

Project: Ghana Emergency Medicine Collaborative

Document Title: Abdominal Emergencies

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Make Your Own Assessment

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Objectives

- Describe the assessment of the abdomen
- Provide an overview of the diagnosis and management of blunt and penetrating abdominal injuries
- Discuss abdominal trauma in children and pregnancy
- Apply the above-mentioned knowledge when analyzing a case
- List the drugs used in abdominal emergencies
- Delineate the nursing process and management of a patient with abdominal emergencies.

Primary Assessment

- Airway
- Breathing
- Circulation

Secondary Assessment

- Vital Signs
- Subjective vs. Objective

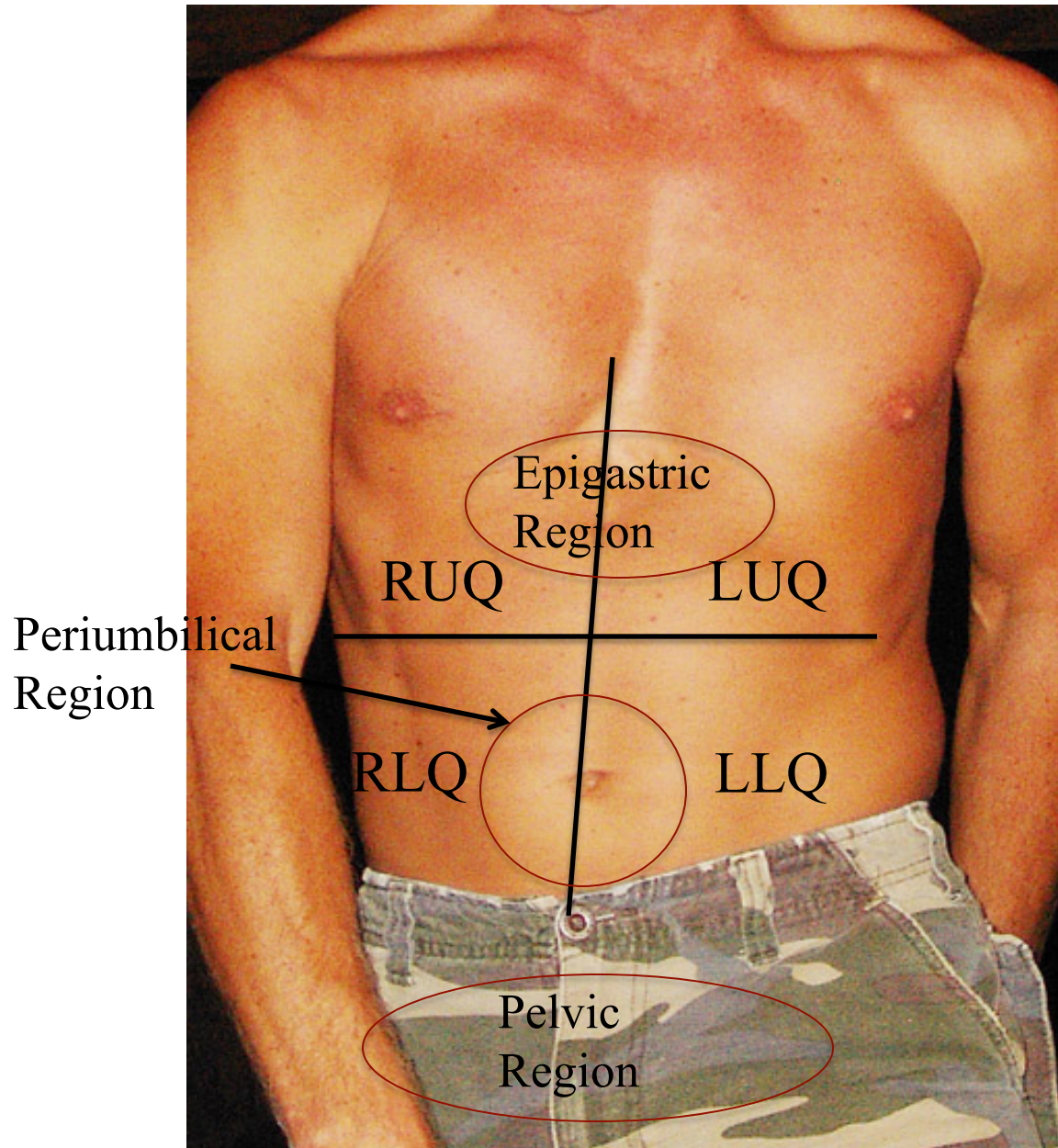
Health History

- Chief complaint?
 - Pain, discomfort, vomiting, diarrhea
- Pain
 - Location, Onset, Provoking factors, Quality, Radiation, Severity, Time
- Other symptoms
 - Nausea, vomiting, diarrhea, constipation, distention, bleeding (upper or lower GI), dysuria, vaginal discharge
- History
 - Hx of similar problems in past?
 - GERD, SBO, Ulcers, etc.?
 - Past surgeries especially abdominal
 - Trauma?
 - Family hx of GI illnesses?

Abdominal Focused Exam

- Inspect
 - Mouth
 - Abdomen
 - Anus/rectum
- Auscultate
 - BS in all 4 quadrants? Normal/Hyper/Hypo active?
 - “gurgles” every 5-15 sec.
 - Bruits in abd = don’t touch!

- Percuss
 - High pitched, tympanic sounds-Air/fluid filled organs
 - Dull, “thud” sounds-solid organs
- Palpate
 - Soft, distended, tender, hernias?
 - Guarding, rebound tenderness?



Abdominal Structures

- RUQ

- Liver
- Gallbladder
- Duodenum
- Pancreas (head of)
- Ascending/transverse colon

- LUQ

- Stomach
- Spleen
- Pancreas (body of)
- Transverse/descending colon

- RLQ

- Appendix
- Cecum
- Ovary/fallopian tube
- Ureter
- Spermatic cord

- Midline

- Abdominal Aorta
- Uterus
- Bladder

- LLQ

- Descending colon
- Sigmoid colon
- Ovary/fallopian tube
- Ureter
- Spermatic cord

Diagnostic Procedures

- Labs
 - Complete Blood Count (CBC)
 - Comprehensive Metabolic Panel (CMP)
 - Electrolytes, Blood urea nitrogen(BUN), Creatinine, Aspartate Aminotransferase(AST), Alanine aminotransferase (ALT)
 - Prothrombin time, Partial Prothrombin time (PT/PTT)
 - Amylase, Lipase
 - Bilirubin
 - Ammonia
 - Urinalysis (and pregnancy test)
 - Stool

Diagnostic Procedures cont.

- X-Rays
- CT
- Ultrasound
- Diagnostic Peritoneal Lavage-DPL
- Endoscopy

Nursing Diagnoses/Collaborative Problems

- Acute pain related to (abd injury, pancreatitis, peritonitis, etc.)
- Imbalanced nutrition/or Risk for fluid volume deficit related to vomiting/diarrhea
- Fatigue related to disease state/anemia secondary to GI bleed
- Potential for gastrointestinal bleeding (collaborative problem)
- Potential for drug toxicity (d/t liver/kidney failure-collaborative problem)

Planning, Implementation & On-going monitoring

- Anticipate need for IV placement with labs
 - IV fluids, medications
- Monitor VS for change
 - Hypotension, tachycardia, fever
- Re-evaluate pt after any medication or intervention and for any change in condition

Documentation

- 0830 Pt laying in stretcher holding abd, appears uncomfortable. Pt reports that he is having bilat upper quad pain and has been vomiting bright red blood with occasional dark red blood in stools. Pain is 7/10. 18g IV placed to R forearm, blood drawn and labs sent for cbc, comp, amylase, lipase, pt/ptt, type and screen. 2nd 18g IV placed to L AC. Pt tolerated insertion of both IVs well. NS hung at bolus rate via gravity.
- 0840 Zofran 4mg IVP provided for nausea, Morphine 4mg IVP given slowly for 7/10 pain.
- 0910 Pt resting, appears more comfortable. Reports nausea is gone at this time and pain is tolerable now at 3/10. Will continue to monitor.

Geriatric Considerations

- Atrophy of gastric mucosa → decreased hydrochloric acid → proliferation of bacteria → increased incidence of gastritis
- Peristalsis decreases → constipation/impaction
- Decrease in number of hepatic cells → decreased liver mass → dec. enzyme activity → depressed drug metabolism → accumulation of drugs to possible toxic levels
- Abdominal emergencies in elderly tend to be more serious and more often require surgery
- Older adults may have increased difficulty expressing symptoms d/t dementia, CVA, etc.

Pediatric Considerations

- Many illnesses/conditions that occur solely in pediatric population
- Limited communication and cognition related to age
- Vague, non-specific symptoms often relayed by family.

Gastritis

- Inflammation of gastric mucosa
- Causes thick, reddened mucosa with progression to mucosal atrophy in chronic cases.

Acute Gastritis

- Various degrees of inflammation/necrosis
- Healing of mucosa usually happens in a few days without long term complications
- Etiology: H. Pylori, E. coli, Salmonella, Alcohol, NSAIDS, stress
- Epigastric pain/discomfort
- Nausea/Vomiting
- Hematemesis
- Dyspepsia
- Anorexia

Types of Chronic Gastritis

- Type A
- Type B
- Atrophic

Chronic Gastritis

- **Type A:** non-erosive inflammation due to the presence of antibodies to the cells that excrete hydrochloric acid.
 - More than 1/2 of pts with type A have Pernicious anemia .
- **Type B:** Most commonly caused by Helicobacter Pylori (H. Pylori). Other factors can be Crohn's disease, Graft vs.. Host, chronic irritation from alcohol, smoking, radiation.
- **Atrophic:** most often seen in older adults and caused by chronic exposure to toxins in the work place (nickel, lead), H. Pylori, autoimmune factors or gastric cancer.

Clinical Features of Gastritis

- Vague epigastric pain, often relieved by food
- Nausea/vomiting
- Anorexia
- Intolerance of spicy or fatty foods
- Pernicious anemia

Interventions/Management of Gastritis

- Management of electrolyte and fluid imbalances with IVF
- Management of any gastric bleeding-NG lavage, blood products if needed.
- Symptomatic treatment for acute cases-pain medication and anti-emetics
- Teaching regarding decreased use of NSAIDS, alcohol, tobacco, stress reduction.
- H2-receptors: ranitidine, famotidine
- Proton-pump inhibitors: omeprazole, esomeprazole magnesium
- Antibiotics: Metronidazole and Tetracycline or Clarithromycin and Amoxicillin (H. Pylori)

Ulcers

- Gastric and Duodenal ulcers occur when hydrochloric acid in the stomach breaks down the epithelium causing erosion of the mucous membrane.
- Ulcers may occur in the stomach (gastric ulcers) or the first part of the small intestine (duodenal ulcers)

Gastric ulcer



Causes of Ulcers

- The most common cause of gastric and duodenal ulcers is H. Pylori infection.
- Chronic or overuse of ASA and NSAIDS
 - Leads to the inhibition of prostaglandin synthesis which leads to decreases in bicarb production and mucous secretion.
- Zollinger-Ellison syndrome which causes hypersecretion of hydrochloric acid.

Clinical Features of Ulcers

- Abdominal distention
- Abdominal pain
- Chest discomfort
- Dysphasia
- Belching
- Heartburn
- Early satiety
- Pain during or after eating.
- 40-50% may be asymptomatic.

Assessment

- History
 - Use of NSAIDS, alcohol, previous ulcers or H. Pylori infection
- Assess for nausea/vomiting, abdominal pain

Intervention/Management of Ulcers

- Definitive diagnosis done through EGD with visualization of ulcer.
- May also test for H. Pylori with biopsy, in stool or serology.
- Proton pump inhibitors (Omeprazole, pantoprazole) and H2 antagonists (famotidine, ranitidine)
- Antibiotics if H. Pylori present.
- Monitor for GI bleed or perforation of ulcer.

Bowel Obstructions

- A small bowel obstruction (SBO) or large bowel obstruction (LBO) are due to:
 - Mechanical obstruction: presence of a physical barrier inhibiting passage of bowel contents.
 - Simple obstruction: complete or partial blockage of flow without vascular compromise
 - Closed loop: 2 points of complete obstruction typically due to a twist in the bowel.
- The area of bowel proximal to the obstruction will become dilated, edematous and unable to absorb the extra fluid. This will lead to vomiting, pain and if untreated perforation of bowel with sepsis and shock.

Causes of...

- SBO
 - Foreign body
 - Adhesions
 - Strangulated hernia
 - Crohn's disease
 - Tumors
 - Radiation
 - Intussusception
 - Volvulus
 - Gallstones
 - Bezoar
- LBO
 - Colon cancer
 - Adhesions
 - Hernia
 - Extrinsic cancer
 - Diverticulitis
 - Volvulus
 - Fecal impaction

Clinical Features

- Absence of the passage of flatus and/or feces
- Nausea/vomiting
- Abdominal distention
- Abdominal pain
- Guarding

Assessment

- History
 - Location/length of time of pain
 - Past hx of obstructions, abdominal surgeries
- Assessment
 - Nausea, vomiting, diarrhea present? Last normal BM
 - Distention
 - Abdominal guarding/rebound tenderness

Interventions/Management

- X-ray
- CT
- Labs
- Nasogastric tube
- Crystalloid fluids
- Monitor VS
- Antibiotics
- Surgery

Gastroenteritis

- Viral or bacterial illness producing inflammation of the mucous membranes of stomach and intestines leading to diarrhea and vomiting.
- Food poisoning may be considered a form of gastroenteritis.
- Infecting organisms may attach to the mucosa and destroy it, release toxins in to the bowel, or penetrate the intestine causing necrosis and ulceration.
 - These all lead to malabsorption, increased motility leading to diarrhea and dehydration.

Common types of Gastroenteritis

- Viral
 - Parvovirus-type organisms
 - Fecal-oral transmission in food/water
 - Incubation period 10-51hrs
 - Communicable during acute phase
 - Rotavirus/Norwalk virus
 - Fecal-oral and possibly respiratory transmission
 - Incubation of 48hrs
 - Norwalk is responsible for 1/3 viral gastroenteritis epidemics in developed countries.
- Bacterial
 - Escherichia coli (E. Coli)
 - Fecally contaminated food, water, fomite transmission
 - Campylobacter enteritis
 - Fecal-oral transmission, contact with infected animals
 - Incubation 1-10days
 - Communicable 2-wks
 - Shigellosis
 - Direct & indirect fecal-oral transmission
 - Incubation 1-7days
 - Communicable during acute phase of illness-4wks after but may₃₆ carry for months.

Clinical Features

- Abdominal pain/cramping
- Watery diarrhea
- Nausea/vomiting
- Fever

Assessment

- History
 - Anyone known to have similar s/s
 - Foods eaten recently, recent travel, outbreaks of known agents
 - Recent antibiotics
- Assess for blood in stool
- s/s dehydration d/t large amount output (v/d)
- Bowel sounds -hyperactive

Interventions/Management

- IV fluid replacement for dehydration
- Viral illness typically needs only symptomatic treatment
- Bacterial may be treated with antibiotics such as Ciprofloxacin or Trimethoprim/Sulfamethoxazole (Bactrim/Septra).
- Anti-diarrheals if available

Salmonella

- Bacteria transmitted via contaminated water or food or by animals
- Incubation period of 8-72hours
- Duration of 2-5 days
- S/S include fever, abd pain, diarrhea, headaches and myalgias. Vomiting is usually minimal. The elderly, young, immunocompromised are more at risk for sepsis
- Treat with Ciprofloxacin 500mg PO or 400mg IV BID 3-7 days. IV for fluid replacement.

Cholera

- *Vibrio cholera* is transmitted via infected food/water. Releases toxins to increase release of water in to intestine causing diarrhea.
- Communicable through stools for 7-14 days
- Begins suddenly with massive amounts of diarrhea (rice water stools) other s/s include vomiting, abd pain and those indicative of dehydration
- Treat with oral or IV fluid replacement, electrolytes
- High mortality rate due to dehydration if not treated.

Typhoid Fever

- The bacteria *Salmonella typhi* is transmitted through contaminated food/water or fecal-oral route with a person contaminated.
 - After treatment and recovery, some people become carriers of typhoid for years.
- If treated early most can recover quickly from typhoid fever, if not patients may suffer complications and death.
- S/S most often develop gradually 1-3 weeks after exposure.

Symptoms of Typhoid Fever

- Week 1
 - Diarrhea or constipation, high fevers, headache, weakness, sore throat, abdominal pain.
- Week 2
 - Rose colored rash to chest/abd, diarrhea or constipation, weight loss, very distended abdomen.
- Week 3
 - “Typhoid State”-laying very still, delirious
 - Life-threatening complications may begin to occur such as GI bleed and perforation with sepsis. Less common complications include myocarditis, pneumonia, pancreatitis, osteomyelitis, meningitis, psychosis and hallucinations.
- Week 4
 - Recovery period usually begins, fever decreases to normal though s/s may return up to 2 weeks after fever is gone.

Interventions/Management

- Diagnosis typically made from symptomology and health and travel history.
- May also obtain cultures from blood, stool, urine or bone marrow.
- Antibiotics necessary for treatment.
 - Ciprofloxacin and Ceftriaxone
 - Increasingly resistant to trimethoprim-sulfamethoxazole and ampicillin.
- Fluid (oral or IV) replacement, healthy diet
- Surgery for GI bleed or perforation.

Gastroesophageal Reflux Disease

- GERD occurs due to the reflux (backwards flow) or gastric contents into the esophagus.
- Symptoms are produced when the esophageal mucosa is exposed to the irritating gastric contents.
- Repeated exposure can lead to esophagitis from erosion.
- Affects 5-7% of the world's population

Causes of GERD

- Inappropriate lower esophageal sphincter relaxation
- Delayed gastric emptying
- Abnormal esophageal clearance
- Irritation of refluxed material
- Gastric distention

Clinical Features

- Dyspepsia (heartburn)
 - Burning feeling in chest, may radiate to neck, back and may worsen with bending over or laying down.
- Regurgitation
 - Travel of fluids up esophagus without nausea
- Hyper salivation
- Difficult or painful swallowing
 - Occurs in chronic cases due to inflammation or strictures
- Eructation (belching)

Assessment

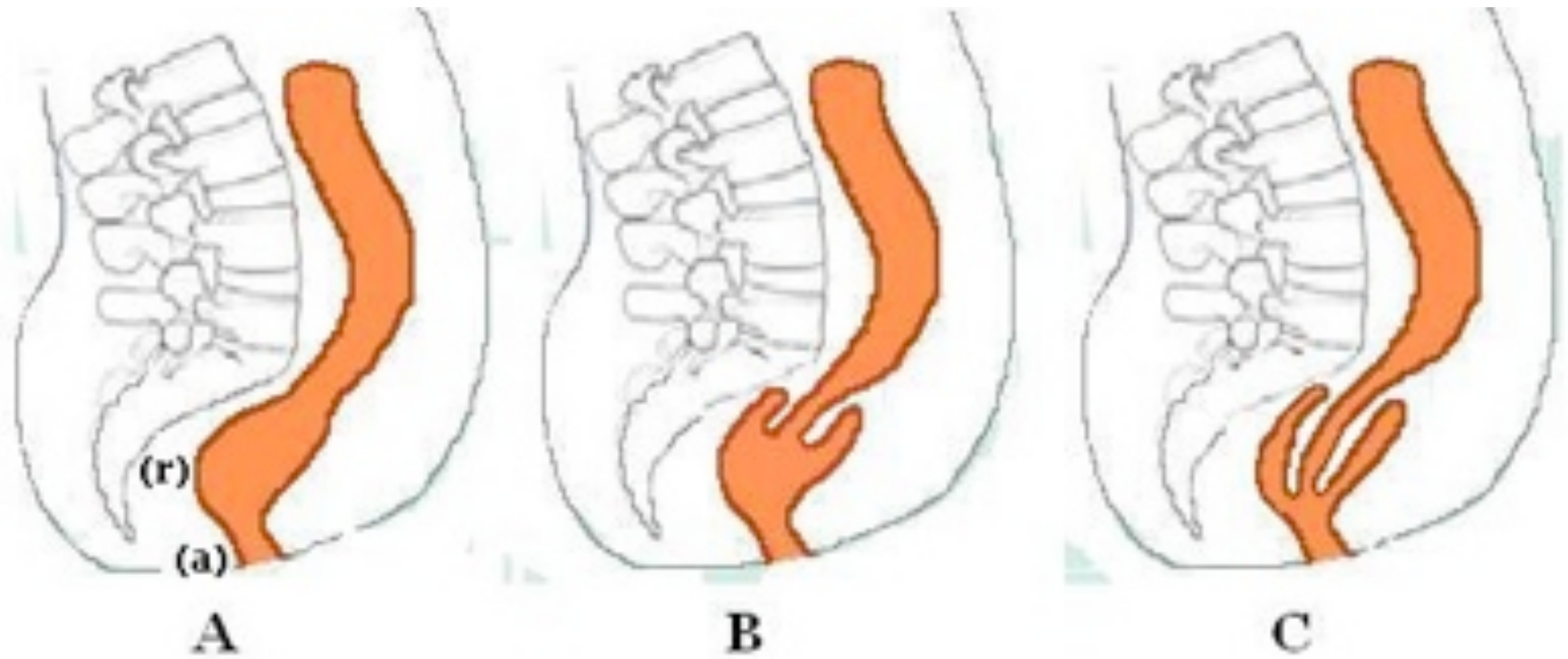
- History
 - Use of alcohol or smoking
 - What foods increase symptoms?
- Assessment
 - Chest pain/discomfort/burning
 - Epigastric pain/discomfort/burning
 - Shortness of breath
 - Cough
 - Bitter taste in mouth

Interventions/Management

- Clinically made by s/s
- Labs
- Radiology
- Proton pump inhibitors
- Histamine 2 receptor antagonists
- Antacids
- Life style changes

Intussusception

- Telescoping of a segment of bowel into the segment adjoining it.
- Children vs. Adults
- Idiopathic vs. pathologic



Normal anatomy \longrightarrow Intussusception

Clinical Features

- Sudden onset intermittent abdominal pain
- Vomiting
- Heme-positive stool
- “Currant Jelly” stool
- Lethargy
- Altered mental status

Assessment

- History
 - Hx of cancer, previous abdominal surgeries
- Assessment
 - Abd distention, mass palpable?
 - Vomiting/diarrhea (currant jelly stools)?
 - Bowel sounds?

Complications

- Bowel obstruction
- Perforation
- Peritonitis
- Sepsis

Diagnosis of Intussusception

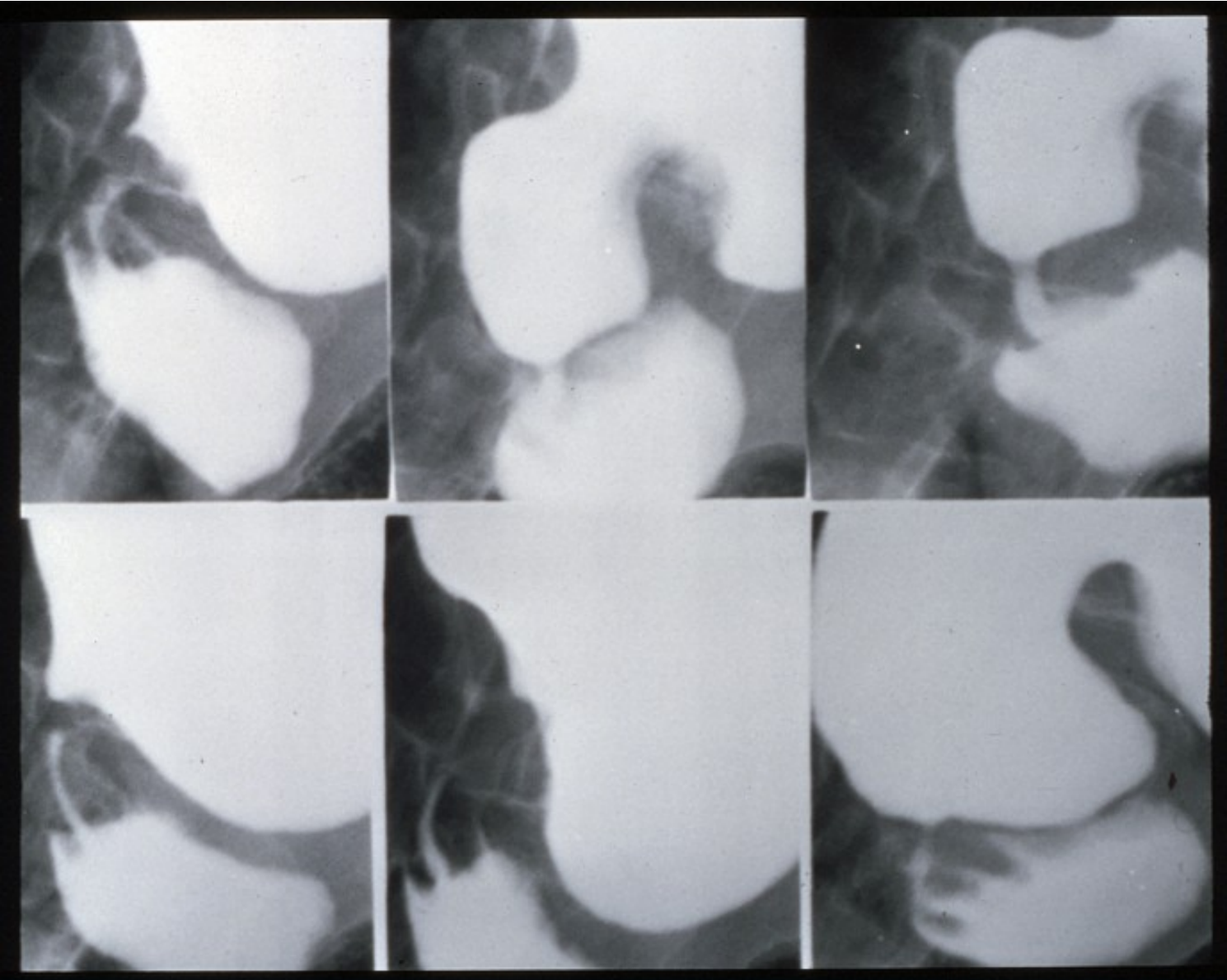
- History and physical exam
- X-rays
- Ultrasound
- Contrast enema
- CT scan

Treatment/Management

- Air contrast enema
- Water-soluble contrast enema
- Surgical resection
- Fluids resuscitation
- NG tube
- Ampicillin, metronidazole

Pyloric Stenosis

- Narrowing of the pylorus
- Hypertrophy often accompanies
- Inadequate muscle enervation
- Population/familial presence



Wellcome Images

Clinical Features

- Non bilious vomiting
- Normal appetite
- S/S dehydration
- Hypochloremia, hypokalemia, metabolic alkalosis

Assessment

- Family history of pyloric stenosis?
- Palpable “olive” mass in R epigastrium
- Forceful vomiting
 - After meals

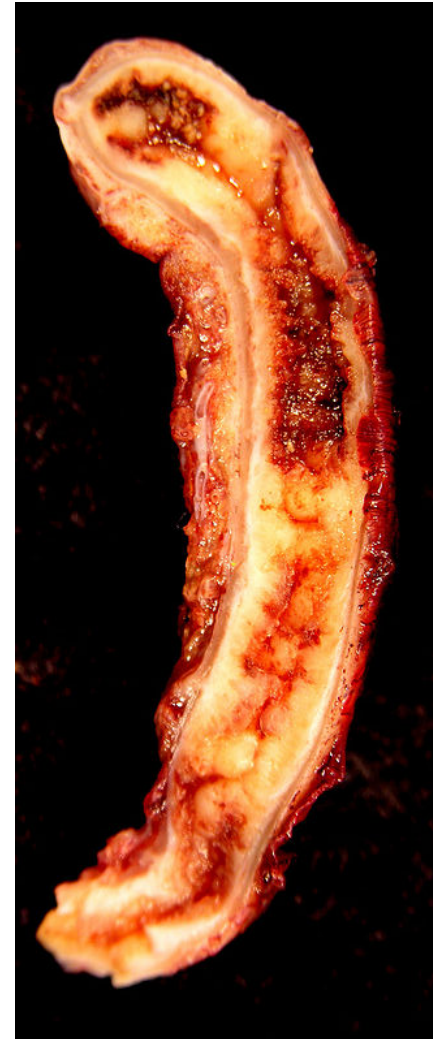
Interventions/Management

- Physical exam and history
- Labs
- X-ray
- Ultrasound
- Fluid resuscitation
- Surgical pyloromyotomy



Appendicitis

- Acute inflammation of the vermiform appendix



Clinical Features

- Epigastric/periumbilical → RLQ pain
- Nausea/vomiting
- Abdominal tenderness
 - McBurney's point
- Fever
- Anorexia
- Rebound tenderness
- Increased pain with movement

Assessment

- History
 - RLQ pain, may originate in periumbilical region.
- Physical
 - RLQ pain/tenderness
 - Nausea/vomiting
 - Fever
 - Rebound tenderness
 - Rovsing's sign
 - Psoas sign.

Complications

- Peritonitis
 - Generalized abdominal rigidity
- Perforation
 - Fever >38.2
- Abscess
 - Increased pain with cough, movement

Interventions/Management

- Ultrasound
- CT
- Labs
 - Elevated WBC
- Surgery
- Antibiotics
- IVF, anti-emetics, pain management

Pancreatitis

- Inflammation of pancreas
 - Mild → life threatening
- Activation of pancreatic enzymes
- Lipolysis
- Proteolysis
- Necrosis of blood vessels
- Inflammation

Causes

- Obstruction
- Infection
- Alcohol overuse
- Medications
- Injury

Clinical Features

- Sharp, epigastric abdominal/chest pain
- Difficulty breathing
- Fever
- Vomiting

Assessment

- History
 - Qualities of current pain
 - Hx alcohol abuse
 - Hx past pancreatitis
 - Hx gallstones
- Pain
 - Increases with food/alcohol intake
- Epigastric tenderness
- Skin-jaundice?
- Vomiting-bile present?
- Hypoactive or absent bowel sounds
- Breath sounds
 - Crackles to bases

Interventions/Management

- Labs
- X-ray?
- CT
- EKG- if chest pain present
- NPO
- Analgesics
- IVF

Cholecystitis

- Caused by prolonged obstruction of bile duct
- Leads to distention of gallbladder with inflammation, edema.
- Obstruction most often caused by gallstones
- Acalculus cholecystitis-biliary stasis
decreased blood flow caused by anatomical twisting of gallbladder neck.

Gallstones

- Gallstones are caused by a build up of cholesterol in bile.
- Stone formation is caused by prolonged retention of bile in gallbladder and/or concentration of cholesterol in bile.
- Pigmented stones occur when bilirubin becomes saturated-can be “black” or “brown”
- Black stones-insoluble calcium salt build up from chronic hemolysis
- Brown stones-chronic anaerobic infection

Clinical Features

- Steady, severe RUQ pain
 - Can last 10-15min or hours
- Pain radiating to R scapula
- Often is worse at night
- May have nausea, vomiting or decreased appetite
- Pain lasting greater than 5hrs or more consistent with cholecystitis
- Increase in RUQ pain with inspiration

Assessment

- History of pain
- History past gallstones

Complications

- Necrosis/perforation
- Gallstone ileus
 - when stone moves in to small intestine via fistula
- Ascending cholangitis
 - Infection in biliary tract caused by obstruction of bile duct
 - Fever, jaundice, RUQ pain (Charcot's Triad)

Intervention/Management

- Labs
- US
- HIDA Scan
- Analgesics
- Anti-emetics
- IVF replacement
- Antibiotics
 - Piperacillin/tazobactam
or ampicillin/sulbactam
- Cholecystectomy
- Diet therapy
 - Decrease fatty foods

Diverticulitis

- Inflammation, bacterial overgrowth or obstruction of diverticulae (small mucosal pockets or pouches)-most often found in sigmoid colon
- Can have micro or macro-perforation of diverticulae possibly leading to hemorrhage.
- Exact cause unknown, may be d/t low fiber diets.

Clinical Features

- LLQ pain/tenderness
- Fever
- Nausea/vomiting
- Dysuria/urinary frequency/hematuria

Assessment

- Vague abdominal pain
 - Commonly intermittent, may last for days
- LLQ tenderness
- guarding/rebound tenderness
- Change in bowel habits?
- Occult blood

Complications

- Fistula formation
 - Colo-vesical
 - Colo-vaginal

Interventions/Management

- Labs
- X-ray
- CT
- NPO
- IVF
- Analgesics
- Antibiotics
- NG
 - If ileus present needing decompression
- Possible surgical repair

Irritable Bowel Syndrome

- Chronic GI disorder
- No pathologic etiology known
- May have remissions and exacerbations
- May be exacerbated by certain foods, drinks, stress.

Clinical features

- Constipation
- Diarrhea
- Abdominal distension
- Feeling of incomplete evacuation (of stool)
- Mucous in stool
- Abdominal pain
 - Pain may often be relieved by defecation or may be affected by a change in stool frequency or consistency

Assessment

- History
 - Abd pain, stool frequency and consistency, dietary history, medications.
- Typically stable weight and nutritional status
- Bowel sounds normal, may be quieter in constipated pt
- Abdominal distention
- Possible diffuse tenderness or LLQ tenderness

Interventions/Management

- Non-emergent
- Treat major symptom
- Dietary modification
 - Increase fiber
 - Increase water
 - Identify and avoid food intolerances

Esophagitis

- Inflammation and/or irritation of the esophagus.
- Many causes
 - Acid reflux
 - Infection
 - Alcohol use
 - Cigarette smoking

Clinical Features

- Hoarseness
- Sore throat
- Heartburn
- Pain or difficulty swallowing

Assessment

- History
 - Social
 - Immunocompromised?
 - Current symptoms?
- Inspect mouth for s/s candida or other infection
- Acid reflux?

Interventions/management

- Proton pump inhibitors for acid reduction
- Antibiotics if infection present
- Long term esophagitis can lead to strictures in esophagus, Barrett's esophagus and esophageal cancer.

Gastrointestinal Bleeding

- GI bleed are classified by Upper GI bleed (UGIB) or Lower GI bleed (LGIB)
- UGIB more common than lower
- Both UGIB and LGIB are more common in males and elderly

Causes of...

- Upper GI Bleed
 - Peptic ulcer disease
 - Esophagitis
 - Varices
 - Mallory-Weiss tear
 - Gastroduodenal erosions
 - Vascular malformation
 - Neoplasm(malignancy)
- Lower GI Bleed
 - Diverticulitis
 - AV malformations
 - Colitis
 - Inflammatory bowel disease
 - Ischemia
 - Radiation
 - Neoplasm
 - Hemorrhoids
 - Rectal varices
 - Fissures
 - Colonic ulcers
 - Meckel's diverticulum
 - Angiodysplasia
 - Enteritis
 - Fistulas

Esophageal Varices

- Cirrhosis
 - Blood from liver refluxes into esophageal and gastric vessels d/t portal hypertension and causes varices.
 - Veins are distended and can be fragile and at risk for tearing and bleeding
 - Varices can be life-threatening with large amounts of blood loss leading to hypovolemic shock.

Clinical features

- Hematemesis
 - “coffee-ground emesis”
- Hematochezia
- Melena
- Fatigue
- Hypovolemia
- Tachycardia

Assessment

- History
 - Hx of abd issues or bleeding
 - Alcohol use
 - NSAID use
- Physical
 - VS
 - General appearance, mental status, s/s hypovolemia
 - Oro and nasopharynx - blood source or swallowing of
 - Abdomen - tenderness, distension, masses
 - Rectal - occult blood, hemorrhoids, fissures

Interventions/Management

- Labs
- NG with lavage
- Endoscopy
- Blood product transfusion
- IVF resuscitation
- Medications
 - Proton pump inhibitors
 - Octreotide
- Sengstaken - Blakemore tube
- Surgery

Abdominal Trauma

Splenic Injuries

- Spleen is most frequently injured abdominal organ
- Injury/rupture can cause significant hemorrhage.
- LUQ location, behind ribs 9,10,11.

Symptoms/Assessment

- LUQ tenderness
- Referred pain to L shoulder (Kehr' s sign)
- Rebound tenderness
- Hypotension

Intervention/Management

- FAST
- CT
- Labs
- Diagnostic Peritoneal Lavage (DPL)
- IVF resuscitation
- analgesics
- Close observation
- Serial labs, CT, US if needed
- Surgery

Liver Injuries

- Liver at increased risk for injury d/t anterior location. It is generally unprotected and large in size.
- May cause significant hemorrhage
- Trauma to epigastric/Right upper abdomen
- Partially located behind ribs 8-12

Symptoms/Assessment

- RUQ pain/tenderness
- Involuntary guarding
- Hypoactive or absent bowel sounds
- Abdominal wall rigidity

Interventions Management

- FAST
- CT
- DPL?
- Labs
- If liver lac is small may self heal.
- Larger, or stellate lacerations need to be surgically repaired.

Stomach Injuries

- Stomach more often endure penetrating than blunt injuries d/t hollow shape
- Nasogastric Tube
- X-ray

Pancreatic Injuries

- Pancreas is located more retrograde in abdomen, behind stomach and liver
- Needs more direct, blunt force trauma to sustain major injury
- Will not see damage on DPL d/t posterior location and may be difficult to see on CT
- Posttraumatic pancreatitis may follow
 - Epigastric pain
 - Nausea/vomiting
 - Abdominal distention
 - *serum amylase, lipase-watch for elevation.

Intestinal Injuries

- Large and small bowel often injured in blunt and penetrating trauma d/t large size and anterior position.

Symptoms/Assessment

- Abdominal rigidity
- Hypoactive or absent bowel sounds
- Rebound tenderness
- +hemocult
- Obvious evisceration

Interventions/Management

- X-ray
- DPL
- CT
- IVF resuscitation
- Exploratory laparotomy
- Antibiotics
- Cover eviscerated organs with damp, sterile gauze.

References

- <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001348/>
- <http://www.mayoclinic.com/health/typhoid-fever/DS00538>
- <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002138/>