

A RARE CASE STUDY OF PRIMARY VENOUS MESENTERIC ISCHEMIA: CLINICAL MANIFESTATION OF A PRIMARY TROMBOPHILIA- IMAGISTIC DIAGNOSIS

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ABSTRACT. Venous mesenteric ischemia is part of the syndrome of primary mesenteric ischemia that can have multiple causes: arterial occlusion, venous occlusion, mechanical strangulation and hypoperfusion due to a non-occlusive vascular disease, the venous ones representing 5-10% of the cases. The risk factors in the case of venous ischemia are represented by: portal hypertension right heart failure, hypercoagulability and among all these primary hereditary thrombophilia. The last one is manifested through recurrent thrombosis episodes located in the deep venous system of the lower limbs, pulmonary circulation(pulmonary thromboembolism) and superficial thrombosis. V Leiden factor [G1691A] represents one of the most important genetic risk factors for hereditary thrombophilia. We bring forward the case of a patient suffering from mesenteric ischemia through partial thrombosis of upper mesenteric vein. As a result of surgery, a diagnosis is made - enteromesenteric infarction of extended venous type. Screening tests to detect the congenital anomalies that generated primary thrombophilia indicate the presence of V Leiden [G1691A] mutant homozygous factor. The case presentation is done engaging a multidisciplinary team. The place of deployment is Arad County Emergency Clinical Hospital.

KEYWORDS: Venous mesenteric ischemia, thrombophilia, thrombosis.

INTRODUCTION

Mesenteric venous ischemia is part of primary mesenteric ischemia syndrome that may have multiple causes; arterial occlusion, venous occlusion, mechanical bottleneck and hypoperfusion due to some non-occlusive vascular diseases[Akira Furukawa], the venous ones representing 5-10% of the cases. V Leiden factor [G1691A] represents one of the most important risk factors for hereditary thrombophilia.

Gene mutation causes resistance to activated protein C. It occurs in 20-50% of the patients suffering from venous thromboembolism , homozygous PAI-15G/5G.

Primary thrombophilia represents one of the causes of primary hypercoagulability which increases the risk of thrombosis, this abnormality may be identified in about 50% of the population that has experienced an episode of deep venous thrombosis. (<https://www.ajronline.org/doi/full/10.2214/AJR.08.1138>)

It was described for the first time by Rokitansky in 1842 and the first series of cases that included 75

patients was published by Wilkie in 1927 (Ahmed Arifur Rahman) ².

From clinical and imagistic (CT) point of view, the identification of mesenteric ischemia is different in various conditions, such as: arterial occlusion, venous occlusion, bottlenecks, non-occlusions (Akira Furukawa), according to the cause and the basic pathophysiology and the associated complications , as well.

Contrast-enhanced CT can also detect venous thrombosis in large central vessels of the portomesenteric circulation and any associated side-effects. (Brandbury MS).⁷

The aim of this article is to examine the incidence of acute mesenteric ischemia on a CT scan in the case of partial mesenteric venous thrombosis and extended venous mesenteric infarction.

The identification of the variations and occurrence on the CT of each of the causes supports the correct interpretation of the CT result in the diagnosis of mesenteric ischemia.

Case presentation : A 47- year old patient, male, goes to the Emergency Unit of the County General

Hospital in Arad with general deterioration, diffuse abdominal pain that had occurred approximately two days before an episode of vomiting and 4 diarrhoeic stools. The patient had never experienced any digestive disorders.

Predisposing factors: Smoking, previous episode of deep venous thrombosis in lower limb, three years ago. In this context, in the absence of the right heart failure, of a portal hypertension and of mechanical causes of mesenteric vein obstruction (volvulus), it is decided to investigate the patient in order to exclude a condition of vascular hypercoagulability (primary or secondary thrombophilia).

Clinical examination: Vital Signs : Pulse = 95 bpm, BP= 150/100 mmHg, RF = 13 and min. ECG - normal.

Plain abdomen: Absence free pneumoperitoneum, small hydroaeric levels in mesogastrum and in the right flank, reduced digestive pneumatization..

After the surgical investigation, the patient is confined to the gastroenterology department where the clinical and paraclinical exploration continue.

Paraclinical investigation :

Paraclinic : Leukocytosis (L = 12250 mm³) Amylase = 736 U/L³

The laboratory tests, which are supposed to detect any congenital abnormality generating primary thrombophilia, confirm the presence of: V G1691A (Leiden) homozygous mutant factor. This V Leiden (G1691A) factor represents one of the most important genetic factors with risk for hereditary thrombophilia. The gene mutation determines resistance to activated C protein . It occurs in 20-50% of the patients with venous thromboembolism, PAI-1 5G / 5G homozygote.

Imagistic investigations

- **Abdominal ultrasound** : Liver steatosis, normal spleen, loops' distension on all abdominal area, free fluid in abdominal cavity (small to large amount).
- **Gastroscopy:** Small transhiatal gastrointestinal hernia and prepyloric erosions.
- **Colonoscopy:** Digested blood along the large intestine up to the the terminal ileum.
- **Abdomino-pelvic CT with contrast:**



Figure1. Entero CT with contrast: Low distended jejunal and ileal loops, thickened wall and reduced contrast grip, micro nodular webbed /reticular infiltration of mesenteric fat .



Figure 2. Entero CT: Jejunal and ileal loops with wall thickened circumferentially with moderate contrast grip/plug. Ascites in right iliac fossa. Incomplete image at upper mesenteric vein.

Diagnosis: Mesenteric ischemia due to the partial thrombosis of upper mesenteric vein. Surgery is decided: extended entero mesenteric infarct/infarction.

Treatment: There is no specific treatment for most thrombophilia but recurrent thrombosis episodes (in this case- lower limb thrombosis and upper

mesenteric vein thrombosis) have indication of long-term preventive anticoagulant therapy.

DISCUSSION

Venous mesenteric ischemia syndrome has a reduced incidence (5-10%) and potentially fatal prognosis - mortality up to 90%, thus it requires an insight of the possible clinical picture (in this case, all the clinical and imagistic items of diagnosis have been identified according to the literature - see Table 1). This syndrome requires an accurate CT analysis, emphasizing the examination of the venous stage of mesenteric circulation, this examination being a test of certainty for a correct diagnosis. Although, theoretically, the ultrasound Doppler of the mesenteric veins could be contributory, this examination is not always feasible in Emergency Medical Aid Service Unit and the digestive tract distension as a result of ischemia may prevent a correct examination.

X rays, CT scan and ultrasound are used alone or combined, if used in full, to treat the patient (Lameris W)⁶

Although the studies have shown improved sensitivity and specificity for the diagnosis of acute abdominal pain by using contrast enhancement, CT accuracy is high regardless of the use of contrast media (Sarah L.)⁴.

Clinical characteristics and typical CT findings of mesenteric ischemia are different under conditions of arterial occlusion, venous occlusion [Akira Furukawa¹ strangulation/ bottleneck, non-occlusion (Table 1), characteristics required for differential diagnosis (Ooi GC, Chan KL³, Richard Mendelson)⁵

Table 1 Clinical characteristics and typical CT findings of mesenteric ischemia under venous occlusion (adapted from Akira Furukawa)¹.

Characteristic	Venous Occlusion
Incidence	5-10 % of PMI
Presentation	Subacute
Risk factors	Portal hypertension, venous hypercoagulopathy, right sided heart failure
Bowel wall	Thickening
Attenuation of bowel wall on unenhanced CT	Low with edema ; high with hemorrhage
Enhancement of bowel wall on contrast-enhanced CT	Diminished, absent, target appearance, or increased
Bowel dilatation	Moderate to prominent
Mesenteric vessels	Defect or defects in veins, venous engorgement
Mesentery	Hazy with ascite

CONCLUSIONS

A correct early diagnosis of acute mesenteric ischemia allows a suitable and efficient treatment of the patient, knowing the fact that the mortality rate in this case varies between 50 and 90%. Performing, as soon as possible, an emergency CT exam on a multi slice device allows the purchase of a large amount of data that enables the 2D and 3D reconstructions in different plans which grant permission for the identification of the location, the extension and cause of the intestinal ischemia.

Conflict of interest: There is no conflict of interest.

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