercoagulopathy, endothelial injury and stasis. Malignancy is present in 4% to 16% of MVT, and up to 37% are idiopathic.[1,2]

We present a case of acute superior mesenteric venous thrombosis.

Case report:
On 29-Jul-2021, a 41-years-old male subject (BMI:26.54) presented with pain in abdomen. He was diagnosed as possible urinary tract infection and treated with oral levofloxacin 500mg. His abdominal ultrasound did not report any abnormal findings. The patient had received Covid-19 vaccination on 28-Jul-2021. He had history of appendicectomy (year-2016) and inguinal hernioplasty (year-2019). There was no other significant medical history.

On 7-Aug-2021, the subject returned with the complaint of epigastric pain and fever (both intermittent). He was treated with proton pump inhibitor (PPI) and anti-pyretic medicine. However, the complaints persist with increased in severity of abdominal pain especially after food intake. He was hospitalized on 11-Aug-2021 for further evaluation. The subject was treated empirically with antibiotic - injection (Inj.) ceftriaxone, intravenous (IV) PPI and IV paracetamol. Contrast-enhanced computed tomography (CECT) scan of abdomen reported acute superior mesenteric vein thrombosis extending partially to portal vein with mesenteric congestion and fat stranding in mid-upper abdomen (Report-1). Blood investigations done on 13-Aug-2021 showed low plasma levels of Antithrombin III (64.1%), highly elevated levels of D-Dimer (436 ng/mL) and presence of Lupus anti-coagulant antibody (Report-2). The patient was put on Inj. Clexane® (enoxaparin sodium) (80mg) twice a day. He was discharged on 16-Aug-2021 with Inj. Clexane® (enoxaparin sodium) (80mg) once a day (OD) which was later switched to oral tablet (Tab.) Lixiana® (edoxaban) (60mg) OD.

The patient continued to have intermittent pain in abdomen and fever. He returned for follow-up with persistent symptoms on 5-Sep-2021. Repeat blood investigations and CECT scan of abdomen was done re-confirming the previous diagnosis of superior MVT with no new findings. The treatment was switched from oral Tab. Lixiana® (edoxaban) (60mg) OD to oral Tab. Warfarin (5mg) OD. On 22-Sep-2021, rheumatology opinion was taken. Patient's only complaint was intermittent abdominal pain but no fever. Oral warfarin medication was stopped, and the patient was put on oral Tab. Xarelto® (rivaroxaban) (20mg) twice a day.

He came for follow-up on 20-Oct-2021, abdominal pain had settled, medication dose was reduced to Tab. Xarelto® (rivaroxaban) (15mg) OD. From 21-Nov-2021 the medication dose was further reduced to Tab. Xarelto® (rivaroxaban) (10mg) OD. He was counselled and advised to continue taking this medicine (blood thinner) life-long because of the body predisposition to blood clots. The subject is presently asymptomatic.

Pathophysiology:
Prothrombotic states, surgery, inflammatory bowel disease and malignancy are common risk factors for the development of MVT. Thrombosis of the larger distal portions of the mesenteric vein is mostly secondary to local factors, such as malignancy, pancreatitis and infection, and is associated with portal vein thrombosis while thrombosis that originate from the vena rectae, leading to isolated MVT thrombosis is most commonly related to a prothrombotic state.[3] In the periods of stress, the intestinal mucosa can augment oxygen extraction. However, with prolonged ischemia resulting from thrombotic occlusion, the ability of the intestinal capillaries to adequately provide oxygen is exhausted. Consequently, an inflammatory reaction occurs that can result in intestinal mucosal necrosis leading to the disruption of the mucosal barrier. Intestinal bacteria may subsequently translocate into the bloodstream and abdominal cavity, resulting in sepsis, hemodynamic collapse, and multiorgan system failure.[4,5]

In our case the subject had elevated D-Dimer levels, low plasma levels of Anti-thrombin III and presence of Lupus anticoagulant antibody, predisposing him to hypercoagulability state. Hence, he was advised to continue blood thinners life-long.

Discussion:
MVT is a rare insidious disease with a high mortality rate. It occurs in 5% to 15% of patients with acute mesenteric ischemic events.[6] Acute MVT can affect ileum in 64-85% of the patients, jejunum in 50-81%, and duodenum in 4-8%.[7] Clinical presentation vary in the severity depending upon affected branch of the venous supply. The size and extent of venous thrombosis affect the outcome, clinical presentation, and probability of bowel infarction.[3] It can present as a fever, sudden onset cramping abdominal pain, peritonitis, septic shock, and multiorgan failure. Patient examination could illicit non-specific abdominal discomfort to severe tenderness on abdominal palpation. A study by Morasch MD et al reported that MVT presented as abdominal pain (84%), diarrhea (42%), and nausea/vomiting (32%) in their study population.[8]

There are no laboratory markers sensitive or specific for MVT. MVT can lead to intestinal infarction causing lactic acidosis. High serum lactate level and metabolic acidosis correlate with increased mortality. However, normal lactate level and Ph do not rule out MVT. D-Dimer testing is also non-specific and could be elevated as a result of infection or inflammation. Improvements in imaging techniques (Contrast-enhanced computed tomography (CECT) had led to early diagnosis and better treatment outcome of MVT. Abdominal CT scanning with adequate portal vein phase contrast was found to be the most reliable modality for diagnosing MVT, with a sensitivity of 90%.[6] In our subject diagnosis was achieved only after CT imaging.

Acute MVT without infarction can be treated with anticoagulation and or thrombolytic agents but acute MVT with infarction requires surgical intervention (laparotomy or laparoscopy). Our patient was treated with anticoagulation therapy. Prompt and prolonged anticoagulation decreases mortality and hospital stay.[9] Outcomes in mesenteric venous thrombosis are better when compared to arterial thrombosis with mortality of 44% as compared to 66–89% respectively.[3,10]

A retrospective analysis by Kumar S et al reported that patients with isolated MVT are more likely to have hypercoagulable disorders. Isolated MVT is more difficult to diagnose and more likely to require surgery.[11]

Chronic MVT is a rare disorder that accounts for 20–40% of the cases of MVT.[9] It is characterized by extensive involvement of the superior mesenteric vein, portal vein and splenic vein often causing persistent abdominal pain, bowel edema leading to malabsorption, portal hypertension and variceal hemorrhage.[3] These patients are treated with anti-coagulation therapy. Chronic MVT in general has a favorable prognosis with 1–5 years survival ranging from 78 to 83%.[3]

Conclusion:

Patient presenting with non-specific symptoms like abdominal pain, fever that do not resolve with conventional medicine should be examined with a suspicion of MVT. CECT at the early stage could help in early diagnosis and treatment, which would help in avoiding further life-threatening complications and limit surgical intervention.

List of Abbreviations:

CECT: Contrast-enhanced computed tomography
Inj: Injection
IV: Intravenous
MVT: Mesenteric vein thrombosis
OD: Once a day
PPI: Proton pump inhibitor
Tab: Tablet

Image Legends:

Report 1: Investigation reports of 11-Aug-2021

Labs on 11-08-2021.pdf

Report 2: Investigation reports of 13 and 15-Aug-2021

Labs on 13 and 15 Aug 21.pdf

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