Abdominal Pain and Acute Abdomen Emergent and Urgent Care: A Case and Evidence-based Tour of the Scenery Around the Neighborhood

Thomas Kintanar, MD, FAAFP

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Learning Objectives

1. Treat patients presenting with abdominal pain in the urgent care or emergency care setting judiciously with appropriate analgesics.
2. Narrow the differential diagnosis of acute abdominal pain based on the location of the pain and the age and sex of the patient.
3. Order appropriate diagnostic and imaging studies based on the location of the pain and the presentation of the patient.
4. Identify red flag symptoms in patients with acute abdominal pain that indicate emergent or urgent conditions that require surgical consult.

Audience Engagement System

Step 1
Step 2
Step 3
Acute Abdominal Pain

- Acute, severe abdominal pain is almost always a symptom of intra-abdominal disease
- Textbook descriptions of abdominal pain have limitations because people react to pain differently
- Approximately 1.5% of office visits and 5% of emergency department visits are for abdominal pain
- Ten percent of patients presenting to the emergency department for abdominal pain have severe or life-threatening cause for their abdominal pain and may require surgery

Pathophysiology

- Visceral pain - from the abdominal viscera, innervated by autonomic nerve fibers, respond to the sensations of distention and muscular contraction and to
- Somatic pain
- Referred pain
- Peritonitis

Etiology of Acute Abdominal Pain

<table>
<thead>
<tr>
<th>Etiology</th>
<th>Acute pancreatitis</th>
<th>Appendix</th>
<th>Acute mesenteric ischemia</th>
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<tr>
<td>Acute appendicitis</td>
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<td>Cholecystitis</td>
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<td>Mesenteric venous thrombosis</td>
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<td>Appendiceal abscess</td>
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<td>Acute mesenteritis</td>
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<tr>
<td>Acute abdominal pain</td>
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History in Patients with Acute Abdominal Pain

- A thorough history usually suggests the diagnosis
- Where
- Previous encounters
- Character of onset
- Severity
- Radiation
- Exacerbation/Relief Other Factors or symptoms
- Age

Age Related Diagnostic Considerations

<table>
<thead>
<tr>
<th>Age Group</th>
<th>0-1 yrs</th>
<th>2-5 yrs</th>
<th>6-11 yrs</th>
<th>12-18 yrs</th>
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<td>Appendicitis</td>
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Referred Pain

Definition
- Pain arising from organs close to but not in the abdomen is called “Referred Pain.”
- Organs involved (typically)
  - Lower lungs
  - Kidney
  - Ovaries
  - Uterus

“Usual” Areas of Referred Pain

<table>
<thead>
<tr>
<th>Referred to</th>
<th>From</th>
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<tbody>
<tr>
<td>Trapezius</td>
<td>Diaphragm or Oesophagus</td>
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<tr>
<td>Scapula</td>
<td>Biliary</td>
</tr>
<tr>
<td>Flank</td>
<td>Renal</td>
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<tr>
<td>Midback</td>
<td>Pancreatitis or Gastric</td>
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</table>

History in Patients with Acute Abdominal Pain

RUQ (Harlem and Upper West Side)
- Cholecystitis and biliary colic
- Congestive Hepatitis/and or abscess
- Perforated ulcer
- Retrocecal appy (rarely)

Presentation Patient #1
- 43 year old caucasian female with history of intermittent epigastric and right upper quadrant discomfort for 3 months presents to your office in acute discomfort.
- She has had postprandial nausea accompanied by occasional vomiting.
- The pain is 8/10 and she is in obvious discomfort in the office.

Physical Exam
- Tenderness diffusely but exquisitely in the epigastric area and right upper quadrant.
- Bowel sounds hypoactive
- No rebound
- Pain elicited greatly when the hands are placed beneath the rib cage and the patient asked to inhale

AES POLL QUESTION

Common Lab Tests You Would Order Include:
A. Electrolytes, BUN, creatinine, and glucose
B. Aminotransferases, alkaline phosphatase, and bilirubin
C. Complete blood count with differential
D. Lipase and Amylase
E. All of the Above

LABORATORY TESTS
- A CBC is appropriate if infection or blood loss is suspected.
- One study of patients 15 to 83 years of age with suspected appendicitis found that a WBC count greater than 10,000 per mm3 (10 × 109 per L) was 77 percent sensitive and 63 percent specific for the diagnosis (LR+ = 2.1, LR− = 0.37).
- Nearly one in four patients with appendicitis does not have an elevated white blood cell count.
- Simultaneous amylase and lipase measurements are recommended because an elevated lipase level with a normal amylase level is not likely to be caused by pancreatitis.
- Liver chemistries are important in patients with right upper quadrant pain.
- A ura should be obtained in patients with hematuria, dysuria, or flank pain.
- Urine pregnancy tests in childbearing age and STD testing in appropriate populations.
**AES POLL QUESTION**

The Maneuver in Palpation of the Rib Cage is:

A. Cullen's sign  
B. Grey-Turners Sign  
C. Murphy's sign  
D. Hall sign

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**AES POLL QUESTION**

The Most Useful Diagnostic Study You Would Order in this Circumstance:

A. KUB  
B. Ultrasound  
C. CT scan  
D. MRCP

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**Most Useful Studies by Location**

<table>
<thead>
<tr>
<th>Location of Pain</th>
<th>Imaging Study</th>
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<tbody>
<tr>
<td>RUQ</td>
<td>Ultrasound</td>
</tr>
<tr>
<td>LUQ</td>
<td>CT Scan</td>
</tr>
<tr>
<td>RLQ</td>
<td>CT Scan with IV contrast</td>
</tr>
<tr>
<td>LLQ</td>
<td>CT with oral AND IV contrast</td>
</tr>
<tr>
<td>Suprapubic</td>
<td>Ultrasound</td>
</tr>
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**Commonly Used Abdominal Studies in Acute Abdomen**

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultrasound</td>
<td>Cholecystitis, Abscesses, Palpable masses, AAA, Pain in abdomen</td>
</tr>
<tr>
<td>CT</td>
<td>AAA, peritoneal disease, or another solid organ (non-contrast) Consider also when diagnosis is not obvious</td>
</tr>
<tr>
<td>IVU/IVP</td>
<td>Pyelonephritis, stones, RCC, TCC, polypoid kidney, hydronephrosis, kidney stones, obstruction</td>
</tr>
<tr>
<td>Mesenteric angiography</td>
<td>Ischemia and/or Herniorrhage</td>
</tr>
</tbody>
</table>
Presentation Patient #1 Continued

- Initial lab values reflect a rise in the serum ALT and AST
- There is also a slight rise in the total bilirubin

AES POLL QUESTION
Which Additional Diagnostic Study(ies) Would be Most Useful?
A. MRCP
B. Repeat Ultrasound
C. ERCP
D. A and C
E. All of the above

Additional Diagnostic Study(ies)?
- MRCP Magnetic resonance cholangiopancreatography (MRCP) is a noninvasive alternative to ERCP that has adequate sensitivity and might be reasonable when therapeutic intervention is not immediately necessary or in populations where ERCP may be of higher than usual risk

Answer C. This patient had choledocholithiasis

Gall Bladder Disease
- Risk factors
  - Hyperlipidemia
  - - 25% due to first degree relative
  - - 1 dozen genes may contribute
  - Obesity
  - - Metabolic syndrome, HTN, DM, hyperlipidemia
  - Drugs
  - - Ceftriaxone, estrogen, clofibrate or other hypolipidemics
  - Hemolytic diseases
  - Sickle cell anemia - hereditary spherocytosis, and beta thalassemia - Black pigmented stones
  - Pregnancy
  - - Higher progesterone levels reduce GB contractility
  - Gall bladder stone: High spinal cord injuries, prolonged fasting, TPN, and rapid weight loss associated with severe caloric and fat restriction, short bowel syndrome, terminal ileal resection
  - 80% of stones are Cholesterol
  - 20% of stones are Calcium bilirubinate
  - Chronic GB disease: fibrosis
  - - Loss of GB function
  - - Increased risk of GB cancer
  - - About 2000 deaths per year from GB cancer

Complications of GB Disease
- Pancreatitis
  - - Ampullary obstruction
  - - RUG pain → epigastric, +/- fever, WBC tachycardia and hypotension
  - - BS may be hypoactive or present Pain is usually epigastric
  - - Reflux of bile activates pancreatic proteases
  - - Retroperitoneal hemorrhage in severe cases
  - - Ileus
  - - Secondary to a cholecystoenteric fistula → 6/1,000 may lead to an SBO
  - - Chronic cholecystitis
  - - GB dysfunction due to fibrosis
  - - Porcelain GB
  - - Increased risk for adenocarcinoma

Complications of GB Disease
- Ascending cholangitis
  - - CBD (common bile duct) obstruction
  - - Purulent inflammation of the liver and biliary tree
  - - RUG pain, +/- fever, WBC, tachycardia, jaundice
  - - BS may be hypoactive or absent
  - - Elevated LFTs
  - - Jaundice, dermal icterus
  - - Charcot’s Triad: Fever, RUG pain, jaundice
  - - Reynolds’ Pentad → Charcot’s + confusion & shock
  - - Lithogenic state
  - - Pregnancy, gallstones
  - - 3-5% rarity of developing complications
  - - Gallstone ileus
  - - Murphy’s sign: pain with palpation over GB, guarding, rigidity may be present
  - - Acute cholecystitis
  - - Observation at the GB neck
  - - RUQ pain, +/- fever, WBC, tachycardia
  - - Hypotension
  - - BS may be hypoactive or absent
Right and Left Upper Quadrant Pain (Upper West Side and East Harlem)

- Acute Pancreatitis
- Herpes Zoster
- Lower Lobe Pneumonia
- Myocardial Ischemia
- Radiculitis

Patient Presentation #2

- 48 year old Caucasian male who has had sudden onset of epigastric pain with nausea, occasional vomiting, and radiation to the back for the past 5 hours
- Pain has been sharp and tearing with increasing intensity 8/10 prompting his wife to transport him to the emergency room
- Of interest is that this patient has a history of chronic alcohol abuse
- He has consumed 5-6 beers 4 nights a week over the past 20 years. He decided to take a break for 3 days
- There has been no other similar history of this clinical presentation

Patient #2 Physical Exam

- VSS
- Chest and Heart unremarkable
- Noting exquisite tenderness in the epigastric area
- Ecchymosis in the left flank and periumbilical regions noted with hypoactive bowel sounds

AES POLL QUESTION

Common Lab Tests You Would Order Include:
A. Electrolytes, BUN, creatinine, and glucose
B. Aminotransferases, alkaline phosphatase, and bilirubin
C. Complete blood count with differential
D. Lipase, Amylase
E. All of the above

AES POLL QUESTION

The Most Sensitive Diagnostic Study You Would Order in this Circumstance:
A. MRI of abdomen
B. Ultrasound
C. CT scan of abdomen
D. Flat Plate/Acute Abdominal Series

The Most Sensitive Diagnostic Study You Would Order in this Circumstance:
C. CT scan of the abdomen The initial workup of pancreatitis will usually involve an abdominal ultrasound to exclude gallstones, although CT scanning is more sensitive for the diagnosis of pancreatitis
- Result of the scan demonstrated fatty liver with large pseudocyst with possible rupture
AES POLL QUESTION
Delineate the Cullen from the Grey Turner Sign in the Physical Exam (101)

Cullen sign is the ecchymotic discoloration in the flank.
- True
- False

Grey Turner sign is the ecchymotic discoloration in the periumbilical region.
- True
- False

False to Both

Cullen: Ecchymotic discoloration in the periumbilical region
Grey Turner sign is the ecchymotic discoloration in the flank

This patient had Fulminant pancreatitis with rupture of pancreatic pseudocyst

Patient Presentation #3
Physical exam pertinently demonstrates:
- Coarse and reduced breath sounds
- 2/6 murmur in LSB
- Non tender unremarkable exam except for soft obese abdomen with a pulsatile entity which on deep palpation elicits some tenderness not similar to the pain previously experienced located in the epigastric area

Patient Presentation #3

Physical exam pertinently demonstrates:
- Coarse and reduced breath sounds
- 2/6 murmur in LSB
- Non tender unremarkable exam except for soft obese abdomen with a pulsatile entity which on deep palpation elicits some tenderness not similar to the pain previously experienced located in the epigastric area

AES POLL QUESTION
The Most Sensitive Diagnostic Study You Would Order in this Circumstance
A. Ultrasound
B. MRI
C. CT scan
D. All of the Above
The Most Sensitive Diagnostic Study You Would Order in this Circumstance
A. Ultrasound. Real-time ultrasonography is the preferred modality for screening and for assessing and following abdominal aortic aneurysms since the sensitivity approaches 100 percent.

The Most Sensitive Diagnostic Study You Would Order in this Circumstance
- Aneurysm size is one of the strongest predictors of the risk of rupture, with risk increasing markedly at aneurysm diameters greater than 5.5 cm
- Abdominal aortic aneurysms smaller than 5 cm are not likely to rupture
- This patient had a 6.8 cm AAA and was referred for therapeutic intervention endovascular stent versus surgical approach

Left Upper Quadrant Pain (East Harlem, Yorkville, UES)
- Gastritis
- Splenic Injury i.e. abscess or rupture
- Intestinal Obstruction
- Ischemic Intestinal Disease

Presentation of Bowel Obstruction
Small Bowel 85%
- Nausea and other times vomiting
- Diarrhea (early finding)
- Constipation (late finding)
- Fever, tachypnea, associated with peritonitis
- 2O abdominal surgery, ovarian or colon Ca
- Distention
- Crampy abdominal pain
- Hyper-tympanic, high-pitch BS
- +/- tenderness
- Peritoneal signs (if strangulation occurs)

Large Bowel 15%
- Abdominal distention
- Crampy abdominal pain
- Nausea and oftentimes vomiting
- Hyper-tympanic to percussion
- BS normal early on, then become quiet
- Tenderness to palpation
- Peritoneal signs suggest strangulation or perforation
- Guaiac positive stools if cancer is the etiology
- Cecum is region most likely to perforate

Small Bowel Obstruction
Partial (simple) 60%
- Wait and watch
Complete (strangulated) 40%
- Surgical emergency
- Most commonly associated with adhesions
- If untreated 100% of pts die
- Surgery<36hrs, mortality~8%
- Surgery>36hrs, mortality~25%
- SBOs make up ~20% of all acute surgical admissions

Proximal SBO
- Pain occurring for a shorter duration
- Colicky in nature
- Bilious vomiting
- Less abdominal distention
- Distal SBO
- Pain occurring for several days
- Pain is progressive
- More abdominal distention

Bowel Obstruction
Plain x-ray findings
- LBO
  - Intra-luminal air (colonic ischemia)
  - Free air (present in only 1/2 of perforations) – Kidney bean (sigmoid or cecal volvulus)
- SBO
  - Dilated loops of small bowel
  - Air-fluid levels
  - Absent or minimal colonic gas
Small Bowel Obstruction

- Appendicitis
- Cecal Diverticulitis
- Meckel’s Diverticulitis
- Mesenteric Adenitis
- Mesenteric Ischemia/Thrombosis

Large Bowel Obstruction

- Birds Beak / Volvulus
- Kidney Bean/Cecal Volulus

Right Lower Quadrant Pain (Chelsea/Soho/West Village)

- Appendicitis
- Cecal Diverticulitis
- Meckel’s Diverticulitis
- Mesenteric Adenitis
- Mesenteric Ischemia/Thrombosis

Patient Presentation # 4

- 9 year old Asian male presents in the office for abdominal pain. Patient will not eat and last meal was 24 hours ago. Had 1 episode of clear billious vomiting
- Pain has been present intermittently for 12 hours and has escalated from a 2 to 9 on a scale of 10 Patient finds it difficult to move
- It is sharp, constant, colicky, and located in the periumbilical area
- Noted mild diarrhea
- Past Hx unremarkable
- PE: VSS except temp of 101.
- Patient lying flat on exam table with knees flexed and shallow breathing
- Chest clear, CV RRR, Abdomen noted to be tender with a point of Max Tenderness at McBurney’s point (1/3 of a line drawn from the iliac crest to the umbilicus)
- Rebound tenderness noted
- Hypoactive bowel sounds noted

AES POLL QUESTION

- Continuous deep palpation starting from the left iliac fossa upwards (anti clockwise along the colon) may cause pain in the right iliac fossa, by pushing bowel contents towards the ileocaecal valve and thus increasing pressure around the appendix Positive in this case

Maneuver Used to Help Diagnosis:
A. Obturator sign
B. Rovsing’s sign
C. Psoas sign
D. Kocher (Kosher)’s sign
E. Blumberg sign

Answer B

- Continuous deep palpation starting from the left iliac fossa upwards (anti clockwise along the colon) may cause pain in the right iliac fossa, by pushing bowel contents towards the ileocaecal valve and thus increasing pressure around the appendix Positive in this case
- ROVSING’S Sign
AES POLL QUESTION

- Right lower-quadrant pain that is produced with either the passive extension of the patient's right hip (patient lying on left side, with knee in flexion) or by the patient's active flexion of the right hip while supine

**Maneuver Used to Help Diagnosis:**
- A. Obturator sign
- B. Rovsing's sign
- C. Psoas sign
- D. Kocher (Kosher)'s sign
- E. Blumberg sign

**Answer:** C

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AES POLL QUESTION

- Spasm of the muscle can be demonstrated by flexing and internal rotation of the hip. This maneuver will cause pain in the vagina or hypogastrum. Hint: that is if an inflamed appendix is in contact with the obturator internus.

**Maneuver Used to Help Diagnosis:**
- A. Obturator sign
- B. Rovsing's sign
- C. Psoas sign
- D. Kocher (Kosher)'s sign
- E. Blumberg sign

**Answer A**

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AES POLL QUESTION

- Increased pain in the right lower testicle quadrant with coughing

**Maneuver Used to Help Diagnosis:**
- A. Obturator sign
- B. Rovsing's sign
- C. Psoas sign
- D. Kocher (Kosher)'s sign
- E. Dunphy's sign

**Answer E**

- Increased pain in the right lower testicle quadrant with coughing
- **DUNPHY'S Sign**
AES POLL QUESTION

• From the history given, the appearance of pain in the epigastric region or around the stomach at the beginning of disease with a subsequent shift to the right iliac region

Maneuver Used to Help Diagnosis:
A. Obturator sign
B. Rovsing’s sign
C. Psoas sign
D. Kocher (Kosher)’s sign
E. Dunphy’s sign

Answer D

• From the history given, the appearance of pain in the epigastric region or around the stomach at the beginning of disease with a subsequent shift to the right iliac region

KOCHER’S Sign

Patient Presentation #3

• Lab studies demonstrate WBC count of 14,000 with left shift
• Pediatric Appendicitis Score of 8
• CT scan and ultrasound diagnostic of Acute appendicitis

Pediatric Appendicitis Score

• The Pediatric Appendicitis Score (PAS) is a tool that utilizes history, physical examination, and laboratory results to categorize the risk of appendicitis in children with abdominal pain on a ten point scale
• Low risk (PAS ≤ 2), high risk (PAS ≥ 7), and intermediate risk (PAS 3 to 6)

Appendicitis

• Exam
  • Most specific findings: – Rebound tenderness
  – Guarding
  – Pain on percussion
  – Rigidity
  – RLQ pain is most discriminating feature
  • Present in 96% of patients
  – Sensitivity and Specificity of ~80%
  • Vomiting usually always follows pain • Rectal exam??helpful or not

Labs
• WBC >10/in80-85%ofpts
• Neutrophilia >75% in 78% of pts
• CRP elevates within 6-12hrs
  – If Sxs >24 hr and nl CRP, NPV~100%
  – If WBC <10.5, Neutrophilia <75% and nl CRP, NPV 99-100%

Imaging
• CT – Gold standard study
  – Studies have found a decrease in negative laparotomy and perforation rates when used in selected patients with abnormal appendicitis
  – US
    – When (+) go to surgery, when (-) go to CT
  – X-ray
    – Appendicith is highly suggestive, but seen in only %
Golden Pearl of Vomiting

- Pain first, followed by vomiting is usually surgical!
- Vomiting is due to “reflex pylorospasm”
- Nausea and vomiting first, followed by pain is usually due to a medical condition
- Not always 100% but a very helpful consideration

Left Lower Quadrant Pain
(Lower East Side/East Village)

- Sigmoid Diverticulitis

Patient Presentation # 4

- 71 yo WF seen for a “UTI”
- LLQ pain with radiation to the left flank
- Pain was sharp 7/10 with bloating and aggravated by meals. Noted intermittent nausea
- Pt had intermittent LBM and constipation x 10 days to 2 weeks
- Seen @ Urgent Care Clinic 4 days prior to office evaluation for possible Renal Stones. Amoxil administered
- No improvement prompted recheck in office
- Previous GI wu 2 months prior revealed lactase deficiency

Patient Presentation # 4 Past History

- History of Hypertension
- RA
- Depression
- Allergies
- GERD
- S/P Cholecystectomy, Carpal Tunnel, laminectomy
- Meds include: Atenolol, Prednisone, fluoxetine, Aldactone, Ridaura, Lyrica, Singular, Zantac, Advil, alprazolam, Aleve, Centrum, Fish Oil
- Multiple Allergies

Patient Presentation # 4 Physical Exam/Data Base

- Chest: clear
- CV: RRR no murmur
- Abdomen: Soft tender in left lower quadrant CVA tenderness. No rebound, Bowel sounds hypoactive
- Temp: 100.2, BP: 131/70, Respirations: 19,
- Pulse: 120
- WBC: 17.9 w/left shift

AES POLL QUESTION

Diagnostic Test of Choice?
A. Abdominal Ultrasound
B. ACBE
C. Water soluble contrast enema
D. CT scan of abdomen
Answer

D - CT scan of the abdomen

Patient Presentation # 4

• Chest X ray negative
• Renal ultrasound negative
• CT scan demonstrated and air fluid filled collection in the mid abdomen with communication with the sigmoid colon
• This patient was then directly admitted from radiology and surgical consult was obtained

Right and Left Lower Quadrant Pain

• Abdominal or Psoas abscess
• Abdominal wall hematoma
• Cystitis
• Endometriosis
• Incarcerated or strangulated hernia
• NOMI
• Acute Mesenteric Ischemia
• Acute Mesenteric Venous Thrombosis/embolism
• Inflammatory Bowel Disease
• Mittle schmerz
• PID
• Renal Stone
• Rupture of Aortic Aneurysm
• Ruptured Ectopic
• Torsion of ovary/testes
• Carcinoid

Patient Presentation # 5

• 71 yo Hispanic male admitted for second time in past year with postprandial bloating, severe pain and heme positive stool
• Pain accentuated over past several months. Sharp 7/10 postprandial

AES POLL QUESTION

Patient Presentation # 5

• Past Hx: DM, HTN, Hyperlipidemia
• Fam/Soc: Non smoker
• PE: AVSS
• Abdomen: soft distended BS hypoactive diffusely tender without rebound or referred
• Data: a1c: 8.2 chol: 278
  Hdl:28 LDL: 161 TG: 328

Clinical diagnosis is:
A. Diverticulitis
B. Bowel Obstruction
C. Renal Stone
D. Mesenteric Ischemia

Patient Presentation # 5

• Answer D
• Acute Mesenteric Ischemia
• "Angina of the gut"
Patient Presentation # 5

- WBC 14,000 with left shift
- Endoscopy biopsy demonstrates ischemic colitis
- Patient taken to IR for stent placement again
- His wife has the same issue although not as remarkable

Intestinal Ischemia

**Acute Mesenteric Ischemia**
- Superior mesenteric artery embolism (50%)
- Superior mesenteric artery thrombosis (15-25%)
- Mesenteric venous thrombosis (5%)
- Non-occlusive mesenteric ischemia (NOMI) (20-30%)

**Chronic Mesenteric Ischemia**
- Intestinal/Abdominal angina
  - Atherosclerotic disease
  - Episodic or constant intestinal hypo-perfusion

Ischemic Bowel Disease

**Acute SMA Occlusion**
- Thromboembolic etiology
  - 15% lodge at origin of SMA
  - Superior mesenteric artery embolism
    - Accounts for 50% of all cases of acute mesenteric occlusion
  - Superior mesenteric artery thrombosis (15-25%)
  - Superimposed on chronic ischemia
  - Abdominal trauma
  - Infection
  - Not associated with hypercoagulability
  - Mortality: 70-80%

**Acute SMA Occlusion**
- Nausea and vomiting are common
- Forceful bowel evacuation
- Abdominal exam
  - Initially non-specific
  - As ischemia progresses → peritonitis → shock
- Labs: Non-specific, Metabolic acidosis
- Develops with disease progression.
- Think cardiac disease, diarrhea, acute abdominal pain
- Keep in mind: Abdominal pain and metabolic acidosis = Ischemia until ruled out!

**Acute SMA Occlusion**
- Thumbprinting

**Non Obstructive Mesenteric Ischemia**
- Elderly patient
  - Average age is 70
- Significant ASCVD
- Life-threatening event or complication
  - MI, CHF, sepsis, cardiogenic shock
  - Can occur following cardiac surgery or dialysis
- Hypo-perfusion to watershed areas
  - Splenic flexure – Distal sigmoid
- Onset is more insidious (hours to days)
- Abdominal pain may be absent in up to 25%
- Outcomes
  - 44% is reversible disease – 19% is persistent colitis
  - 13% ischemic stricture
  - 19% gangrene/perforation
- Heme (+) or bloody stools common

Acute SMA Occlusion

Symptoms
- PP pain – Poor localization
- Dull and crampy
- Food avoidance- 15-30 lb wt loss
- Abdominal bruit 40-60%
- Guaiac positive in 10%
- Women:Men 2:1
- Guaiac positive 10%
- High smoker rate 70-80% /Delayed dx 17 m
- Mean age 60

Age >60, female, CV risk factors, 4-6 month hx post-prandial abdominal pain, weight loss, negative work-up for cancer. Bruit on exam.

Non Obstructive Mesenteric Ischemia

Elderly patient
- Average age is 70
Significant ASCVD
Life-threatening event or complication
- MI, CHF, sepsis, cardiogenic shock
- Can occur following cardiac surgery or dialysis
Hypo-perfusion to watershed areas
- Splenic flexure – Distal sigmoid

Onset is more insidious (hours to days)
Abdominal pain may be absent in up to 25%
Outcomes
- 44% is reversible disease – 19% is persistent colitis
- 13% ischemic stricture
- 19% gangrene/perforation
Heme (+) or bloody stools common
Non Obstructive Mesenteric Ischemia

Imaging:
- CT: initially normal, mild dilation. With disease progression, thumbprinting, pneumatosis or portal venous gas
- MRI: same as CT
- Angiography: can demonstrate areas of narrowing

Treatment:
- Invasive: reversal of underlying condition
- Surgery limited to patients with peritoneal signs
- Antiplatelet agents may be helpful in some patients

Mesenteric Venous Thrombosis

- 5-15% of all mesenteric ischemic events
- Usually involves superior mesenteric vein
- 75% have pro-thrombotic states
- Common predisposing factors: cancer, thrombophilia, atrial fibrillation, or phlebitis
- Presentation: acute, sub acute, chronic
- Marked edema, viscus gangrene, other present <48 hrs. before seeking medical attention
- Nausea, vomiting, systemic and diarrhea are common
- CT/and ultrasound of abdomen
- Imaging
- CT: is helpful. 90% sensitivity
- Treatment: anticoagulation alone or in combination with surgery
- Mortality: 20-50%

AES POLL QUESTION

- 14 year old male presents to ER with RLQ pain of 2 days
- PE slight RLQ tenderness
- Labs negative, U/A negative
- CT/and ultrasound of abdomen Negative
- Other test considerations?

Situation/Age Specific Considerations:
- Observe and send home with pain meds
- Ultrasound of testes
- Stool culture
- Rectal Exam

Answer
- B - Ultrasound of testes

AES POLL QUESTION

Situation/Age Specific:
- 26 yo Caucasian female seen for severe pelvic pain of 2 weeks duration. 8/10 Noted slight yellow discharge
- The patient was asked to lift her head and shoulders from the examination table to tense the abdominal muscles without pain noted (Carnett’s sign)

Clinical factors confirming Pelvic Inflammatory Disease include all except:
- Positive Lactoferrin
- Cervical Motion tenderness
- Mucopurulent discharge
- Presence of abundant numbers of white blood cells (WBCs) on saline microscopy of vaginal secretions

Answer
- A - Lactoferrin is a Stool evaluation to determine inflammation
AES POLL QUESTION
Situation/Age Specific Considerations
In consideration of the 26 year old female with the PID, the following test that should always be considered:
A. Culture of discharge  
B. CBC  
C. Pregnancy test  
D. KOH

Answer
• C - Pregnancy test

Extra-Abdominal Causes of Abdominal Pain
- Abdominal wall- Rectus hematoma
- GU- Testicular torsion
- Infectious-Herpes Zoster
- Metabolic-Alcoholic, DK acidosis, Porphyria, Sickle Cell Disease
- Thoracic-MI, Pneumonia, PE, Radiculitis
- Toxic-Black Widow spider bite, Heavy metal poisoning, methanol poisoning, scorpion sting, Opiod withdrawal

Final Pearls
- Acute abdominal pain and metabolic acidosis = ischemia until clearly ruled out
- Acute abdominal pain first, followed by vomiting is usually due to a "Pylorospasm reflex" causing the vomiting and is usually a surgical presentation
- Olmesartan may be implicated in unexplained bloating, nausea and loss of appetite

Practice Recommendations
- A normal white blood cell count does not rule out appendicitis. (SOR-C)
- Simultaneous amylase and lipase measurements are recommended in patients with epigastric pain. (SOR-C)
- Ultrasonography is the imaging study of choice for evaluating patients with acute right upper quadrant abdominal pain. (SOR-C)
- Computed tomography is the imaging study of choice for evaluating patients with acute right lower quadrant or right lower quadrant abdominal pain. (SOR-C)

Summary
- The presentation of the patient can narrow the differential diagnosis. Consider age, sex, and type of pain under consideration
- Specialized maneuvers can evaluate for signs associated with specific entities
- Laboratory tests should be performed based on suspected diagnosis and location of pain
- Imaging studies are based on the location of the pain
- The location of the abdominal pain should guide the evaluation
- Age and gender of the patient are also important considerations in the consideration of diagnostic workup
Summary

• Causes of abdominal pain that are immediately life threatening should be addressed and referred
• Admission?
• ONE LAST THING!
• Expect the Unexpected!!!!

Questions

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References


Billing & Coding

CPT Abdominal Ultrasound: 76700 Complete
76705 for limited
Office visit 99212-215 add 25 modifier if performing ultrasound on same day
45239 - EGD with biopsy
45378 - Screening Colonoscopy
45380 - Colonoscopy with Biopsy
45385 - Colonoscopy with Snare Biopsy
45388 - Colonoscopy with fulguration of lesions or tumors
46600 - Anoscopy

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