FoEM Clerkship:

Abdominal Pain Essential Learning

- **Abdominal Pain Learning Objectives**
  - List a differential for causes of abdominal pain including common and life threatening diagnoses, including extra-abdominal mimics.
  - Identify patient characteristics and elements of the history that will be important for characterizing the cause of the abdominal pain.
  - Describe specific physical exam findings and vital signs derangements that may help narrow the differential for acute abdominal pain.
  - Discuss the laboratory and other diagnostic tests necessary to evaluate abdominal pain and the pattern of abnormalities on the laboratory results you would expect for the conditions on the differential.
  - Compare utility of different imaging modalities in the evaluation of abdominal pain, including when each type of test is indicated.

- **Upper Abdominal Pain Essential Differential**
  - The most important differential diagnoses for upper abdominal pain include biliary disease (biliary colic, choledocholithiasis, cholangitis), hepatitis, pancreatitis, peptic ulcer disease/gastritis, and appendicitis. A pelvic exam and sexual history should be considered in women with appropriate historical factors (i.e. pelvic symptoms) to exclude the possibility of Fitz-Hugh-Curtis Syndrome. A broader differential diagnosis could also include cardiovascular concerns such as acute coronary syndrome, aortic dissection, AAA rupture, mesenteric ischemia, nephrolithiasis, and pulmonary issues such as pneumonia, pleurisy, or pulmonary embolism.

- **Cholecystitis**
  - History/Physical
    - Inflammation of the gallbladder causes RUQ/epigastric pain, n/v, fever.
    - Radiation to the right shoulder may occur due to referred nerve pain.
    - Often there is association with prior biliary colic episodes with fatty food consumption.
    - Patient risk factors include history of gallstones, middle age, female sex, and obesity.
    - Exam: tenderness to palpation in the RUQ. Classic finding is Murphy's sign (involuntary breath-holding when palpating deeply the RUQ) but pain can be epigastric or in the right flank as well.
  - Workup

        - Labs: LFTs (biliary pattern, though may be normal), CBC (looking for leukocytosis, though may be normal), blood cultures, lactate (if concern for sepsis)
        - Ultrasound is the most specific modality for diagnosis
        - Four signs of acute cholecystitis on ultrasound
            - Presences of gallstones
            - Pericholecystic Fluid
            - Anterior gallbladder wall thickening > 3mm
            - Sonographic Murphy's sign (pain with pressure of probe over gallbladder)
    - Treatment
        - Analgesia (often will require IV opiates for severe pain)
        - Antiemetics
        - NPO
        - Volume resuscitation
        - IV antibiotics (IV Zosyn is a reasonable first line or cephalosporin + metronidazole)
        - General Surgery Consultation (the only lasting treatment is cholecystectomy)

- **Cholangitis**
    - History/Physical
        - Blockage and inflammation of the common bile duct (e.g. mass, choledocholithiasis) causes RUQ/epigastric pain and fever, very similar to cholecystitis, but patients may also have jaundice due to higher bilirubin elevation as a result of obstruction (Charcot's Triad).
        - May progress quickly to include hypotension and AMS (Reynold's Pentad).
        - Similar history of prior biliary colic and patient risk factors given shared pathophysiology.
        - Exam: Jaundice and RUQ TTP
    - Workup
        - Labs: LFTs (biliary pattern), CBC (leukocytosis), blood cultures, lactate
        - RUQ ultrasound again useful, but may require MRCP or ERCP
            - Looking for CBD dilation and signs of inflammation
    - Treatment
        - Analgesia (often will require IV opiates for severe pain)
        - Antiemetics
        - NPO
        - IVF resuscitation
        - IV antibiotics (IV Zosyn is a reasonable first line)
        - Interventional GI consultation +/- surgical consultation (often require ERCP to remove blockage or place stent)
- **Pancreatitis**
    - History/Physical

        - Blockage or inflammation of the pancreas/pancreatic ducts leads to epigastric pain often radiating to the back and n/v.
        - Most common risk factors are EtOH use and gallstones, but may also be caused by severe hypertriglyceridemia, medication or toxins.
        - Exam: Epigastric TTP
    - Workup
        - Diagnosis is made with 2 out of 3 criteria:
            - Lipase > 3x normal limit
            - Epigastric abdominal pain
            - Radiographic imaging consistent with pancreatitis (i.e. fat stranding near pancreas)
        - Since the first 2 of these criteria are often present, imaging is rarely needed to make the diagnosis, but in equivocal cases, CT imaging is appropriate. CT may also be indicated to rule out other pathology or if concerned for complications of pancreatitis (pseudocyst, abscess).
    - Treatment
        - IVF resuscitation
        - Pain control (often with IV opiates)
        - NPO
            - In the past, patients were made NPO for days, but more recent literature supports slowly advancing the diet as tolerated.

- **Acute Hepatitis**
    - History/Physical
        - Inflammation of hepatic cells causes RUQ pain, often with n/v and/or jaundice.
        - Etiologies of acute disease include viral infection, toxic ingestion, EtOH use
            - Ask about IVDU, recent foods/medicines, sexual hx
        - Exam: RUQ TTP
    - Workup
        - Significant elevation in LFTs often in hepatic pattern (AST and ALT more than ALP)
        - Elevated bilirubin
        - Elevated ammonia (may cause altered mental status)
        - If severe, may have elevation in INR (due to impaired hepatic synthetic function)
        - Hepatitis Viral Panel
    - Treatment
        - Dependent on etiology, ranging from supportive care, antivirals, to liver transplant

- **Peptic Ulcer Disease**
    - History/Physical

        - Ulcerative injury to gastric/duodenal lining causes burning epigastric/LUQ pain, often radiating up the esophagus as well (GERD).
        - H. pylori is a common cause, more prevalent in lower socioeconomic classes, non-US born patients, usually acquired in childhood.
        - Overuse of NSAIDs may also be a cause
        - Exam: may be normal without TTP as pain is usually more related to food ingestion.
        - If perforation is present, expect a diffusely tender/distended/rigid abdomen.
        - If bleeding, expect gross or occult fecal blood (melena, hematochezia) or hematemesis.
    - Workup
        - If concern for perforation, obtain STAT upright CXR to evaluate for free air under the diaphragm, and consider CT scan if negative.
        - Definitive diagnosis made via EGD**.** Testing may include breath, serum, or fecal H. pylori test. However, these tests are not typically sent from the ED.
        - Often a diagnosis of exclusion after other etiologies are ruled out; diagnosed empirically based on symptomatology.
    - Treatment
        - Maalox for immediate relief
        - PPIs/H2 blockers
        - If known H. pylori +, triple vs. quadruple therapy, but this is rarely known on ED presentation.
        - Cessation of NSAIDs

- **Appendicitis**
    - History/Physical
        - Classically presents as pain in the RLQ, however can start as more generalized/periumbilical pain before spreading to the RLQ.
        - Typically associated with nausea, vomiting, anorexia.
        - Tenderness at McBurney's Point (⅔ of the way between umbilicus and right anterior superior iliac spine).
        - Rovsing sign (palpation of LLQ worsens RLQ pain), Psoas sign (extension of R leg at hip while patient lies on left side elicits abdominal pain), Obturator sign (internal and external rotation of thigh at hip elicits pain) may be seen but are not overly sensitive.
    - Workup
        - Labs including cbc, bmp, pregnancy test; consider lactate and CRP
        - CT abdomen/pelvis is the typical diagnostic imaging test
        - Consider ultrasound first in children, pregnant patients, or very thin patients.
        - Can consider MRI if unable to identify appendix in children or pregnant patients.
    - Treatment
        - IVF resuscitation, NPO

- Analgesia/antiemetics
- Antibiotics targeting gram negatives and anaerobes (Ceftriaxone + Flagyl or Zosyn are common options)
- Surgical consult for consideration of appendectomy vs. medical management

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  - **References**

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