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Case report – hepatocytolytic syndrome hiding mesenteric venous ischemia

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BACKGROUND

Acute mesenteric ischemia (AMI) is a syndrome caused by inadequate blood flow through the mesenteric vessels, resulting in ischemia and eventual gangrene of the bowel wall. AMI may be classified as arterial or venous, non-occlusive or occlusive. The overall prevalence of AMI is 0.1% of all hospital admissions [1]. The exact prevalence of mesenteric venous ischemia (MVT) is not known, because many cases are presumed to be limited in symptomatology and to resolve spontaneously.

CASE PRESENTATION

A 70 years old male patient presented to our gastroenterology department for investigating an acute hepatocytolytic syndrome (AST 297 UI/ml, ALT 616 UI/ml). He was non-smoker, with no history of hepatotoxic treatment or other toxic substance abuse. One month before he had normal liver enzymes at clinical tests (AST 50 UI/). He was asymptomatic on admission, with unremarkable physical exam: except sensitive abdomen in the right hypochondrium, moderate hepatomegaly (left liver lobe hypertrophy) and abdominal postsurgical scars. His blood pressure was 110/70 mmHg with no orthostatic changes. A regular heart rate of 90 beats/min and respirations of 18-20/min were observed.

From the patient history: he was operated six years ago for abdominal aortic aneurysm with reimplantation of both renal artery after aortic graft, plus aorto-iliac bilateral stent, he has diabetes mellitus type 2 (on oral antidiabetic drugs from 2008), hypertension, ischaemic heart disease, systemic atheromatosis, laparoscopic colecistectomy in 2011 and right coxartrosis. A control angiogram and Doppler ultrasound was performed six months ago, with no evidence of occlusion or blockage of the mesenteric arteries.

At presentation the patient had hepatocitolytic syndrome – elevated serum transaminases ALT 537 UI/L ; AST 297 UI/L, cholestatic syndrome – elevated alkaline phosphatase ALP 124 UI/L, no modification on hemograme, hyperglycemia 190 mg/dl with HbA1c 6.8 %, serum creatinine 1.3 mg/dl. We tested the patient for virus B and C infection, and we found Ac anti HVC positive. Then we performed HCV RNA viral load 115 UI/ml (low viral load) and supportive hepatic treatment was immediate conducted. On abdominal ultrasound we found: mild hepatomegaly, post-colecistectomy status, normal CBP and a left renal

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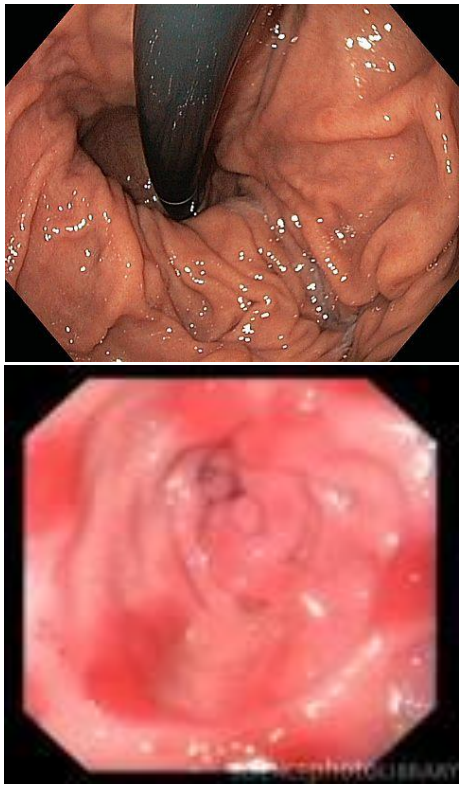
cyst.

After a few days the patient accused upper abdominal pain, nausea, fatigue, vomiting, constipation and oliguria. The blood pressure was 140/80 mmHg, the abdomen was symmetrically distended, dull to percution with absent bowel sounds with firm and tender to palpation in the mid-epigastrium. We did an upper GI endoscopy that revealed hiatal hernia, diabetic gastroparesis and duodenitis (figures 1a, 1b)

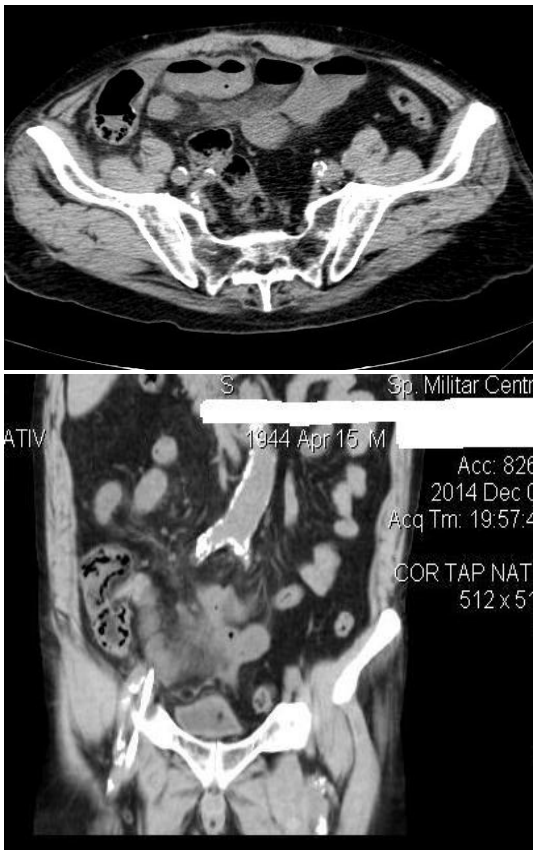
Figures 1 (a, b).



The laboratory tests showed normalization of liver enzymes, but rapid increase of urea 270 mg/dl and creatinine 4.88 mg/dl needing temporary hemodialysis in ICU, by femoral venous catheter placement. On abdominal examination, the patient had persistent abdominal pain, tenderness to palpation and increased abdominal wall rigidity. The native CT scan performed immediately (due to renal function impairment) did not confirmed arterial mesenteric ischemia suspicion, and also the biological markers D-dimers, CK, CK-MB where negative, with no signs of hypovolemia or hypotension.

After the temporary hemodialysis, another CT scan was performed, this time with contrast, because the suspicion of mesenteric ischemia remains, the patient had signs of peritonitis (right inguinal fossa pain and tenderness, exacerbated by moving the peritoneum, coughing and the Blumberg sign positive) and on ultrasound he has periappendiceal fluid collection and intestinal wall thickening. The contrast enhanced CT scan revealed: terminal ileum wall oedema, suggestive for acute mesenteric vein ischaemia, without lacunar imagine of a possible thrombus (arterial or venous) – figures 2a, 2b.

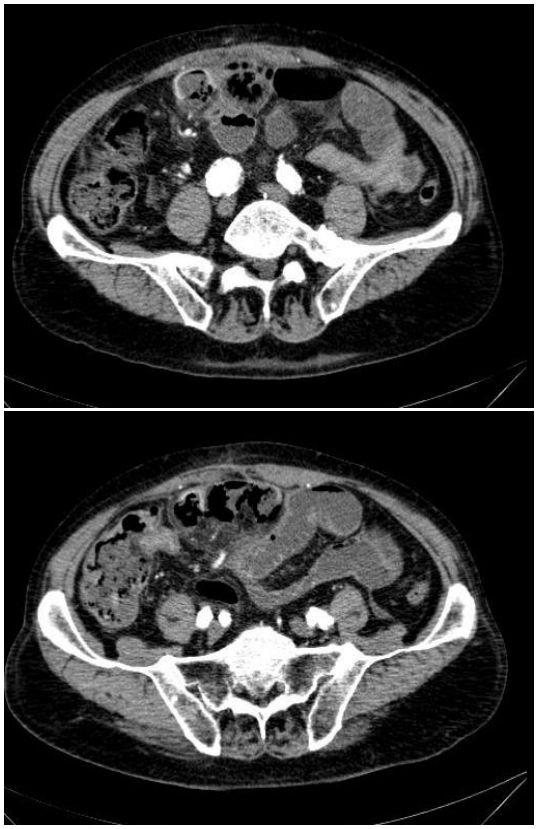
Figures 2 (a, b).



Initially the surgical intervention was temporized and the patient had conservatory heparinotherapy for 10 days (taking into account the patient comorbidities, history and risk factors for thrombosis), but the patient general status did not improved, he had nausea and vomiting, also persistent abdominal pain, fever and leucocytosis. We took blood cultures, remove central venous catheter and femoral venous catheters and continued antibiotherapy.

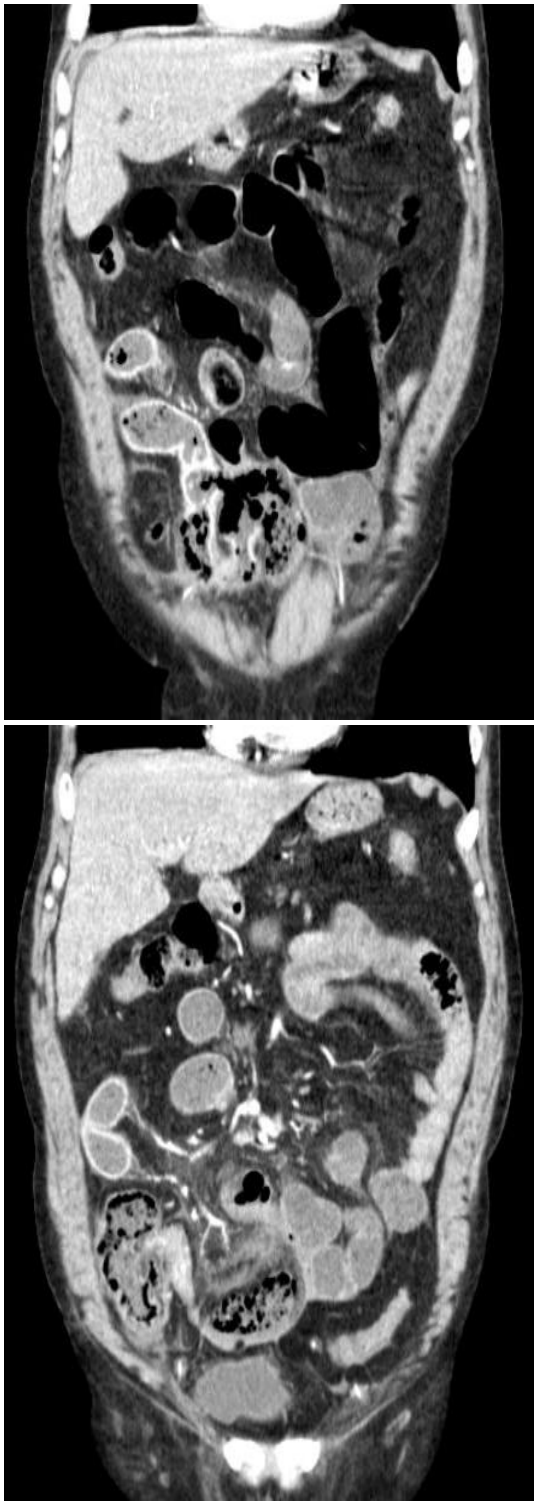
We did another CT scan with contrast one week later that showed distal ileum thickening with iodophile walls in arterial phase and necrosis, plus entero-enteral fistula localized in the right inguinal fossa (figures 3a, 3b, 4a, 4b).

Figures 3 (a, b).

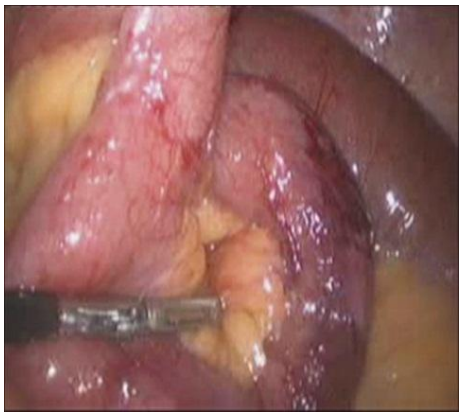


The treatment included both surgical and anti-thrombotic therapy and we transferred the patient to the surgical department. A median laparotomy was performed, and mesenteric venous ischemia modifications were found at 5 cm from ileocecal valve, with entero-enteral fistula and cecal abscess. A large enterectomy was made, with resection of approximately 150 cm of the ileum (figure 5), followed by peritoneal cavity lavage and drainage, then protective right ileostomy. The postoperative evolution was favorable, and the patient was released with normal liver and renal function, with protective ileostomy. At three months the patient came in good clinical status, and ileostomy reversal was made. Further investigations are needed for this patient regarding hypercoagulability status or identifying other MVT risk factors, and of course close follow up for prompt diagnosis and treatment of recurrence.

Figures 4 (a, b).



Figures 5.



DISCUSSION

Mesenteric ischemia is caused by a reduction in intestinal blood flow, due to occlusion, vasospasm and/or hypoperfusion of the mesenteric vessels. The clinical consequences can be catastrophic, including sepsis, bowel infarction, and death, making rapid diagnosis and treatment imperative.

Injury severity is inversely proportional to the mesenteric blood flow and is influenced by the number of vessels involved, systemic mean blood pressure, duration of ischemia, and collateral circulation [1]. Mesenteric ischemia may be classified acute and chronic, based upon the rapidity and the degree to which blood flow is compromised.

Acute mesenteric ischemia refers to the sudden onset of intestinal hypoperfusion, which can be due to occlusive or nonocclusive obstruction of arterial or venous blood flow. Nonocclusive arterial hypoperfusion is most commonly due to primary splanchnic vasoconstriction [2].

Chronic mesenteric ischemia (also called intestinal angina) refers to episodic or constant intestinal hypoperfusion, which usually develops in patients with mesenteric atherosclerotic disease [2].

Venous thrombosis is predominantly a result of stagnation of blood flow, vascular injury, and hypercoagulability (ie, Virchow's triad) [3]. First differentiated from arterial causes of acute mesenteric ischemia 75 years ago, acute mesenteric venous thrombosis (MVT) is an uncommon disorder with non-specific signs and symptoms, the diagnosis of which requires a high suspicion rate [4].

Mesenteric vein thrombosis almost always involves the distal small intestine (superior mesenteric venous drainage) and rarely involves the colon (inferior mesenteric venous drainage) [5]. The anatomic site of involvement in acute mesenteric venous thrombosis is most often ileum or jejunum, followed by colon and duodenum [6].

Acute thrombotic occlusion of one or more mesenteric veins reduces perfusion pressure due to increased resistance in the mesenteric venous bed. As flow stagnates, increased venous pressure leads to efflux of fluid into the tissues, causing profound bowel-wall edema, which can lead to submucosal hemorrhage. If the venous arcades and vasa recta are involved and venous return from the bowel wall is completely occluded, bowel infarction will occur [4].

Causes of MVT include the following (>80% of patients with MVT are found to have predisposing conditions):

- Hypercoagulability [7] from protein C and S deficiency [8, 9] antithrombin III deficiency, dysfibrinogenemia, abnormal plasminogen, polycythemia vera (most common), thrombocytosis, sickle cell disease, factor V Leiden mutation, pregnancy, and oral contraceptive use [10, 11]
- Tumor causing venous compression or hypercoagulability (paraneoplastic syndrome)
- Infection, usually intra-abdominal (eg, appendicitis, diverticulitis, or abscess)
- Venous congestion from cirrhosis (portal hypertension)
- Venous trauma from accidents or surgery, [12, 13] especially portacaval surgery
- Increased intra-abdominal pressure from pneumoperitoneum during laparoscopic surgery [12]
- Pancreatitis
- Decompression sickness

The diagnosis is most often made by contrast-enhanced computed tomography, though angiography and exploratory surgery still have important diagnostic as well as therapeutic roles [4]. CT findings of intestinal ischemia due to acute MVT include wall

thickening > 3 mm in an adequately distended segment, abnormal enhancement patterns, distended luminal diameter, thickened mesentery, indistinct bowel wall margins, and the presence of new or unexplained ascites [14].

Thus, abdominal CT with adequate venous phase contrast should be used as the initial diagnostic test of choice for MVT, with angiography reserved for patients with non-diagnostic CT results yet a reasonable clinical suspicion for MVT (i.e. no alternate explanation for symptoms and either a known hypercoagulable risk factor or family history of venous thrombosis)[4].

Anticoagulation prevents clot propagation and is associated with decreased recurrence and mortality [4]. Immediate heparinization is currently accepted as standard therapy. Heparin has been shown to prevent recurrence of thrombosis after intestinal resection and to be associated with lower mortality when recurrence does occur [4].

When intestinal infarction is suspected by virtue of clinical decompensation or radiologic/CT findings, immediate exploration of the abdomen – either by laparotomy or laparoscopy is needed and non-viable segments of intestine are resected.

CONCLUSION

MVT is associated with a 30-day mortality of 13-15%. Without anticoagulant therapy, mortality increases, with a 25% recurrence rate. The combination of anticoagulant therapy with surgery is associated with the lowest recurrence rate (~3-5%)[1]. Although its mortality rate has fallen over time, acute MVT remains a life-threatening condition requiring rapid diagnosis and aggressive management.

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