Mesenteric Ischemia

Mesenteric Ischemia consists of 4 entities:

1) **Mesenteric Arterial Emboli**: commonly secondary to cardiac embolic source. Sudden onset abdominal pain, often presents with blood diarrhea

2) **Mesenteric Arterial Thrombosis**: caused by atherosclerosis of splanchnic vasculature. “Abdominal angina”, commonly presents with post-prandial abdominal pain

3) **Non-occlusive Mesenteric Ischemia**: hypoperfusion to mesenteric vasculature due to low cardiac output or splanchnic vasoconstriction. May have blood in stool. Common in elderly, septic patients, patients on vasopressors

4) **Mesenteric Venous Thrombosis**: often secondary to coagulopathy. Non-specific abdominal pain, +/-diarrhea and anorexia

**Risk Factors:**
- Age > 50
- Vascular risk factors
- Atrial Fibrillation
- Coagulopathy
- Low flow state (eg: septic shock)

**Classic Triad**: sudden onset of poorly localized abdominal pain ‘out of proportion’ to exam + gastric emptying (vomiting or diarrhea) in a patient with cardiac disease. **But** only a third of patients with AMI present with nausea, vomiting or diarrhea. Up to 25% will have a positive fecal occult blood test, but this, too, is not a specific finding.

**Laboratory Testing in Mesenteric Ischemia (1, 2)**

- Lactate – can be normal early, sensitivity can be as low as 52% depending on stage of disease – do not rely on lactate to rule out mesenteric ischemia
- D-dimer – D-dimer has a 96% sensitivity in one study - Neg LR = 0.12 - higher sensitivity than lactate! poor specificity
- Amylase – can be elevated so don’t be fooled into assuming pancreatitis
- Troponin often elevated & can mislead you to assume AMI and delay diagnosis of mesenteric ischemia

**Pearls:**
1. use a cognitive forcing strategy to consider mesenteric ischemia in every pt >50y/o and/or Afib with abdo pain
2. ask about a history of post-prandial abdominal ‘angina’

**Mortality/Morbidity:**

High mortality (59-93%) associated with mesenteric ischemia. **Early diagnosis** and intervention associated with improved mortality and morbidity.
Imaging for Mesenteric Ischemia

**Plain film:** Consider plain films if patient too unstable for CT. May see: bowel dilatation, thumb printing, ileus, (often misinterpreted as mechanical bowel obstruction), pneumatosis in severe cases.

**CT:** Speak with radiology regarding protocol:
- Venogram – if suspicion of venous thrombosis
- Angiogram – if suspicion of arterial emboli
- Triple phase (plain, venous and arterial phase CTs) – increased sensitivity for mesenteric ischemia; but, increased radiation exposure

**Early CT Findings:** non-specific findings- bowel wall thickening, dilatation, mesenteric edema, ascites
*pitfall would be to assume alternate Dx like infectious colitis

**Late CT Findings:** pneumatosis, pneumoperitoneum, gas

Initial Management of Mesenteric Ischemia

1) Fluid resuscitation: can have massive 3rd space losses, +/- bleeding. Aggressive IV fluid resuscitation often required.
2) Antibiotics: consider broad spectrum antibiotics if patient presents with a septic picture
3) Anticoagulation (controversial): if embolic source, no urgent OR, and no bleeding, consider heparin
4) Early surgical consult
5) Pressors: try to avoid, but if required, choose pressors with least effect on splanchnic circulation (i.e. dobutamine/milrinone). Avoid epinephrine, phenylephrine because of vasoconstrictive effects.

Post-ERCP Abdominal Pain

- Pancreatitis: worsening abdominal pain, amylase 3x upper limit of normal, usually presents within 24h of ERCP
- Infection: can have an ascending cholangitis
- Perforation: often retroperitoneal
- Bleeding

Rise in amylase should washout within 3 days of ERCP, lipase may stay longer. Can be affected by CrCl.

References (click for link)


Imaging:

- Ultrasound: helps determine if gallstones are the cause and if ERCP could be indicated.
- CT: can be normal within the first 48h; not best test to pick up gallstones;

**Laboratory Parameters** (4,5):

Amylase: sensitivity (80%) -shorter t1/2 than lipase, therefore less reliable if presenting later in time course of disease.

Lipase: better sensitivity (90%) vs amylase for pancreatitis.

Absolute number of lipase or amylase does not correlate to severity of disease.

False elevation of amylase and lipase in renal failure.

Pancreatitis

**Presentation:** Epigastric pain, can be RUQ or LUQ with radiation to back, relieved by sitting up. Vomiting, +/- jaundice, abdo distension, ileus.

**Scoring Systems** (3):
- APACHE II & Ranson Score
- CT severity index based on degree of pancreatic necrosis seen on CT- may help prognosticate BISAP score (Bedside Index of Severity in Acute): 1 pt for: BUN >5, GCS=15, 2 or more SIRS criteria, age >60, pleural effusion. Score 0 = 0% mortality, > 5 = 22% mortality (moderate utility in predicting who may need ICU monitoring but does not help decide who can be discharged or if better than clinical gestalt)

**Causes:**
- Alcohol pancreatitis: diffuse, gradual pain, usually AST > ALT (2:1 ratio)
- Gallstone pancreatitis: often RUQ

**References**
