

Spontaneous Renal Artery, Superior Mesenteric Artery and Distal Splenic Artery Thrombosis: An Unusual Case of Acute Abdomen

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Abstract: *Thrombosis of splanchnic arteries is a significant life threatening cause of acute abdominal pain in adults and is associated with high morbidity and mortality if not diagnosed promptly and treated adequately. Often various radiological modalities like USG and CT are required to confirm the diagnosis. Thrombosis of mesenteric arteries leads to hypoxic ischemia of target organs like bowel which if not treated promptly leads to bowel infarction and gangrene formation. Low blood supply as compared to surface area and absence of collaterals make it further prone to ischemia. Other factors like hypercoagulable states also play a role. Aim: To study spontaneous renal artery, superior mesenteric artery and distal splenic artery thrombosis as a cause of acute abdominal pain in a patient presenting with abdominal distension, vomiting and loose motions. Material and Method: 40 yr old female patient presenting in surgical emergency department of SCSM Hospital Solapur. Procedure: Initially USG Abdomen was performed for the complaints of severe pain in abdomen and abdominal distension. Upon presence of specific findings, CECT Abdomen was performed on request. Axial scan (slice thickness 1mm) was taken with patient in supine position starting from the dome of diaphragm upto pubic symphysis. Scan was repeated after administration of 80cc of Iodinated non ionic contrast at flow rate 4cc/sec. Then arterial and portovenous phase images were acquired. Thin 1mm reformatted images were acquired in coronal and sagittal planes.*

Keywords: CECT, USG, Spontaneous Thrombosis, Mesenteric artery

1. Introduction

Spontaneous thrombosis of visceral arteries is life threatening cause of sudden acute abdomen.

In situ spontaneous thrombosis of renal, superior mesenteric and splenic artery is usually caused by blunt abdominal trauma and atherosclerotic disease.

The most common cause of visceral arteries thrombosis is thromboembolism from heart.

Renal artery thrombosis is associated with polycythemia vera, pregnancy, hypercoagulability, renal transplantation, intra - aortic balloon placement, renal angiography, oral contraceptives, systemic lupus erythematosus, renovascular hypertension, infective endocarditis, Ehlers - Danlos syndrome, renal surgery causes spontaneous visceral arteries thrombosis.

Arterial thromboembolisms has an incidence of about 10% in the visceral vessels, 20% in the cerebrovascular circulation and 70% in the peripheral circulation.

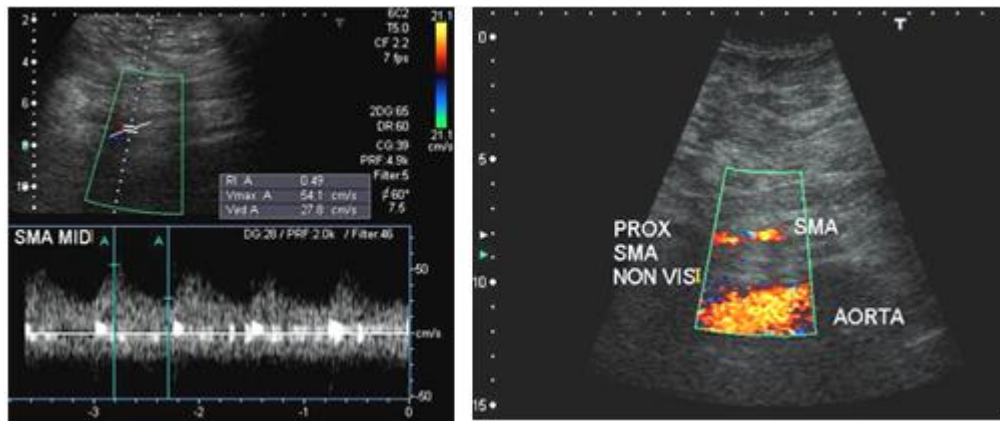
In this case the peripheral circulation was unaffected. The patient died from multi - organ dysfunction syndrome.

Visceral thrombosis preferentially seen in the superior mesenteric artery (SMA) due to its calibre and oblique origin from the abdominal aorta.

2. Finding and Procedure

Case: 40 year female patients presenting with complaint on severe pain in abdomen, vomiting, abdominal distension and loose motion since 3 days. She denied history of trauma. Review of rest of the systems was negative. She had no prior medical history, no prior hospitalizations, and no prior surgery. Specifically, he had no history of diabetes mellitus, hypertension, hyperlipidemia, heart disease, or atrial fibrillation.

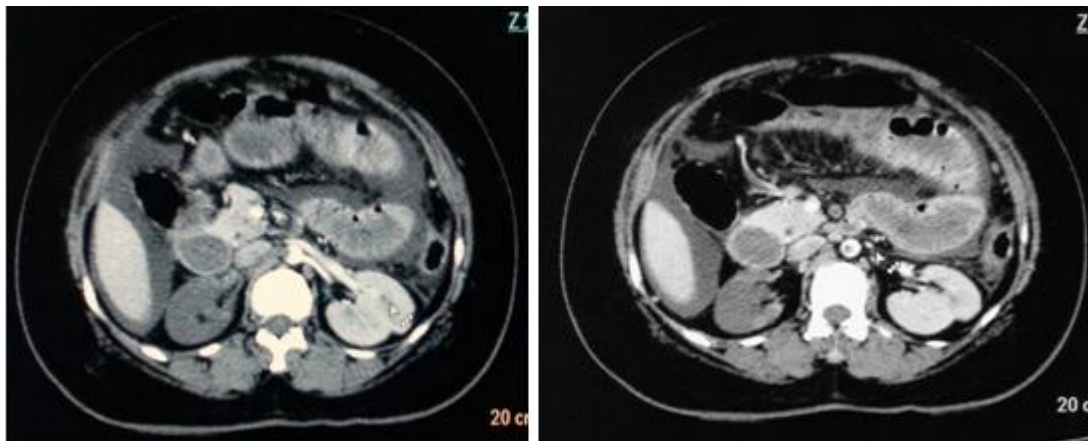
USG (A+P) and Abdominal Color Doppler study:



Moderate free fluid in abdomen and in pelvis, edematous thickened small bowel coils with absent peristalsis with hypoechoic right kidney. Color Doppler study revealed partial colour filling defect noted in abdominal aorta just above the level of renal artery, complete absence of colour

flow in right renal artery and proximal superior mesenteric artery. She was referred for contrast enhanced CT scan of abdomen and pelvis.

CECT Study:



Partial Thrombosis of aorta at the level of renal arteries with complete thrombosis of right renal artery causing almost complete right renal infarct.

Distal splenic artery thrombosis with large splenic infarct.

Complete thrombosis of proximal superior mesenteric artery with small bowel gangrene with peritonitis.

Caecum and ascending colon show wall thickening and show minimal wall enhancement secondary to ischemia. Moderate ascities.

3. Discussion

Visceral arteries thrombosis leading to acute mesenteric ischemia, splenic infarct and renal infarct is surgical emergency.

Spontaneous visceral arterial thromboembolisms is less common (10%) cause of acute abdomen.

Occlusion of the renal artery by thrombo-embolism is rare whilst, simultaneous thromboembolisation of renal artery, SMA and splenic artery has not been reported before.

The most common source of visceral arterial thromboembolisms is heart.

In this patient there is no underlying known disease process triggering the formation of thrombus in renal artery, SMA and splenic artery.

Complete infarct (involving entire kidney due to occlusion or interruption of the renal artery) is very rare, seen typically after trauma or interventions involving the aorta.

Clinical features:

- Severe acute abdominal pain, initially in right flank.
- Persistent vomiting.
- Loose motion.
- Fever
- Constipation and abdominal distension.
- Tenderness, guarding and rigidity

Imaging Findings:

- a) Computed Tomography Specific signs: -
 - Lack of bowel wall enhancement.
 - Intramural gas.
 - Portal venous gas.
 - Ischemia of other organ Kidney and spleen.
- b) Abdominal films:

- Multiple gas filled dilated small bowel loop.
- Pneumoperitoneum.
- c) Ultrasonography: -
 - Edematous gut wall thickening.
- d) Angiography: -
 - Although once the gold standard for diagnosis. MDCT angiography has much improved diagnostic accuracy.
 - Differential diagnosis: -
 - Splanchnic venous occlusion 1
 - Crohn's disease.

4. Conclusion

Spontaneous visceral arteries thrombosis with acute mesenteric ischemia and other solid organ infarct is rare cause of acute abdomen associate with high mortality rate.

It is mostly caused by thromboembolic phenomenon but should rule out other causes of visceral arterial thrombosis and acute abdomen.

MDCT and MDCT angiography play vital role in detection of thrombosis in visceral major arteries (SMA, Renal and Splenic artery) in acute abdominal emergency. Although Arteriography is the gold standard for diagnosis of visceral arterial thrombosis.

These phenomena may be associated with a variety of congenital prothrombotic disorders, vaculitis, PAN.

References

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