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**MESENTERIC ISCHAEMIA: NOT
SO SIMPLE!**



Learning Objectives


To outline the signs in mesenteric ischaemia, to be capable of interpreting the radiological appearance of mesenteric ischaemia and finally to identify related findings of surrounding organs.





Background

The small and large bowel have rich blood supply from a well-organized artery net originating mainly from celiac trunk, superior and inferior mesenteric artery. These artery branches make several anastomoses, reserving bowel blood supply, under any circumstances.



Background

Mesenteric ischaemia is a rare entity, with high mortality rate (24-94%)¹ if remains untreated.

In more than 95% of cases Mesenteric Ischaemia is associated with diffuse atherosclerotic disease ¹.


The so called “silent killer”, is often underestimated by clinicians as it has no symptomatology at all.

- ¹. Mesenteric Ischemia: Pathogenesis and challenging diagnostic and therapeutic modalities. Aik. Mastoraki, Sot. Mastoraki, Evg. Tziava et al. World J Gastrointest Pathophysiol Feb 2016 15;7(1):125-130.



Background

Mesenteric Ischaemia can be acute or chronic.
Acute Ischaemia may result from:


- arterial obstruction (embolism or thrombosis)
 - venous obstruction and
 - chronic hypoperfusion of non-occlusive vascular disease (ie. low cardiac output, fibromuscular dysplasia, vasculitis).
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Background

The pathogenetic pathway includes:

- ✓ Insufficient blood supply
- ✓ Inflammatory injury
- ✓ Bowel necrosis




The severity of findings is in proportion to blood flow decrease from reversible bowel wall injuries to necrosis and perforation.



Imaging Findings/Procedure Details

Traditionally, angiography used to be the basic method for confirming bowel ischaemia.



Imaging Findings/Procedure Details

Nowadays, CT and CT angiography is the method of choice in assessing acute mesenteric ischaemia and findings differ, depending on :

- time of installation
- cause
- underlying pathophysiology and
- general condition of the patient.

Imaging Findings/Procedure Details

- Oral and IV administration of contrast medium is necessary so as to obtain accurate results about ischaemia. Mesenteric ischaemia is characterized by various morphologic abnormalities. CT can offer adequate information about location of ischaemia (small or large bowel), bowel lumen, bowel wall evaluation.

Imaging Findings/Procedure Details

According to the importance of each condition, we can obtain several imaging findings such as:

- Pathological enhancement of the bowel wall
- Thickening of bowel wall
- Mesenteric edema
- Abnormal gas distribution through bowel wall (pneumatosis intestinalis)
- Gas in portal veins
- Solid organ infarction

Imaging Findings/Procedure Details

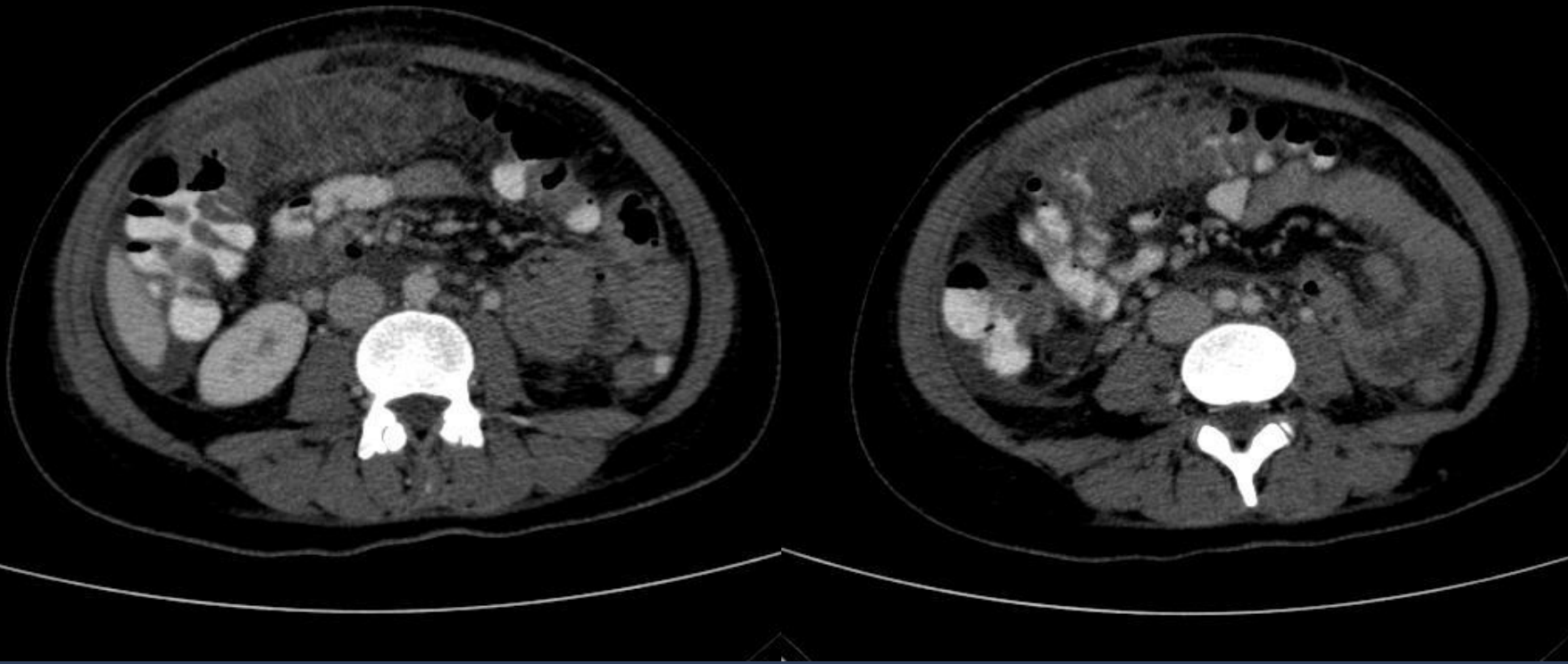


Figure 1a,1b. Thickening of bowel wall (thumb finger print sign) and abnormal mural enhancement in a young woman suffering from a vasculitis, resulting in mesenteric ischaemia.

Imaging Findings/Procedure Details

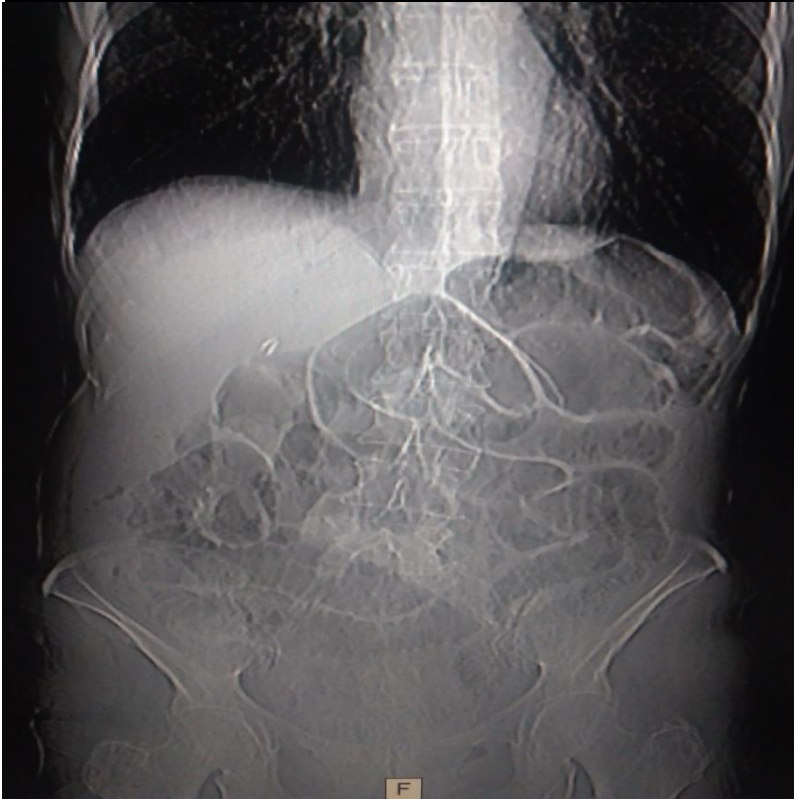


Figure 2a. Plain abdomen x-ray in up-right position. Dilated bowel loops with abnormal air distribution.
Figure 2b. Axial image (CT) – pneumatosis intestinalis (air within bowel wall).

Imaging Findings/Procedure Details

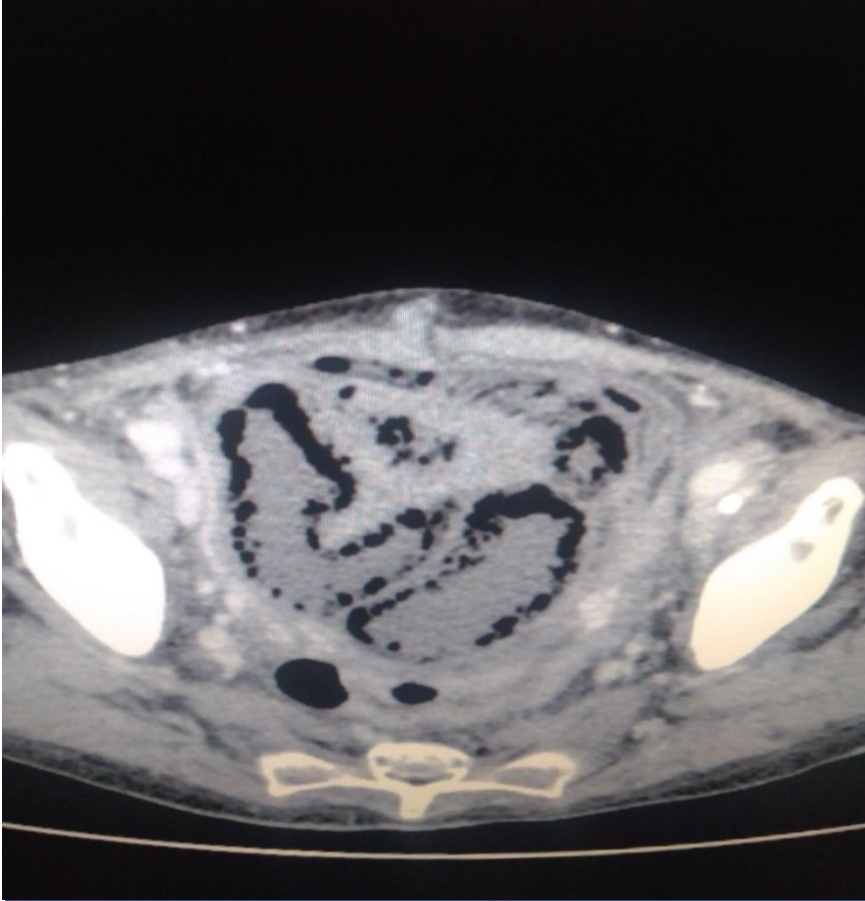


Figure 3a. Pneumatosis intestinalis.



Figure 3b. Thrombosis of celiac trunk

Imaging Findings/Procedure Details

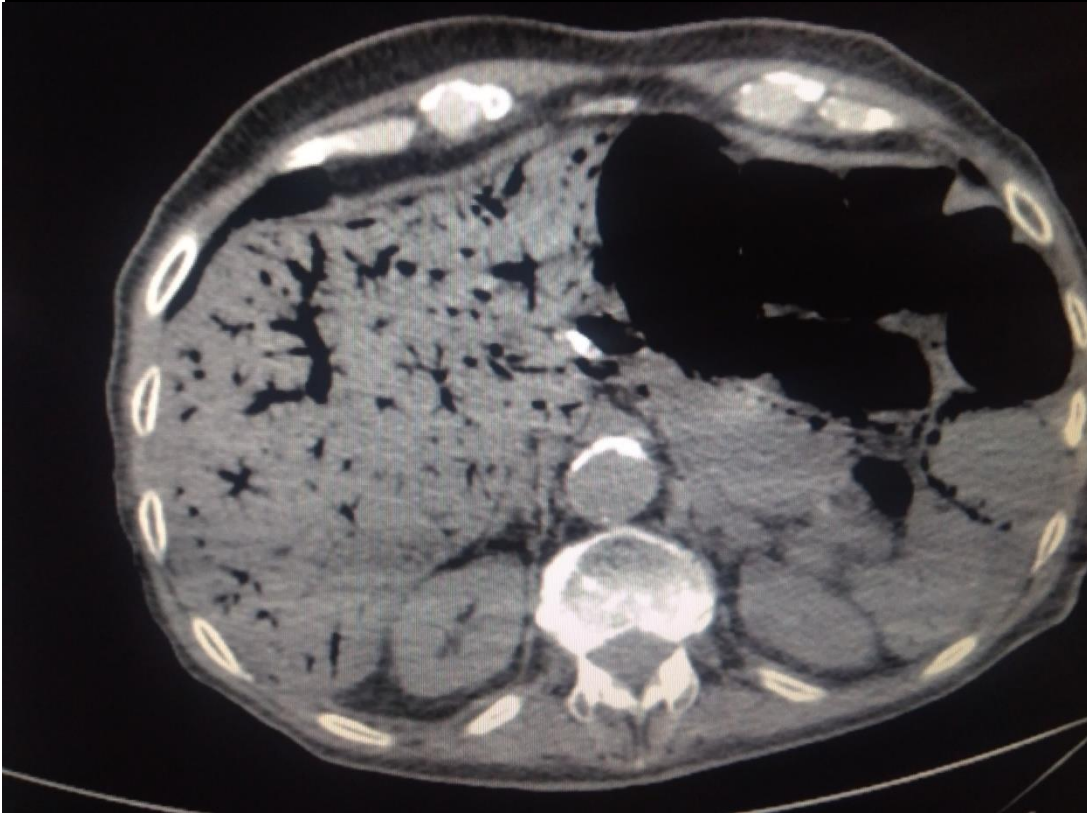


Figure 4a, 4b. Axial and coronal CT planes, showing excessive air within portal veins, a devastating complication of mesenteric ischaemia.



Conclusion

An early and accurate diagnosis of acute mesenteric ischaemia, is essential for a prompt clinical response in therapy. CT is a valuable tool in detecting mesenteric ischaemia, recognizing not only specific but also weak radiological features.

