Acute Abdomen

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Objectives

• Review causes of the acute abdomen
• Prepare for initial and ICU management of acute abdomen
• Review common operations and their complications
What is an Acute Abdomen?

Lactate: 3.8
Bicarb: 13
Alk Phos: 490
What is an Acute Abdomen?

• No clear definition of acute abdomen
  – Not inherently surgical or medical
  – Wide range of conditions resulting in ‘Acute Abdomen’
  – Surgeons *most* interested in peritonitis

• Even this doesn’t mandate surgery
Definition of Pain

- **Visceral pain** – autonomic nerve fibers responding to sensations of distention and muscular contraction
  - Typically vague, dull, and nauseating
- **Somatic pain** – comes from parietal peritoneum
  - Sharp and well localized
- **Referred pain** - perceived pain distant from its source and results from convergence of nerve fibers at the spinal cord
- **Peritonitis** - inflammation of the peritoneal cavity
Definition of Pain

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Definition of Pain

- **Visceral pain** – autonomic nerve fibers responding to sensations of distention and muscular contraction
  - Typically vague, dull, and nauseating
- **Somatic pain** – Nociceptive or inflammatory pain pathways
  - Sharp and well localized
- **Referred pain** - perceived pain distant from its source and results from convergence of nerve fibers at the spinal cord
- **Peritonitis** - inflammation of the peritoneal cavity
Definition of Pain

- **Visceral pain** – **ORGAN PAIN**
  - Autonomic nerve fibers responding to sensations of distention and muscular contraction
  - Typically vague, dull, and nauseating

- **Somatic pain** – **MUSCULOSKELETAL PAIN**
  - Comes from parietal peritoneum
  - Sharp and well localized
History - PQRST

- **P** – Position, palliating, provoking
- **Q** – Quality
- **R** – Region, Referral, Radiation
- **S** – Severity
- **T** – Temporal
Past Medical History

• Previous illnesses or diagnoses?

• Medication Usage?
  – Narcotics
  – NSAIDS
  – Steroids
  – Immunosuppressants
  – Anticoagulants
  – EtOH /Tobacco
  – Recreational drugs
Physical Exam

• From the Door
  – Diaphoresis, Respiratory distress, Risk factors
  – “Are they sick”

• Bedside
  – Kick the bed - Distract the patient
  – Guarding! - Scars

• Ancillary exams
  – ?Rectal exam
  – Other body parts
Labs

• Nearly ALL labs have a high false positive rate
• If the patient is sick, baseline labs have value
• Recognized baseline medical conditions!

NO LAB IS AS VALUABLE AS ITS OWN TREND!!!
Imaging – Plain films

Plain Films

+ FAST
+ Cheap
+ Portable

- Rarely diagnostic
- “Art” has been lost to CT/MRI
- Non-Specific
Ultrasound

+ Cheap
+ Can see motion, flow
+ Absence of radiation exposure

- No (common) way to contrast
- Extremely operator dependent
- Very limited for hollow viscous
CT Scan

- Often the study of choice
- Typically easy to interpret, aids in OR
- Fast (compared to MRI

- Contrast, Radiation
- Cannot see motion
- Non-portable
To Contrast or Not to Contrast

• Creatinine
• PO contrast
  – Leak
  – Bowel vs Abscess
  – ?Obstruction
• IV contrast
  – Abscess
  – Solid Organ
  – Generally best
• Non Con
  – Kidney, Ureter
Plain Films

+ Almost TOO specific
+ Very detailed images

- Very slow
- Very expensive
- Not easily read
Initial Management

• Determine level of admission
• Fluid resuscitation!!
  – Lactate
  – SvO2
• Antibiotics
• (Anticoagulation)
• Correct metabolic derangements
• Pre-op
Surgical Causes of the Acute Abdomen

Obstruction
Ischemia
Perforation
Infection
Hemorrhage
Obstruction

- Risk factors: Prior abdominal or pelvic surgery, abdominal wall or groin hernia, neoplasm, prior irradiation, foreign body ingestion
Bowel Obstruction

• **S&S:**
  - Colicky, crampy, intermittent abdominal pain, nausea/vomiting

• **Physical exam:**
  - Abdominal distention
  - PAIN IS NOT NORMAL
  - Watch NGT output
Small Bowel Obstruction

• Imaging:
  – Flat/upright KUB – multiple air fluid levels with distal evacuation of colon and rectum
  – Gastrograffin UGI
  – CT scan

• Treatment:
  – NGT to LIWS
  – Hydration with IVF
  – Electrolyte repletion
  – Surgical intervention
Colonic Obstruction

• Imaging:
  – “Comma sign” or “kidney bean” appearance
  – Mechanical obstruction has “cutoff” sign at level of obstruction with air in the proximal colon and small bowel and a gasless distal colon.
  – An acute increase of cecal diameter >10cm, perforation of the colon may be imminent

• Treatment:
  – NGT to LIWS
  – Hydration with IVF
  – Replete electrolytes
  – Surgical intervention
Volvulus

• Refers to a twisting of a segment of the intestinal tract around a fixed point
  – Leads to ischemia and necrosis of the bowel

• Most common sites of volvulus are the cecum and sigmoid colon
  – Small bowel volvulus is less common in adults
  – Sigmoid volvulus are common in bedridden, institutionalized patients

• S&S:
  – Abrupt onset in continuous pain with superimposed colicky pain during peristalsis
  – N&V (1-3 days after onset of pain)
  – Abdominal distention
  – Constipation
Volvulus

- **ABD Exam:**
  - Tympany upon auscultation
  - Distended, tender abdomen

- **Imaging:**
  - CT scan – “whirl pattern” or “bird beak” appearance, absence of rectal gas, split wall sign and two crossing sigmoid transition points projecting from a single location; may see bowel necrosis
  - KUB – U-shaped distended sigmoid colon extending from pelvis to RUQ as high as diaphragm
    - Points LLQ for sigmoid and RLQ for cecal
Sigmoid volvulus
Volvulus

Treatment:

– Sigmoid volvulus
  • Can attempt endoscopy first – successful in 75-95% of patients
  • Surgery if endoscopy is unsuccessful
  • 40-50% will not have recurrence

– Cecal volvulus
  • Resection and anastomosis of involved segment
Intussusception

• Intestines slide or “telescope” into an adjacent part of the intestine
  – Cause of only 1-5% of bowel obstructions.
  – RARE in adults... Mandates investigation
“Pseudo-obstruction”
Ogilvie syndrome

• S&S of bowel obstruction present without mechanical cause

• Associated with:
  – Hospitalization
  – Metabolic derangements
Ischemic Acute Abdomen

• Ischemia due to a reduction in blood flow due to acute arterial occlusion, venous thrombosis, or hypoperfusion
  – Risk factors: abdominal surgery, cardiac bypass surgery, MI, atrial fibrillation, hemodialysis

• Two main types:
  1. Colonic ischemia
     • Most common form of intestinal ischemia
     • Most often affects patients 60yo and older
     • Approximately 15 percent of patients with colonic ischemia develop gangrene
  2. Mesenteric ischemia
     • Mortality is 70%
Ischemic Acute Abdomen

• ABD exam:
  “Pain Out of Proportion to Exam”

• Imaging:
  CT A/P. Contrast is nice, but most patients will have AKI
  • Pneumatosis, Portal Venous Gas
  • Calcifications at SMA, Absent IMA
Mesenteric Ischemia

• Treatment
  – IVF resuscitation
  – Anticoagulation
  – Immediate surgical intervention for peritoneal signs and diagnostic findings of intestinal perforation or infarction
Perforated Acute Abdomen

• Associated with h/o colonic obstruction, PUD, UC, Crohn’s dx, diverticulitis, and trauma

• S&S
  – N&V
  – Quiet to absent bowel sounds
  – Anorexia

• ABD exam: depends on location of perforation
  – Esophageal, gastric, duodenal perf – abrupt onset of severe generalized pain and peritonitis
  – Other GI site perf – usually gradually developing, localized pain that has worsened
Perforated Acute Abdomen

• Imaging:
  – KUB – subdiaphragmatic air
  – Abdominal CT is highly sensitive showing free intraperitoneal air not contained within any visible bowel wall
Perforated Acute Abdomen

• Treatment:
  – Fluid resuscitation
  – Broad spectrum ABX to cover intraabdominal flora
  – Immediate surgical intervention... Most of the time
Infectious Acute Abdomen

• S&S:
  – N&V, anorexia
  – Location and onset of pain help determine cause of infectious process

• Causes: appendicitis, pancreatitis, intraabdominal abscesses, diverticulitis, cholecystitis, SBP, c. difficile colitis
Infectious Acute Abdomen

• ABD Exam - depends on cause of infectious process
  – Appendicitis – periumbilical or epigastric pain that shifts to RLQ – increased pain with passive extension of the right hip
  – Pancreatitis – upper ABD pain with radiation to the back
  – Intraabdominal abscesses – related to recent abdominal surgery or inflammatory disease processes
  – Diverticulitis – LLQ pain with rebound and guarding
  – Cholecystitis – right subcostal pain worsened by inspiration upon palpation
  – SBP – associated with hepatic dysfunction
Infectious Acute Abdomen

• Imaging:
  – CT with IV contrast is preferred

• Treatment:
  – Broad spectrum ABX coverage for intraabdominal flora
  – IVF resuscitation
  – SOURCE CONTROL
Hemorrhagic Acute Abdomen

• S&S:
  – Hematochezia, Melena

• Physical Exam:
  – Tachycardia
  – Hypotension
  – Pallor
  – Diaphoresis
  – Abdominal discomfort
Hemorrhagic Acute Abdomen

• Causes:
  – GI bleed
    • Associated with liver disease, NSAID abuse, PUD, aortoenteric fistula, diverticulosis, CA
  – Abdominal aortic aneurysm
    • Associated with tender, pulsatile mass and back pain
  – Ruptured ectopic pregnancy
    • Associated with amenorrhea and/or vaginal bleeding
    • Ruled out with negative pregnancy test
  – Recent abdominal surgery
  – Trauma
Hemorrhagic Acute Abdomen

• Imaging:
  – CT with IV contrast to evaluate active bleeding
  – Do not halt surgical intervention to obtain imaging

• Treatment:
  – Supportive care
  – LOCALIZATION!
  – Intervention (IR, OR, GI Lab)
Things to Remember

The most rapidly lethal condition compatible with the presentation should be considered first, particularly in patients with overt abdominal signs and shock.

Shock associated with acute abdomen is usually attributable to vascular disruption with intra-abdominal hemorrhage or severe sepsis.
References