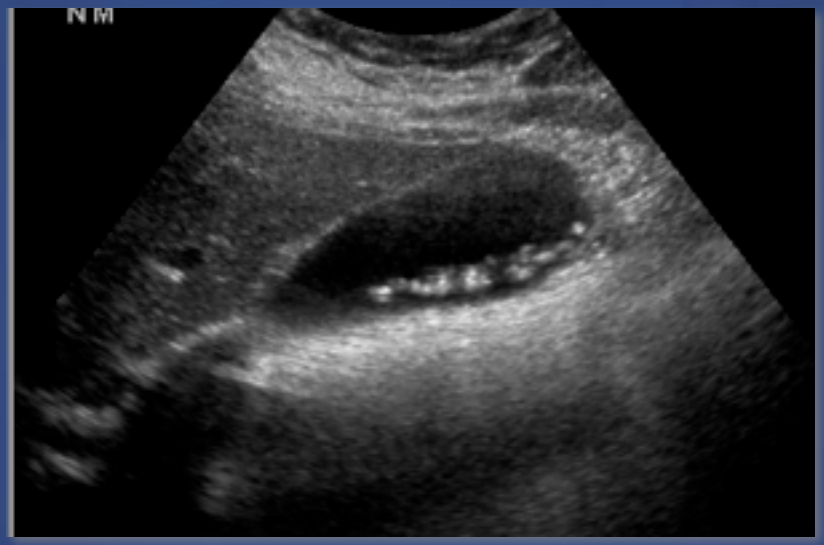
# Abdominal Emergencies



SAEM Undergraduate Medical Education Committee
Emergency Medicine Clerkship Lecture Series
Primary Author: John Sarko, MD
Edited: Darren Manthey, MD
4/2012

# Learning Objectives

- Review the presentation, work up and management of abdominal pain and other abdominal emergencies

# Case #1

- HPI: 65 year old man c/o sudden severe left flank and epigastric pain
- PMHx: None
- No medications
- NKDA
- SHx: Smokes 1ppd x 30 years

# Case #1

Physical exam:

- VS: BP 82/40  P 110  RR 16  T 37.2°F
- HEENT: Normal
- Heart: Regular rhythm, tachycardic
- Lungs: CTA
- Abdomen: Soft, tender in epigastrium, ND, +BS
- Guaiac negative brown stool

# Case #1

Physical exam:

- Extremities: Diminished DP pulses, capillary refill time 3 sec
- Skin: Clammy, cool
- Neurologic: A+O x 3, anxious, moves all extremities, GCS 15

# Differential Diagnosis

**Always consider life-threatening conditions first!**

- Abdominal aortic aneurysm
- Perforated peptic ulcer
- Acute pancreatitis
- Incarcerated hernia
- Nephrolithiasis
- Gastritis

# Key Point

**Abdominal pain associated with hypotension =**

***"Vascular Emergency"***

# Case #1

- Describe your initial management?
  - What needs to be done with this patient in the first 5 minutes?

**ED safety net**

**IV, O2, monitor**

**2 large bore IV lines** (14 or 16 ga)

**Resuscitation with NS**

**Supplemental Oxygen**

**Cardiac monitoring**

# Case #1

- Based on your clinical suspicion, what laboratory studies are indicated?

**CBC, BMP, coags**
**Type and Cross x 6u**

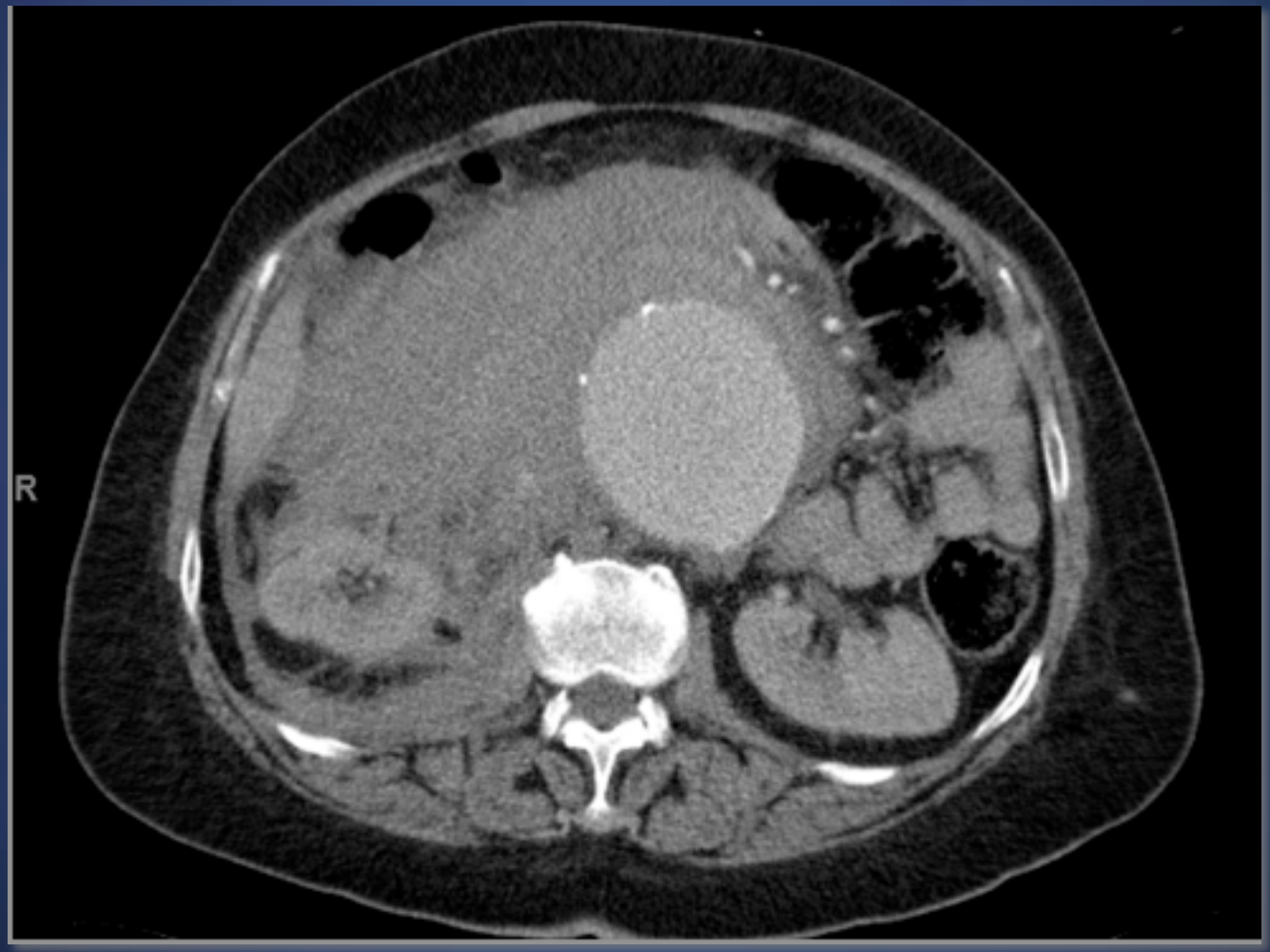
# Case #1

- Based on your clinical suspicion, what radiographic study should be obtained?

**Abdominal US**
**(Performed at the bedside)**

**Abdominal CT**
**(Stable patient, US unavailable)**

# CT Scan



# Abdominal Aortic Aneurysm

- True aneurysm: Dilation of all 3 layers of the arterial wall
- Normal abdominal aorta diameter is ≤ 2 cm
  - 3 cm or greater defines an aneurysm
- Most AAA's involve the infrarenal aorta

# Abdominal Aortic Aneurysm

## Epidemiology and Risk Factors

- Occurs in 2-5% of patients over 50
- Mean age at diagnosis is 65-70 years
- Major risk factors
  - Atherosclerosis
  - Peripheral vascular disease (PVD)
  - First degree relative with AAA
    - 10x higher risk

# Abdominal Aortic Aneurysm

**Clinical presentation**

- Unruptured:
  - gradual onset of vague, dull, constant abdominal pain
  - Some are diagnosed incidentally
- Do not rely on palpating an abdominal mass or a pulsatile aorta

# Abdominal Aortic Aneurysm

**Clinical presentation**

- No risk of rupturing an aneurysm by palpating the abdomen!
- Abdominal bruit is present in only 10-30% of cases
- Peripheral pulses are often maintained in the absence of PVD

# Abdominal Aortic Aneurysm

**Clinical presentation**

- Ruptured AAA:
  - Classis triad:
    - abdominal pain
    - hypotension
    - syncope
  - May have back or flank pain instead of abdominal pain

# Abdominal Aortic Aneurysm

## Clinical presentation

- Rupture:
  - more likely if AAA > 5.5 cm
  - often leaks into the retroperitoneum
    - severe back or flank pain
  - If the rupture is intraperitoneal, death is imminent

# Abdominal Aortic Aneurysm

**Diagnostic adjuncts**

- Plain films (supine and lateral abdomen)
  - Usually non-specific
  - May identify calcifications of the abdominal wall
  - Retroperitoneal hemorrhage may obscure the psoas muscle shadow or kidney

# CT vs Ultrasound

## CT Scan

- Patient leaves the ED (stable patient)
- Takes time
- Provides more anatomic information
- Requires IV dye

## Ultrasound

- Patient stays in the ED (unstable)
- Quicker
- Often can answer the ? (AAA yes or no)
- Can’t visualize retroperitoneum

# Abdominal Aortic Aneurysm

**Outcome**

- Without surgery, mortality is 100% when rupture occurs
- Surgical mortality is 50% in ruptured AAA
- Mortality is 5% when the repair is elective

# Abdominal Aortic Aneurysm

**Management**

- No one with a ruptured or suspected ruptured AAA is stable!
- Call the vascular surgeon

# Abdominal Aortic Aneurysm

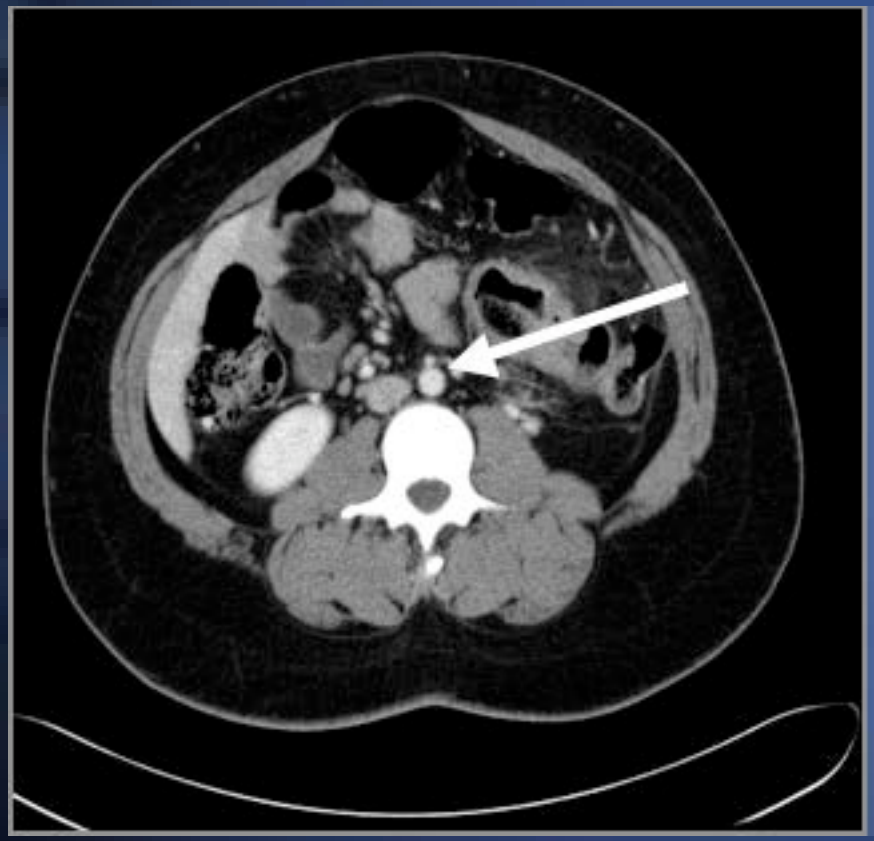
**Treatment**

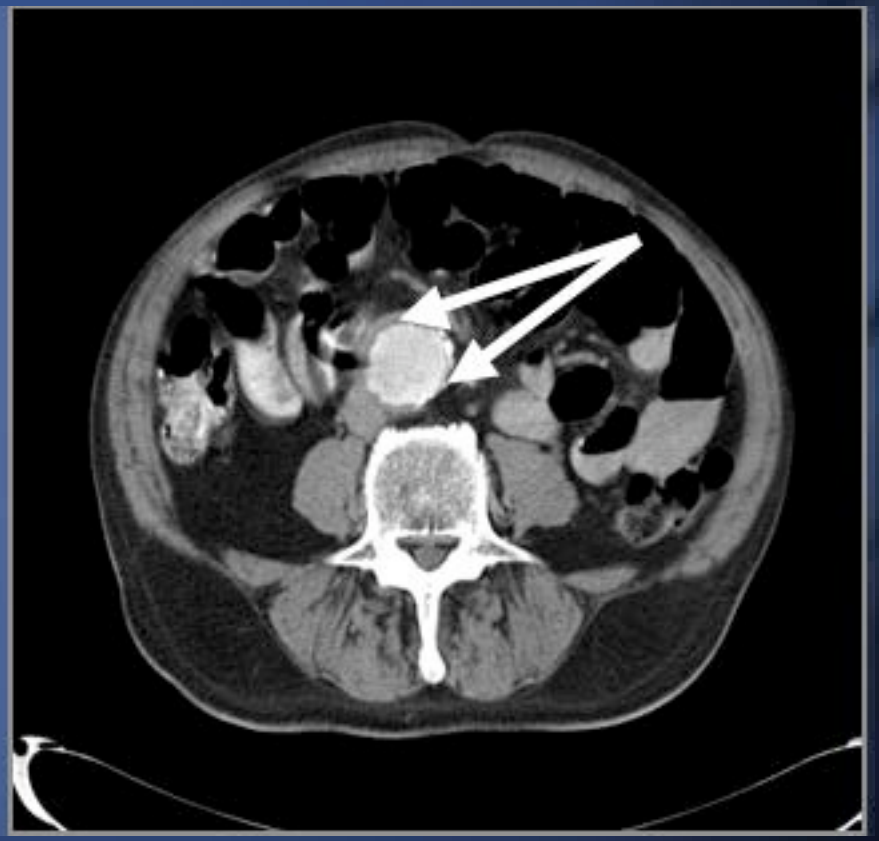
- Traditional repair: Laparotomy
  - Open the aneurysm, place the graft, close the aneurysm over the graft
- Endovascular repair: Via femoral artery
  - Stent is placed inside aneurysm

# Abdominal Aorta

Normal

AAA – 4 cm





# Case #2

- HPI: A 75 year old female c/o sudden onset of diffuse abdominal pain that woke her from sleep
- She is in obvious pain, tearful
- PMH: atrial fibrillation
- Meds: coumadin (ran out a week ago)
- NKDA

# Case #2

Physical exam

- VS: BP 146/90  HR 118  RR 24
  T 37.0°F  $SaO_2$ 98%
- Heart: irregularly irregular, tachycardic
- Lungs: CTA
- Abdomen: soft, NT, ND, no masses

# Case #2

Physical exam

- Guaiac positive, brown stool
- Extremities: no edema, moves all extremities, dorsalis pedis pulses intact

# Case #2

**Diagnostic Adjuncts**

- Abdominal plain film: Non-specific bowel gas pattern, no free air
- CT Abdomen/pelvis: Ischemia of small bowel, filling defect in proximal superior mesenteric artery

# Acute Mesenteric Ischemia

- Life threatening vascular emergency
- Rare cause of abdominal pain, but overall mortality is 60-80%
- Time is of the essence

# Acute Mesenteric Ischemia

- Intestinal blood supply is from:
  - Celiac plexus
  - Superior mesenteric artery (SMA)
  - Inferior mesenteric artery (IMA)
  - Internal iliac artery
- Most cases are due to occlusion of SMA or IMA

# Acute Mesenteric Ischemia

- This patient's history of atrial fibrillation makes her most likely to have mesenteric ischemia due to arterial embolism
- The embolic event leads to acute arterial occlusion

# Acute Mesenteric Ischemia

## Etiology

- Embolic: 40-50%.
- Thrombotic: 25-30%
  - Can be an arterial or venous occlusion
  - Arterial: Most often at origin of SMA
  - Venous: Starts in venous arcades and progresses to SMV

# Acute Mesenteric Ischemia

## Etiology

- Non-occlusive: 20%
  - Due to low flow state and mesenteric vasoconstriction
  - “intestinal angina”

# Acute Mesenteric Ischemia

**Risk factors**

- History of embolic events
- Dysrhythmias
- Valve disease
- Endocarditis
- Ventricular aneurysms
- Myocardial infarction
- Cardiomyopathy

# Acute Mesenteric Ischemia

**Risk factors**

- Recent angiography
- Atherosclerosis
- Hypovolemia
- Vasopressors
- Hypotension
- Decreased cardiac output
- Digoxin

# Acute Mesenteric Ischemia

**Presentation**

- Severe abdominal pain
- Pain is out of proportion to findings on physical exam
- Peritoneal findings occur late
- Mimics many other causes of abdominal pain, therefore, a very difficult diagnosis to make

# Acute Mesenteric Ischemia

**Presentation**

- Pain from embolic or thrombotic (arterial) etiology
  - Acute and severe, usually periumbilical early on
- Pain from occlusive disease
  - Patients may report "*intestinal angina,*" pain that occurs after eating
  - May cause them to eat frequent, small meals, and lose weight

# Acute Mesenteric Ischemia

**Presentation**

- Pain from mesenteric venous thrombosis
  - Diffuse, nonspecific, may be in the lower abdomen
  - Patients typically present 1-2 weeks after the onset of pain
  - Anorexia and diarrhea

# Acute Mesenteric Ischemia

**Presentation**

- Non-occlusive ischemia
  - Usually elderly, debilitated, critically ill patients

# Acute Mesenteric Ischemia

**Diagnosis**

- Must be suspected
- Consider in elderly patient with abdominal pain
- Specifically, the patient with pain out of proportion to their physical examination
- Lab values are nonspecific
- Elevated lactic acid is suggestive
  - Early on may lack sensitivity
  - Lactic acidosis is a late finding

# Acute Mesenteric Ischemia

**Diagnosis**

- KUB rarely shows thumb printing (thickened bowel wall)
- Duplex ultrasound operator dependent
- CT may occasionally show ischemic bowel or filling defect in artery
  - Special protocols may increase its sensitivity

# Acute Mesenteric Ischemia

**Diagnosis**

- Angiography is the gold standard
  - Localizes the clot, and diagnoses nonocclusive ischemia
  - One of the few times we need to obtain urgent angiography in the ED
- MRI is limited to diagnosing chronic ischemia

# Acute Mesenteric Ischemia

**Treatment of occlusive ischemia**

- Heparin
- Glucagon: 1ug/kg/min, titrated to 10ug/kg/min (if angiography not done)
- Intraarterial papaverine
- Laparotomy usually necessary to remove embolus, bypass the occlusion, remove dead bowel

# Acute Mesenteric Ischemia

**Treatment of non-occlusive ischemia**

- Fewer good options because this is usually due to underlying conditions
- Remove offending stimulus
- Correct underlying conditions
- Vasodilation, anticoagulants, mesenteric regional blockade, and intraarterial papaverine

# Acute Mesenteric Ischemia

**Treatment of mesenteric venous thrombosis**

- Heparin
- IV thrombolytics and thrombectomy occasionally used

# Case #3

- A 56 year old male presents with 3 days of epigastric abdominal pain and vomiting dark blood approximately 1 hour PTA
- PMH: Arthritis
- Medications: Naproxen
- NKDA

# Case #3

- Social: Smokes 1 ppd x 20 years, occasional alcohol use

Physical exam:

- VS: BP 100/55  HR 122  R 18  T 37.5°F
- General: Middle aged male appears uncomfortable
- Heart: Regular, tachycardic

# Case #3

- Lungs: CTA
- Abdomen: soft, epigastric tenderness, no rebound or guarding, guaiac negative stool
- Extremities: Cool and clammy

# Case #3

**Initial management**

- IV, O2, monitor
  - 2 large bore IV's
    - Crystalloid resuscitation with normal saline solution
- Labs including type and cross x 4-6 units

# GI Bleed

- Upper GI bleed is defined as bleeding proximal to the ligament of Treitz
  - Incidence is 50 –150 per 100,000 adults annually
- Lower GI bleed is defined as bleeding distal to the ligament of Treitz

# GI Bleed

**UGIB Etiology**

- Peptic ulcer disease (PUD) *#1*
- Gastric erosions
- Variceal bleeding
- Mallory-Weiss tear
- Esophagitis
- Duodenitis
- Rare: Aortoenteric fistula, renal disease

# UGIB

**Terminology**

- Hematemesis: Vomiting blood
- Melena: Black, tarry stool, often foul smelling
  - *Most common presentation of PUD
- Hematochezia: Maroon or dark red stool
  - Up to 10% of cases are caused by UGIB

# UGIB: Essentials

- Vital signs are vital!
  - Remember that a stable BP does not insure that the patient is stable
  - Hypotension can be a late finding (class 3 shock)
- Abdominal tenderness may or may not be present
- Heme testing stool can provide valuable information, but may be negative early on

# NG Lavage

- Which of the following conditions represent a relative contraindication to placing an NG tube?
  - Suspected or known esophageal varices
  - Active peptic ulcer disease
  - Mallory-Weiss tears
  - Gastric bypass surgery

# NG Lavage

- Which of the following conditions represent a relative contraindication to placing an NG tube?
  - Traditionally, NG tube placement should be avoided in patients with prior gastric bypass surgery
  - It is recommended to discuss the case with the surgeon prior to placement

# GI Bleed

- Laboratory studies
- CBC
- Coagulation studies
- Type and screen or cross
- Electrolytes and renal function
  - Elevated BUN can be due to an UGIB

# Subspecialty Consultation

Subspecialty consultation can be institution dependant

- GI consultants
  - Usually assist in the management of UGIB
  - Emergent endoscopy may need to be performed in the ED or ICU
- Surgical consultants
  - may assist in the management of LGIB

# Disposition

- Traditionally, all patients with upper and lower GIB (known or highly suspected) are admitted
- Exceptions
  - Hemorrhoids or fissures
  - Stable patients with a negative work up
    - Normal hemoglobin, (-) NG lavage, no active rectal bleeding

# Disposition

- ICU admission
  - Hemodynamically unstable, active bleeding, severe anemia, coagulopathy, need for urgent endoscopy or blood transfusion
- Stepdown or floor bed
  - Hematemesis that quickly clears in stable patient, stable vital signs

# UGIB: Treatment

- Octreotide to reduce splanchnic blood flow
- Proton pump inhibitors
  - Decrease acid secretion which contributes to ulcer formation

# UGIB: Treatment

- Endoscopy: Mainstay of treatment
  - Allows identification of bleeding site
  - Emergent for suspected variceal bleeding, rebleeding, or intractable hemorrhage
  - Can be performed in 12-24 hours if bleeding stops
  - Has not reduced mortality

# UGIB: Risk Stratification

Rebleeding and mortality increase with:

- Hemoglobin of < 11 g/dl
- Shock or hypotension on presentation
- Tachycardia of > 110-120 per minute
- Age > 60
- Coagulopathy
- Co-morbidities such as cancer

# LGIB

- Usually presents with hematochezia
- Melena can be seen from right side colonic bleeds
- Causes include: diverticulosis (most common), angiodysplasia, cancer, rectal disease, ischemic colitis, and IBD

# LGIB

- Resuscitation first!
- Diagnostic maneuvers
  - Anoscopy – localizes lesion to rectum
  - Colonoscopy – procedure of choice (difficult to perform without bowel prep or if active bleeding)
  - Nuclear red blood cell scan (rarely performed in the ED setting)
  - Angiography (may provide information to help localize the source of the acute LGIB)

# LGIB

Treatment

- Embolization
- Intraarterial vasopressin
- Surgery

# Abdominal Pain

Summary

- One of the most common complaints prompting a visit to the ED
- Definitive diagnosis can be difficult
- The need for hospital admission increases dramatically with advancing age (> 65 years)

# Abdominal Pain

Summary

- Obtaining an accurate history is paramount to developing a sound differential
  - Remember some patients present with atypical features
- Beware of prematurely labeling a patient with a diagnosis of "gastroenteritis"