

Superior mesenteric vein thrombosis complicating appendicular masses

Salma S. Echtibi, MBBS, Masoud O. Bashir, FRCSI, Misbah U. Ahmed, DMRD,
Frank J. Branicki, FRCS, Fikri M. Abu-Zidan, FRCS, PhD.

ABSTRACT

Mesenteric vein thrombosis (MVT) is rare. Its diagnosis is usually difficult and delayed. Herein, we report 2 patients who developed MVT as a complication of an appendicular mass. One of them had appendectomy and developed fever 10 days postoperatively. The other was treated conservatively. An abdominal computerized tomography (CT) scan with intravenous contrast was helpful in diagnosing the superior MVT in both patients, which were not suspected. Intravenous contrast should be used when performing CT of an appendicular mass. Special interest should be directed at studying the superior mesenteric vein. Early diagnosis of our patients helped to start early medical treatment with anticoagulation.

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Mesenteric venous thrombosis (MVT) is rare and accounts for 5-15% of cases of mesenteric ischemia. Vague non-specific symptoms usually lead to delay in diagnosis and treatment. Herein, we report 2 patients who developed MVT complicating an appendicular mass. The CT scan of the abdomen helped in reaching early diagnosis and treatment.

Case Reports. Patient One. A 34-year-old Indian male complained of right lower abdominal pain of 2 days duration. The pain started in the right iliac fossa and was not associated with alteration of bowel habit or dysuria. On physical examination the patient had a temperature of 37.5°C, blood pressure of 120/70 mm Hg and heart rate of 75 beats per minute. Abdominal examination revealed tenderness and guarding in the right lower quadrant. White blood cell count was $28.5 \times 10^9/L$. Examination under anesthesia revealed a mass in the right iliac fossa. A decision was

taken to treat the mass conservatively. An abdominal CT scan with intravenous contrast was suggestive of an appendicular mass (**Figure 1**). A filling defect was seen in the superior mesenteric vein (**Figure 2**). Treatment was started with Enoxaparin 60 mg subcutaneously twice a day and warfarin 10 mg daily and a combination of broad spectrum antibiotics. The patient responded very well and followed up CT scan 6 months later showed complete disappearance of the mass and a patent superior mesenteric vein (**Figure 3**).

Patient 2. A 36-year-old Egyptian male complained of pain in the right iliac fossa of one day duration. The pain started in the paraumbilical region and was associated with vomiting and fever (38.5°C). Abdominal examination revealed tenderness and guarding in the right iliac fossa. White blood cell count was $6.8 \times 10^9/L$. Abdominal ultrasound showed a target sign suggestive of acute appendicitis. The patient initially refused appendectomy and left against medical

From the Department of Surgery (Echtibi, Bashir, Branicki, Abu-Zidan), Department of Radiology (Ahmed), Al-Ain Hospital and the Department of Surgery (Branicki, Abu-Zidan) Faculty of Medicine and Health Sciences, United Arab Emirates.

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Address correspondence and reprint request to: Dr. Fikri Abu-Zidan, Associate Professor, Head, Trauma Group, Department of Surgery, Faculty of Medicine and Health Sciences, PO Box 17666, Al Ain, United Arab Emirates. Fax: +971 (3) 7672067. E-mail: fabuzidan@uaeu.ac.ae



Figure 1 - Computerized tomography scan of the abdomen showing a soft tissue mass in the right iliac fossa.



Figure 2 - Computerized tomography scan of the abdomen showing thrombosis of the superior mesenteric vein.

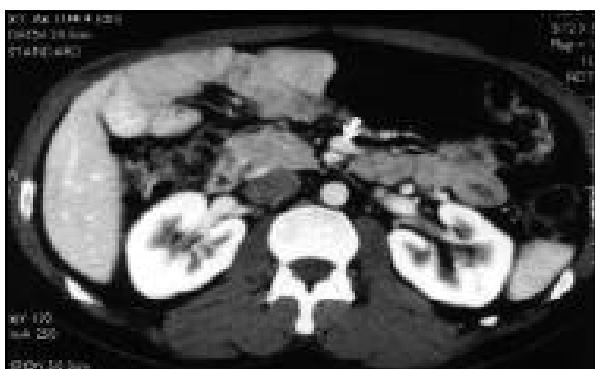


Figure 3 - Follow up computerized tomography scan of the abdomen 6 months later which shows a patent superior mesenteric vein (arrow).



Figure 4 - Computerized tomography scan of the abdomen showing with intravenous contrast showed superior mesenteric vein.

advice. Appendectomy was performed 2 days later after the patient accepted surgery. The appendix was gangrenous subcecal and forming a mass. Histopathology confirmed the clinical diagnosis. The patient was treated with intravenous antibiotics for 5 days (ceftriaxone 2 gm daily and metronidazole 500 mg 8 hourly) and discharged home. Five days later he came back complaining of fever and severe central abdominal pain. White cell count was $11.3 \times 10^9/L$ and abdominal examination revealed tenderness around the umbilicus. The abdominal wound was clean. Plain abdominal x-ray did not show air fluid levels. The CT scan of the abdomen with intravenous contrast showed superior MVT (**Figure 4**). The portal vein was patent. There was no evidence of intra-abdominal collection. Coagulation profile was normal. Anticoagulation therapy was started (Enoxaparin 60 mg/12 hours subcutaneously and Warfarin 10 mg orally daily). The patient was informed of his condition, but he decided to travel back home to continue his treatment. We tried to contact the relatives of the patient to know his outcome, but we failed.

Discussion. Mesenteric venous thrombosis occurs without a known cause in 20% of patients and the

remaining is secondary to inflammation, coagulopathy, sepsis, neoplasia or trauma. Inflammation, sepsis and neoplasia tend to initiate thrombus formation in the large veins while coagulopathies initiate thrombosis in the smaller tributaries of the mesenteric veins.^{1,2} Our patients developed thrombosis in the large vessels secondary to appendicular masses. The clinical features of MVT vary with vague non-specific symptoms or an acute presentation with intestinal infarction and peritonitis.² Some have a previous history of venous thrombosis or a family history of coagulopathy.³⁻⁵ Occasionally a palpable mass is evident, which may be attributed to engorged intestine. In the first patient, the diagnosis of MVT was incidental. This is probably largely due to a good collateral circulation of the mesenteric system. Experimental studies showed that bowel may remain viable with a good collateral circulation following mesenteric venous ligation.³ Gastric intramural pH measurements and CT scan evaluation of the bowel wall may give accurate prediction of the degree of ischemia present.^{1,2,6,7} Mesenteric Doppler sonography may show the thrombus, but usually gas in the intestine prevents good visualization of the mesenteric veins.^{1,2} Computerized

tomography scan can diagnose MVT in 90% of cases.^{1,3,7-9} Findings include a filling defect in the mesenteric vein (as shown in our patients), edema of the intestinal wall, and dilatation of the small bowel loops. Angiography has an accuracy of only 55%³ and should not be used as the initial tool for diagnosis. It is more invasive and less accurate than CT scan. A definitive diagnosis is occasionally reached only at laparotomy.^{1,2} Despite the fact that some cases of MVT may resolve spontaneously without major sequelae, treatment with anticoagulation, surgery or both is indicated. That is due to some cases will progress with morbid results. Medical treatment with anticoagulants is superior if the diagnosis of MVT can be confirmed by means of CT scanning and transmural bowel necrosis is absent. Bowel ischemia is notoriously difficult to assess clinically. Thrombectomy of mesenteric vein may be needed or resection of infarcted bowel. It is unclear when to operate on bowel ischemia without transmural necrosis as it may be reversible with anticoagulation. The mortality rate has been reported to be higher in patients treated surgically (29-38%), than medically (13-13%).^{1,2,6} The first patient did not have any signs of intestinal ischemia and was treated successfully with anticoagulants. The second patient has left early and was lost for follow up.

In conclusion, the reported patients demonstrate that MVT complicating appendicitis is probably more common than we think. Intravenous contrast should be used when performing CT scan of suspected appendicular mass or postappendectomy fever. Special interest should be taken in studying the mesenteric veins.

A high index of suspicion is needed for early diagnosis that enables early treatment.

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