Acute Abdomen Differential Diagnosis: Lower Quadrants

Acute Abdomen is a general term used to describe any patient condition that involves sudden onset and severe abdominal pain. There are many conditions that may or may not require emergent surgery to treat, which is why it is important to be able to quickly identify the cause. It can be helpful to sort the causes of acute abdomen into the classically defined region of abdominal pain. Midepigastric pain can be due to pancreatitis, aortic dissection, peptic ulcer disease, and myocardial infarction. Causes within the lower quadrants include ovarian torsion, ectopic pregnancy, pyelonephritis, renal calculi and acute salpingitis. Appendicitis is most commonly associated with right lower quadrant (RLQ) pain; and causes within the left lower quadrant (LLQ) include sigmoid volvulus and sigmoid diverticulitis.

PLAY PICMONIC

Right Lower Quadrant

Appendicitis

Appendicitis-pen

Inflammation of the appendix due to obstruction of the appendiceal lumen, which then becomes infected and inflamed. Beginning as periumbilical pain, appendicitis pain will eventually move to the RLQ, causing tenderness at McBurney’s point, which is one-third of the distance from the anterior superior iliac spine to the umbilicus (navel) on the right side. Accompanying symptoms include loss of appetite, nausea and vomiting. Diagnosis is made clinically, however ultrasound or CT scan may show appendiceal inflammation and labs may show an elevated WBC count. Gold standard for treatment is an appendectomy, as the risk for rupture and potential mortality is too high to attempt medical management.

Salpingitis

Sultan-on-fire

Acute salpingitis is a type of pelvic inflammatory disease (PID), which is a more general term that refers to any ascending infection from the vagina to the uterus, fallopian tubes, ovaries and peritoneal cavity. Infection with STIs, like gonorrhea or chlamydia, will predispose to development of PID. Women present with extreme unilateral or bilateral pain, vaginal discharge, dysuria, nausea, fever and chills. Physical exam shows cervical motion tenderness that is sometimes called the “Chandelier Sign” since the patient may jump upwards toward an imaginary chandelier due to the pain. Diagnostic criteria for any form of PID have not been set, but since the rate of potential complications is so high, dual antibiotic treatment is begun on an outpatient or inpatient basis as soon as the diagnosis is suspected.

Left Lower Quadrant

Sigmoid Volvulus

S-mud Volvo Stuck in a Loop of Bowel

A volvulus refers to any malrotation of a portion of intestine that then causes an obstruction and compromise of vascular supply to the affected tissue. Sigmoid volvulus affects the sigmoid colon This is more common in the elderly, as this portion of bowel becomes more flaccid with age, thus more prone to twisting. Initial symptoms may include LLQ pain, distention, constipation, and hematochezia (bright red blood per rectum). A KUB (kidney, ureters, bladder) x-ray will show a “coffee-bean” sign and can be diagnostic in the majority of cases. Surgical intervention is required to prevent complications like necrosis and perforation.

Sigmoid Diverticulitis

S-mud Diver-on-fire

Diverticula are outpouchings of any mucosal tissue; when there are multiple present in the colon then it is called diverticulosis. This condition is caused by increased bowel pressure (from a chronically fiber-deficient diet), but is usually asymptomatic or with the sole symptom of painless hematochezia. However, when outpouchings become inflamed, the condition is called diverticulitis, and can manifests as LLQ pain, nausea, vomiting, constipation, and diarrhea. CT scan or other imaging is required for diagnosis. If mild, treatment can be achieved with diet modification and pain relief. If severe, antibiotics are recommended to prevent complications like abscess formation.

Lower Quadrant (Both/Either)

Ectopic Pregnancy

Egg-top Pregnant-woman

Any pregnancy that occurs outside the uterus (fallopian tube, ovary, peritoneal cavity) can cause abdominal pain. Complications include infertility and death if fallopian tube rupture triggers internal hemorrhage. Patients can present with severe lower quadrant abdominal pain, especially if fallopian tube rupture has already occurred. Serum hCG that is low for time of gestation and transvaginal ultrasound can be used for diagnosis. Treatment can be non-surgical with methotrexate for a stable ectopic pregnancy, but if risk of rupture is high or has already happened, surgery may be necessary.

Ovarian Torsion

Ovary Twisted

Benign ovarian cysts, such as follicular cysts, or ovarian tumors, such as fibromas, often facilitates ovarian torsion. This is because the enlarged ovary is more prone to being flipped and tangled around the fallopian tube and ovarian artery, compromising the blood supply and leading to a fertility-and-life-threatening condition. Torsion can present with sudden abdominal pain in either lower quadrant. Diagnosis can be made with ultrasound, and treatment is emergent surgery.

Renal Calculi

Kidney Cow-captain

More commonly known as kidney stones, renal calculi occur in a variety of forms. From most to least common are: calcium oxalate/phosphate stones, ammonium-magnesium-phosphate (struvite) stones, uric acid stones and cystine stones. Each type have their own respective causes, but all classically present with colicky lower quadrant pain and hematuria with CVA tenderness on physical exam. CT or ultrasound imaging can be used to assist with diagnosis. Treatment varies depending on type and size; if <5 mm then the stone will most likely pass spontaneously with adequate hydration. If the stone is larger, other therapies include lithotripsy or surgical removal.

Pyelonephritis

Pillar with kidney-on-fire

If a lower urinary tract infection (UTI) goes untreated, it is possible for the infection to ascend to the kidneys, causing pyelonephritis. Most commonly caused by E. coli, patients present with flank pain or lower quadrant abdominal pain on the affected side, with fever, chills, nausea, vomiting, and dysuria. Physical exam will be positive for unilateral or bilateral costovertebral angle (CVA) tenderness. Urinalysis is obtained to look for WBCs and signs of bacteria in the urine. Depending on clinical severity, it can be treated with IV or oral antibiotics, such as ciprofloxacin or ceftriaxone.