

Acute Mesenteric Ischemia

A 74-year-old male with a past medical history of hypertension and Type II Diabetes Mellitus presents to the ED with sudden onset periumbilical abdominal pain, nausea, and vomiting. He has also experienced one episode of diarrhea since the pain began. He has no history of abdominal surgeries and has never experienced similar pain before. He is a 1 pack per day smoker of over 40 years. On exam, patient is diaphoretic and appears to be in acute distress due to pain. Vitals show a temperature of 99°F, blood pressure 162/97 mmHg, heart rate 117 bpm, respiratory rate 21, and O2 saturation 98% on room air. Cardiac exam is unremarkable aside from tachycardia. His lungs are clear to auscultation bilaterally. On abdominal exam, patient has no abdominal tenderness to palpation. Bowel sounds are hypoactive. What is the next best step for evaluation of this patient's presentation?

- A. Immediate surgical intervention
- B. CT with IV contrast
- C. Abdominal ultrasound
- D. Small bowel follow-through
- E. Serial abdominal exams

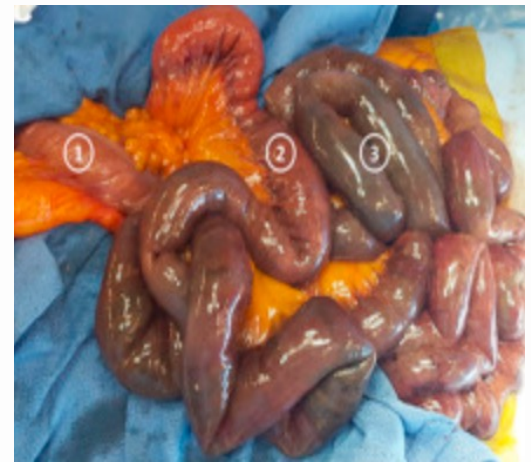


Figure 1. Bowel ischemia. Source: "Acute Mesenteric Ischemia: A Critical Role for the Radiologist"¹

Discussion

Answer: B (CT Angiography)

Acute Mesenteric Ischemia (AMI) has a mortality rate of 60-80% and thus should be on the radar for Emergency Medicine physicians.⁶

AMI occurs with sudden intestinal hypoperfusion, typically caused by arterial thrombus, arterial embolus, venous occlusion, or a non-occlusive process that causes low perfusion.

Since the etiology is most often occlusive in nature, risk factors for developing AMI are the same as those for atherosclerosis (obesity, hypertension, hyperlipidemia, smoking) in addition to valvular disease leading to embolism, such as atrial fibrillation.²

In the vast majority of cases of AMI, the superior mesenteric artery (SMA) is affected. Less commonly, the inferior mesenteric artery (IMA), celiac artery, or superior mesenteric vein can be affected.³ In order to determine which vessel is occluded, CT angiography must be performed immediately.

Alternative diagnostic options include MR angiography and mesenteric angiography, although these are less preferred, especially in the acute care setting.²

Aside from determining the location of the occlusion, contrast CT can be obtained to search for other characteristic radiologic findings associated with AMI, including bowel dilatation, decreased enhancement of the bowel wall, and gas within the bowel wall.⁴

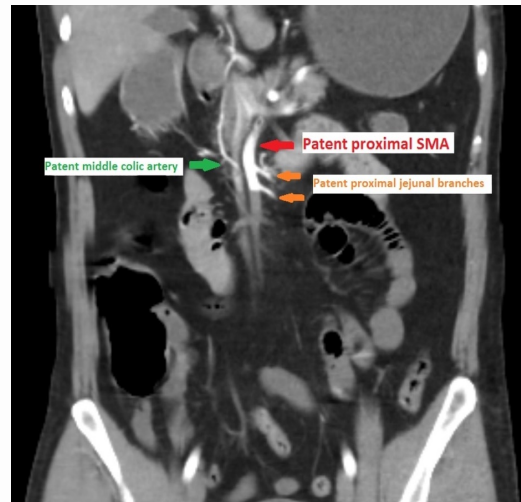


Figure 2. Coronal CT view showing arterial occlusive mesenteric ischemia. Source: Radiopaedia.

A thorough history and physical must be performed. The history for a patient with AMI will often include sudden onset, severe, generalized or periumbilical abdominal pain. Patients will often have associated nausea and vomiting, and, as AMI progresses, patients can also experience hematochezia and diarrhea. Physical exam will generally show a diffusely tender abdomen that is not consistent with their reported pain level, and often without guarding, rebound, or rigidity.⁵

Discussion continued...

Laboratory testing in early AMI may show non-specific leukocytosis. As the ischemia progresses, elevated levels of lactate, amylase, phosphate and potassium can also be discovered.² Lactate may be negative in up to 25% of patients, however serial lactate levels may be helpful in suspected cases.

Treatment

Once the diagnosis of AMI has been confirmed, immediate intervention is warranted to halt the progression of bowel ischemia. It is important to note that the management will vary depending on the etiology of the ischemia (arterial, venous, nonocclusive).

Initial treatment includes hemodynamic stabilization which includes IV fluid resuscitation, analgesia, and broad-spectrum antibiotics for enteric coverage. Multispecialty evaluation usually involves general surgery, vascular surgery, and interventional radiology. Bowel infarction or necrosis requires emergent surgical evaluation and intervention.³ In cases of mesenteric venous thrombosis, if no contraindications, patients are started on anticoagulation therapy (heparin), and are evaluated for possible embolectomy or thrombolysis with revascularization.

Take Home Points

- **Acute Mesenteric Ischemia is a medical emergency that warrants prompt evaluation and intervention to avoid further progression of bowel ischemia**
- CT angiography is the preferred imaging method for diagnosing Acute Mesenteric Ischemia
- Look out for abdominal pain out of proportion to exam findings when taking the history of a patient with risk factors

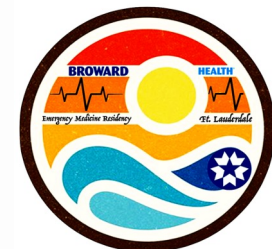


About the Author

Alyssa Cartwright is a fourth-year medical student at Florida International University Herbert Wertheim College of Medicine who is pursuing her decade-long dream of becoming an Emergency Medicine physician.

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