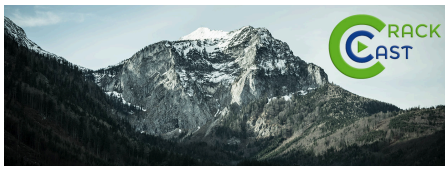


Chapter 27 – Abdominal Pain

Episode overview:

1) List and explain 8 causes of life-threatening abdominal pain
2) List 15 causes of extra-abdominopelvic abdominal pain

Wisecracks:

1) Why is WBC of so little utility in abdominal pain?
2) When is an abdominal x-ray useful in investigating abdominal pain?

Rosen's in Perspective

- Common and challenging presentation:
  - History and physical examination can be misleading
  - Serious pain can be benign and mild pain can be serious

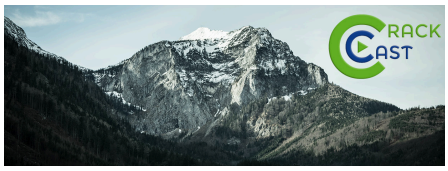
Epidemiology

- Groups that require special consideration in the work up:
  - **Elderly**
    - Commonly missed diagnoses
      - Diverticulitis
      - Ruptured AAA
      - Mesenteric ischemia
  - **Immunocompromised** (uncontrolled DM, HIV, liver disease, chemo)
    - Presentation can be misleading due to lack of an inflammatory response
  - **Women of reproductive age**
    - Pelvic organs can lead to more missed pathologies
    - Ectopic pregnancy

Pathophysiology

Pain is derived from three pathways:

i. Visceral
ii. Somatic
iii. Referred



Visceral pain:

- Stimulation from autonomic nerves in the visceral peritoneum surrounding organs
  - A result of gas, fluid, stretching, edema, blood, cysts, abscesses
  - If the affected organ undergoes peristalsis, then the pain is usually intermittent, crampy and/or colicky in nature

- Pain follows the embryonic somatic segments:
  - Upper, periumbilical, lower abdominal pain
    - Foregut = upper pain = from stomach, duodenum, liver, pancreas
    - Midgut = periumbilical pain = small bowel, proximal colon, appendix
    - Hindgut = lower abdominal pain = distal colon, genitourinary tract
  - Localization of pain only occurs when the **parietal peritoneum** becomes affected by the inflammatory process

Somatic pain:

- Occurs with irritation of parietal peritoneum, thereby allowing the patient to localize exactly the location of the pain.

Referred pain:

- "Pain felt at a distance from its originating source"
- This is due to peripheral afferent nerve fibers entering varying spinal cord levels

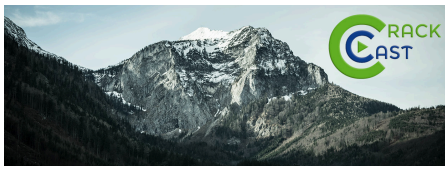
Questions:

1) List and explain 8 causes of life-threatening abdominal pain

Life threatening causes of abdominal pain:

1. **Ruptured ectopic pregnancy**
   a. Females of childbearing age. 1/100 pregnancies
   b. Risk factors:
      i. Non-white race, older age, history of STI/PID, infertility treatment, IUD in the last year, tubal ligation, previous ectopic pregnancy, smoking, fallopian surgery
   c. Symptoms: Severe, sharp pain or may be diffuse with shock or peritonitis
      - With or without vaginal bleeding.
   d. Physical exam features do not rule in or out the diagnosis
      - Abdominal and vaginal symptoms may or may not be present.
   e. FAST exam, U/S, BHcG necessary

2. **Ruptured or leaking abdominal aneurysm**
   a. Increases with advanced age, men, or HTN, DM, smoking, COPD, CAD, connective tissue disease, trauma
   b. Symptoms: usually asymptomatic until rupture
      i. ACUTE onset epigastric, back pain WITH syncope and shock. May radiate to back, groin, testes.



ii. May have normal vital signs with normal exam and normal femoral pulses.

c. Abdominal plain films - abnormal in 80% of cases; can do FAST
   - CT abdomen is test of choice.

3. Mesenteric ischemia

a. Peak: elders, CV disease, CHF, arrhythmias, sepsis, dehydration
   - **70% mortality**

b. Mesenteric venous thrombosis - associated with hypercoagulable states
   - Haematological, inflammation, trauma

c. Types of lesions:
   i. Arterial occlusion - sudden / emboli / low flow atherosclerosis

d. Symptoms: periumbilical then diffuse pain, with nausea and vomiting, at times postprandial.

e. May have a normal exam

f. Labs: Metabolic acidosis with lactic acidemia. NEED **CT** to diagnosis.

4. Intestinal obstruction

a. Peaks in infants and the elderly or post-operative

b. Etiology:
   i. **Adhesions**, cancer, hernias, volvulus, infarctions,
   ii. Usually have normal vitals until bowel strangulation or dehydration occurs

5. Perforated viscus

a. Incidence increases with advancing age (risks: diverticular dz & PUD)
   i. Duodenal ulcer erodes through stomach
   ii. Colonic diverticula
      - Gallbladder and large bowel perforations are rare
   iii. Symptoms: acute onset epigastric pain, vomiting, then developing into a fever
   iv. Diffuse board-like abdomen with guarding, tachycardia, fever
   v. Upright radiograph shows air under diaphragm in 70-80% of cases

6. Acute pancreatitis

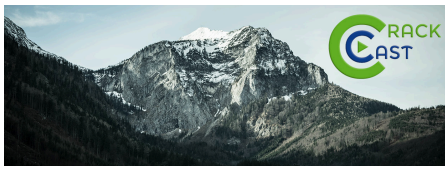
a. Peaks in adulthood - alcoholism, biliary tract disease or manipulation
   i. Hyperlipidemia, hypercalcemia, ERCP, cancer, ischemia, trauma, ARDS, spontaneous hemorrhage into the pancreas

b. Sx: acute onset epigastric pain, more than findings on exam

c. Rarely have rebounding or guarding because the organ is retroperitoneal

d. Grey turner's or cullen's sign may be present if it is hemorrhagic

e. Workup:
   i. Lipase, U/S+/- CT scan can show necrosis or abscess



7. **Ascending cholangitis**
   Charcot's Triad
   - Fever
   - RUQ
   - Jaundice

   Antibiotics on board ASAP

8. **Complicated diverticulitis or appendicitis (ruptured or with abcesses)**
   - IV fluid resuscitation + IV Antibiotics; Surgery

2) List 15 causes of extra-abdominopelvic abdominal pain

- Must consider extra-abdominal causes of pain - See box 27-1

Box 27-1 Important Extra-abdominopelvic Causes of Abdominal Pain

Thoracic
Myocardial infarction or unstable angina
Pneumonia
Pulmonary embolism
Herniated thoracic disk (neuralgia)
Pericarditis or myocarditis

Genitourinary
Testicular torsion

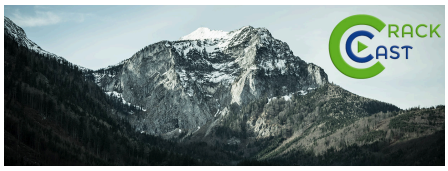
Abdominal Wall
Muscle spasm
Muscle hematoma
Herpes zoster

Infectious
Streptococcal pharyngitis (more often in children)
Rocky Mountain spotted fever
Mononucleosis

Systemic
Diabetic ketoacidosis
Alcoholic ketoacidosis
Uremia
Sickle cell disease
Porphyria
Systemic lupus erythematosus
Vasculitis
Glaucoma
Hyperthyroidism

Toxic
Methanol poisoning
Heavy metal toxicity
Scorpion bite
Snake bite
Black widow spider bite

Adapted from Purcell TB: Nonsurgical and extraperitoneal causes of abdominal pain. Emerg Med Clin North Am 7:721, 1989.



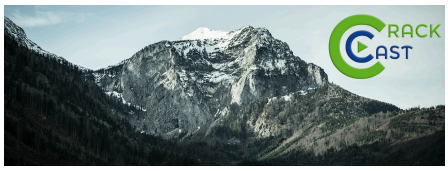
- Key is to visualize what's "around" the black box of the peritoneal cavity!

1. Thoracic
    a. **MI / angina**
    b. **Pneumonia / PE**
    c. **Perimyocarditis**
2. GU
    a. **Torsion of the testicles**
    b. **Penile pathology**
    c. **Intra-vaginal foreign body / mass / pathology**
3. Superficial
    a. **Muscle hematoma or herpes zoster**
4. Systemic
    a. Infectious
        i. Pharyngitis (in kids)
        ii. RMSF
        iii. Mononucleosis
    b. Metabolic
        i. DKA
        ii. Sickle cell disease
        iii. SLE / vasculitis
        iv. Porphyria
5. Toxic
    a. Methanol / Heavy metal poisoning
    b. Scorpion bite / snake bite / **black widow spider bite**

Wisecracks:

1) Why does the WBC have so little utility in abdominal pain?

- Blood work:
    - "**The WBC count is neither sensitive nor specific to be a discriminatory test to establish or rule out serious causes of abdominal pain"**
    - Serial WBCs have FAILED at distinguishing surgical from non-surgical pathologies
    - ***WBC is never helpful, except when they indicate immunosuppression***



2) When is an abdominal x-ray useful in investigating abdominal pain?

Has little utility in centres with CT imaging available.

I love LITFL:

“Gasses, masses, bones, stones” approach

Check out: http://lifeinthefastlane.com/investigations/axr-interpretation/

Useful for:

- Query foreign body / body packers/stuffers
    - Shout-out to: http://lifeinthefastlane.com/top-ten-foreign-bodies/
- Query drug overdose
    - Check out: http://www.ncbi.nlm.nih.gov/pubmed/3813170
    - Iron, mercury, calcium carbonate, chloral hydrate, acetazolamide, potassium chloride tabs
- Query perforated viscus
- Pediatric population exceptions
    - Neonates / kids
        - Volvulus / Malrotation
        - NEC

Notice that small bowel obstruction and constipation **are not** suggested indications for getting an abdominal x-ray - especially in centres where CT is available.