Clinical Case Discussion

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CUSOM

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Our patient . . .

A 78-year-old woman presents to the emergency department with a one-day history of abdominal pain and rectal bleeding. She was in her usual state of health until 2 am today when she awoke with severe abdominal pain. She arose to go to the bathroom and had one episode of dark red blood per rectum. She was nauseated but did not vomit. She denied fever but felt short of breath.

She tried to go back to sleep but the abdominal pain kept her awake. She got out of bed to use the bathroom at about 7 am. She had excruciating left lower abdominal pain, worse when she tried to walk. She sat on the toilet and had bowel movement mixed with bright red blood.

She felt lightheadedness and her husband called EMS . . .

PMH:

- HTN x 30 years
- CVA age 65
- CABG age 61
- Peripheral vascular disease s/p stent L leg age 68

PSH:

- s/p T+A age 23
- R breast biopsy age 54, benign
- No other hospitalizations.
- No serious injuries
- Flu vaccine this year; last COVID vaccine 10/23

Medications:

- Clopidogrel 75 mg po daily
- Amlodipine 10 mg po daily
- Atorvastatin 80 mg po qhs
- Metoprolol XR 50 mg po daily
- Lisinopril 10 mg po daily

NKDA

Per EMS, the patient was pale and diaphoretic. She describes diffuse, sharp abdominal pain worse with any movement.
Vital signs: bp: 86/67 p 120 RR 30 temp 99.1 O2 sat 93% on RA

HEENT: PERRL; EOMI
OP: moist, no exudate

Neck: Full ROM; trachea midline; no adenopathy; no thyromegaly

Car: r/r/r without murmur

Lungs: few bibasilar rales

Abd: nondistended; hypoactive bowel sounds; marked LLQ tenderness with voluntary guarding and rebound. No organomegaly.

Extr: no edema; dp pulses trace B/L

Rectal: Normal tone; no masses; Dark red blood on the glove.

OMM:
thoracic inlet restricted on the L
Inhalation dysfunction L 7^{th} 8^{th} 9^{th} ribs

wbc	11,000
hgb	12.0
hct	36%
platelets	110,000

Na	135
K	4.8
CL	102
CO2	23
BUN	39
Cr	1.9
Glc	92

AST	40 units/L
ALT	54 units/L
Alkaline phosphatase	108 unit/L

Lipase	123 (normal)

Lactate	0.7 mmol/L (normal)

An abdominal and pelvic CT with oral and IV contrast is performed . . .

radiopaedia.org

Acute Mesenteric Ischemia

Why does bowel ischemia happen?

Etiology	**%**
Mesenteric arterial embolism	50
Mesenteric arterial thrombosis	15 to 25
Mesenteric venous thrombosis	5
Non-occlusive intestinal disease which becomes ischemic due to intestinal hypoperfusion	20 to 30

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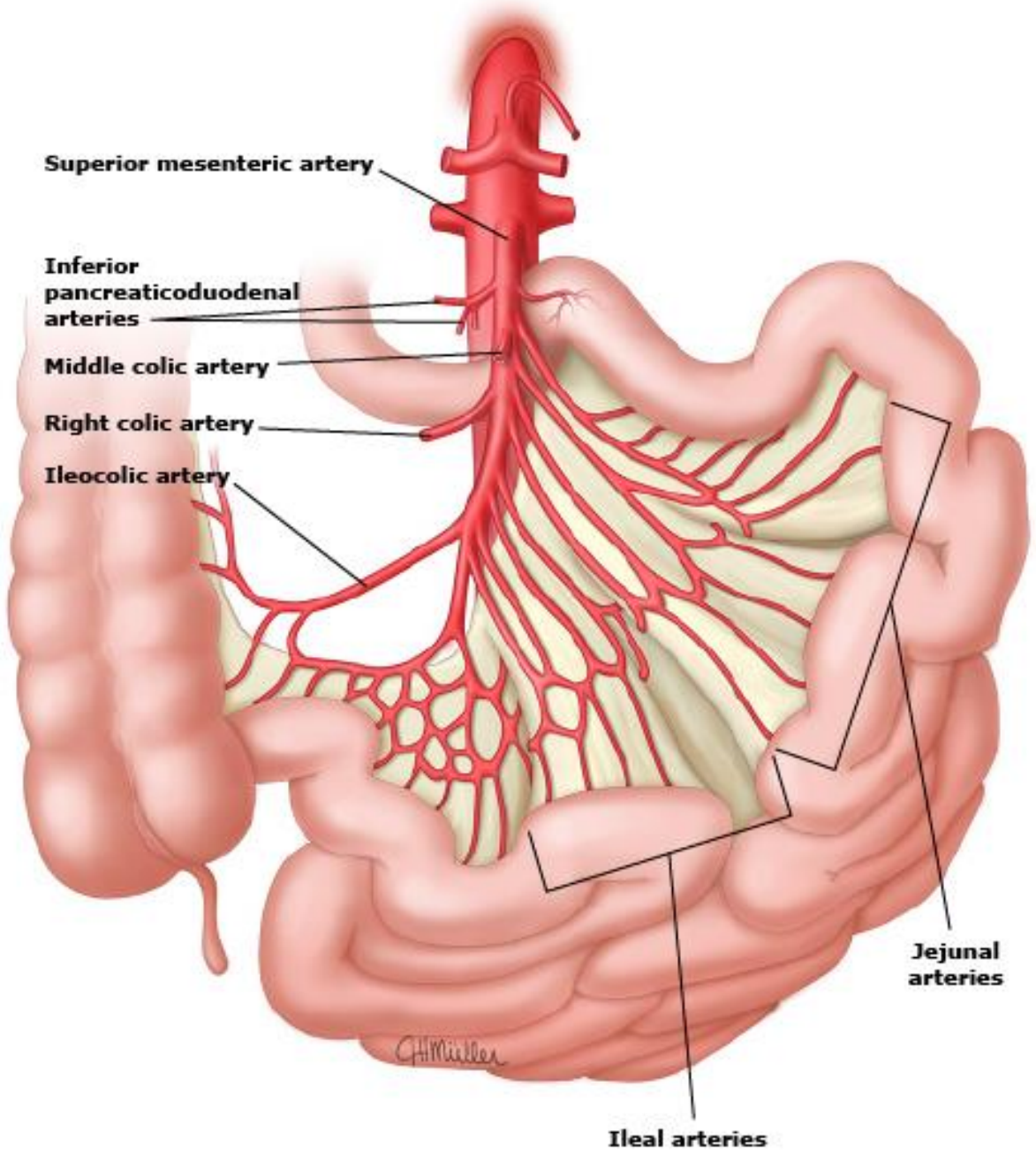
Arterial supply to the small intestine



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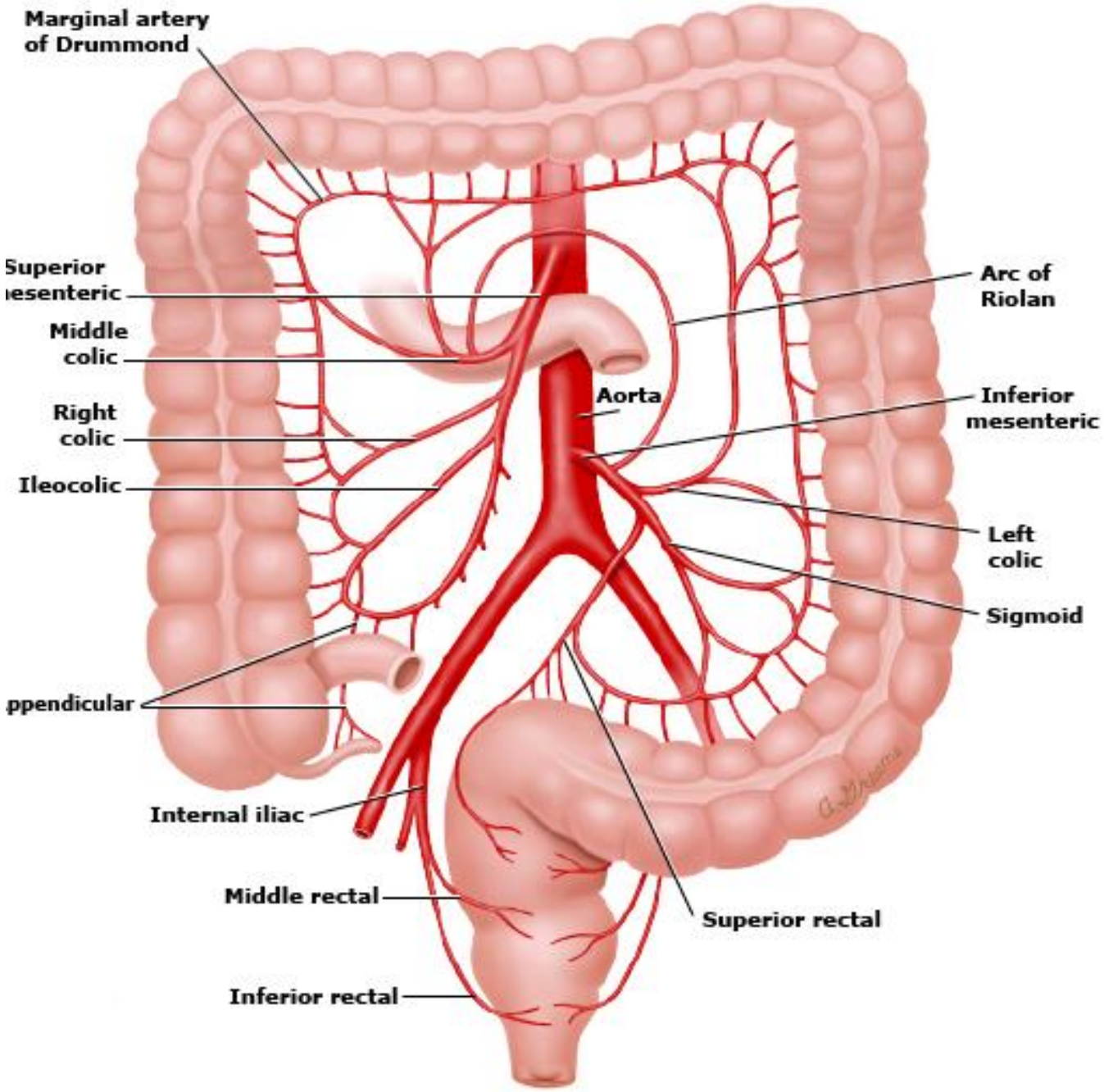
Arterial supply to the large intestine and colon



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Diagnosis of Acute Mesenteric Ischemia

Diagnosis of Acute Mesenteric Ischemia—Risk Factors

- Coronary artery disease
- Atrial fibrillation
- Cerebrovascular disease
- Peripheral vascular disease
- Aortic surgery
- Hemodialysis
- Vasoconstrictive medications/illicit drugs
- Hereditary or acquired thrombophilia

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Diagnosis of Acute Mesenteric Ischemia—Risk Factors

- Inflammation or infection of the intestine
- Hypovolemia
- Segmental ischemia from vascular compression:
  - Hernias
  - Volvulus
  - overdistention of bowel (ex: in bowel obstruction)
  - Tumors
  - Retroperitoneal fibrosis

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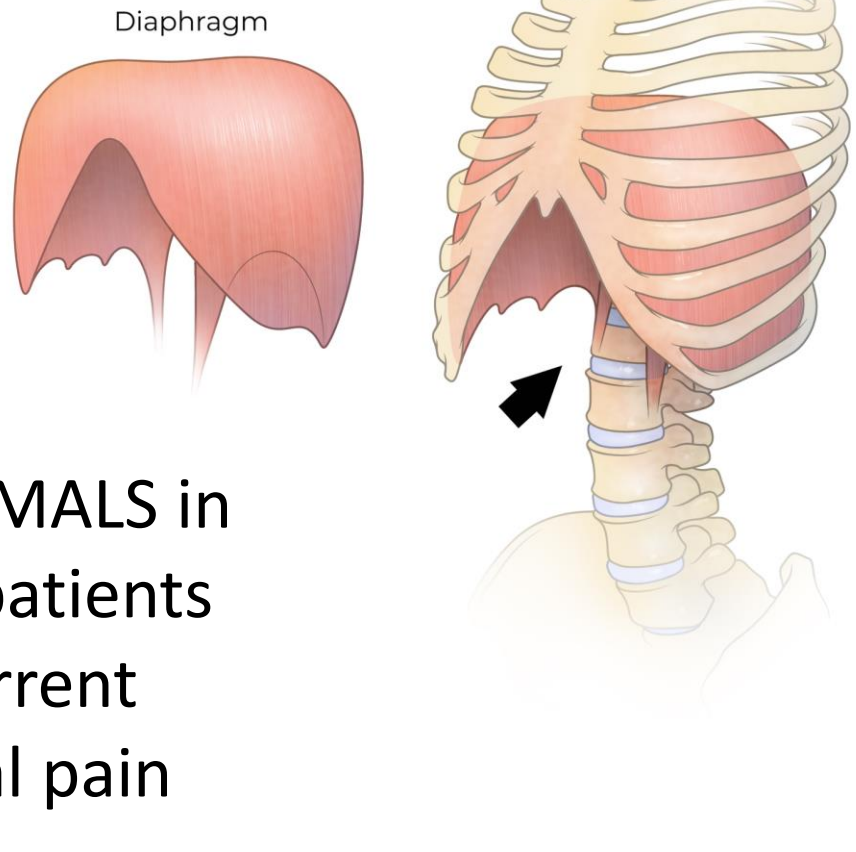
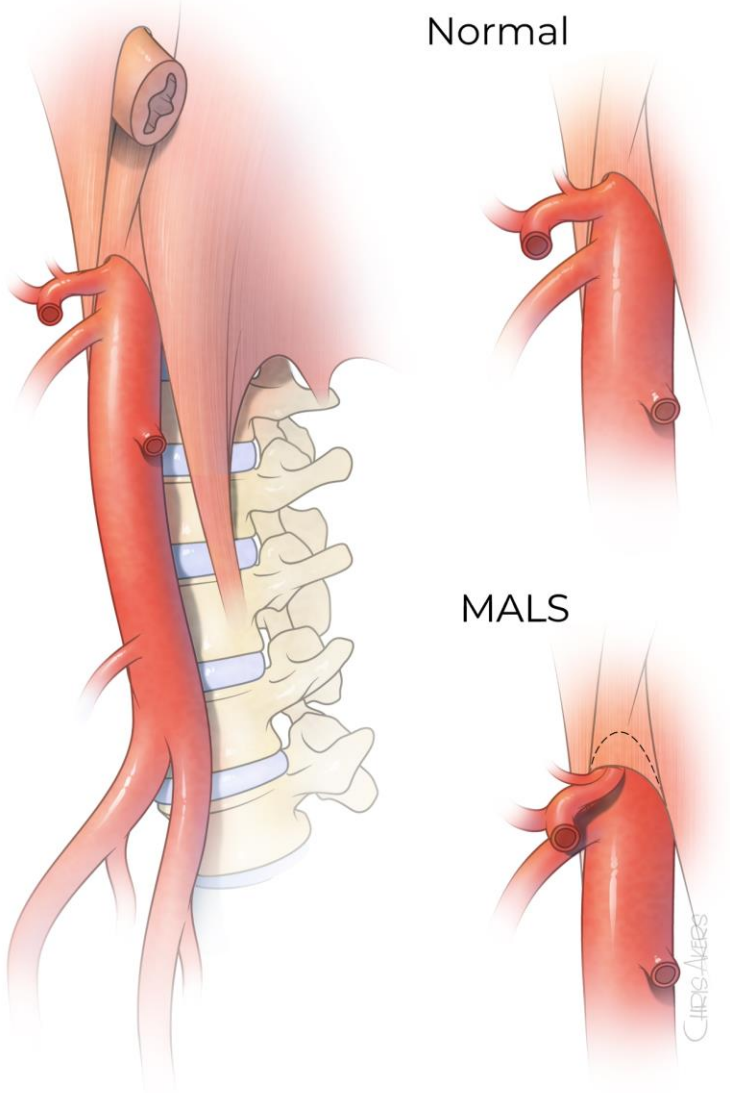
Median Arcuate Ligament Syndrome (MALS)





Consider MALS in younger patients with recurrent abdominal pain

https://med.uth.edu/cvs/patient-care/conditionsandprocedures/median-arcuate-ligament-syndrome-mals

Diagnosis of Acute Mesenteric Ischemia: Abdominal Pain

- Sudden onset, severe: embolic arterial occlusion of proximal superior mesenteric artery
- Worsening postprandial pain: thrombotic arterial occlusion
- Insidious onset which waxes and wanes: mesenteric venous thrombosis
- Rapid onset of mild abdominal pain on the L abdomen with rectal bleeding or bloody diarrhea within 24 hours

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Diagnosis of Acute Mesenteric Ischemia: Abdominal Examination: *Don't get fooled*

- "Abdominal pain out of proportion to the physical examination"
- Early signs: *normal* exam with no peritoneal signs
- Progressive bowel ischemia to transmural infarction
  - Abdominal distention
  - Absent bowel sounds
  - Peritoneal signs
  - Shock

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Diagnosis of Acute Mesenteric Ischemia: Laboratory Studies: *Don't get fooled*

- There are no specific lab tests for mesenteric ischemia
- Lab abnormalities happen, including an elevated lactate level, *after bowel necrosis has already happened*
- At that point, the patient is unlikely to survive
- A normal lactate DOES NOT rule out mesenteric ischemia

Diagnosis of Acute Mesenteric Ischemia: Abdominal Imaging: *Don't get fooled*

- Plain abdominal films *can be completely normal* in early ischemia
- With late ischemia, plain films may reveal an ileus with bowel distention and thickening
- Normal abdominal/pelvic CT (ie. without mesenteric angiography) can be normal or nonspecific in early ischemia
- In hemodynamically stable patients, abdominal/pelvic CT with CT angiography without oral contrast is study of choice

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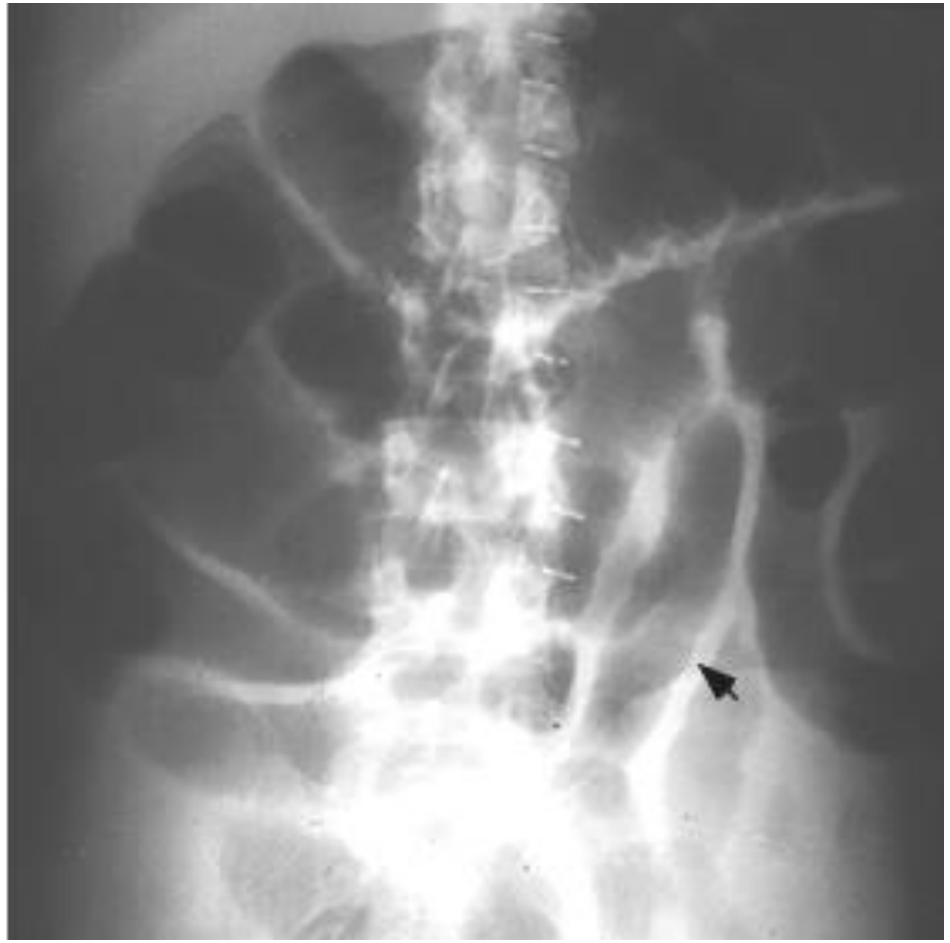
Early ischemia: Normal



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(Too) late ischemia: distended and thickened small bowel

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Early ischemia: Normal

(Too) late ischemia:
thickened small bowel

Sigmoidoscopy or colonoscopy can also confirm bowel ischemia . . .

Diagnosis of Acute Mesenteric Ischemia: Abdominal Imaging: *Don't get fooled*

- In hemodynamically unstable patients, DO NOT WAIT. TAKE PATIENTS DIRECTLY TO THE OR

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Gangrenous small intestine

Researchgate.net

Management of Acute Mesenteric Ischemia

- NPO
- IVF resuscitation: 30 ml/kg bolus of isotonic fluid (ie. NS or LR)
- Empiric antibiotics
- Pain control
- Early surgery consultation
- Serial exams
- Percutaneous arterial thrombectomy or open surgical embolectomy
- Bowel resection

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Empiric antibiotics for suspected bowel ischemia

Organisms to Cover	Streptococcal sp. Non-resistant *E. coli* •*K. pneumoniae* •*P. aeruginosa* •*Proteus* species Anaerobes
Sample antibiotic Regimen (all IV, assumes normal renal and hepatic function)	Piperacillin/Tazobactam 3.375 grams q 6 hrs OR Ciprofloxacin 400 mg q 12hrs PLUS Metronidazole 500 mg q 8 hrs

Prognosis of acute mesenteric ischemia is poor with mortality over 60%; about 50% surgical mortality

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Approach to Acute Abdominal Pain

Evaluation of the acute abdomen: summary and conclusions

- Obtain a focused history:
  - location
  - radiation
  - effect of food
  - effect of bowel movements
  - fever
  - nausea vomiting
  - evidence for GI bleeding
  - genitourinary symptoms
  - alcohol, NSAIDS use
  - pregnancy?

Evaluation of the acute abdomen: summary and conclusions

- Perform a focused exam
  - vitals
  - patient manner
  - mental status
  - chest auscultation
  - bowel sounds
  - two handed palpation of all regions
  - gentle percussion of all regions
  - Liver, spleen and kidney exam
  - Genitourinary/rectal exam

Diffuse pain

- Gastroenteritis
- Bowel ischemia
- DKA
- Bowel obstruction
- Peritonitis
- Irritable bowel syndrome

“Rapid Response Team!”: Intraabdominal disasters

You're probably dealing with an intraabdominal disaster in a patient with abdominal pain and. . .

- Hypotension/shock
- Acute delirium
- Tachypnea
- Tachycardia
- Diaphoresis
- Fever with rigors
- Hematemesis, new onset melena or hematochezia
- A rigid abdomen with no bowel sounds

Initial management of acute abdominal pain

- Decide if RRT or Code Blue is warranted
- ABCs
- Two peripheral IVs
- Consider bedside cardiac monitor and/or EKG
- O2 sat
- Blood glucose
- Consider ABG
- Medication for pain, nausea if clinically appropriate

Osteopathic Considerations for Acute Mesenteric Ischemia

OMM findings:
thoracic inlet restricted on the L
Inhalation dysfunction L 7^{th} 8^{th} 9^{th} ribs

- Lymphatic techniques
- Autonomic techniques
- Biomechanical techniques

Questions?
Thank you!