A Pictorial Essay of Common and Uncommon CT Findings of Left Upper Quadrant Abdominal Pain

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INTRODUCTION
Abdominal pain is the most common chief complaint of patients presenting to the emergency department. The differential diagnosis of left upper quadrant pain can be divided into organs located in the left upper quadrant including the lung, stomach, spleen, kidney, pancreas, bowel, and mesentry. In this exhibit, we will review the imaging features of some of the common and uncommon causes of left upper quadrant pain on CT and briefly highlight the general clinical management of the more common etiologies so that the radiologist can aid the referring clinician in forming a management plan in the acute clinical setting.

LUNGS

Boerhaave Syndrome with left upper abdominal fluid collection
Boerhaave Syndrome typically occurs in left side of distal thoracic esophagus with full-thickness tear following vomiting or straining. If there is suspicion for Boerhaave syndrome, may consider CT with oral contrast or esophagram with water-soluble contrast. If no leak is identified with water-soluble contrast, examination should be repeated with thin barium to evaluate for subtle leaks. CT findings include extravasal gas and fluid collections in the left mediastinum and/or upper abdomen. Large perforations require surgical intervention and drainage of fluid while small self-contained perforations are managed nonoperatively with broad-spectrum antibiotics.

Uteroretropelvic obstruction
UPL-obstruction most commonly is a congenital partial proximal ureteral obstruction detected in utero or later in life. The exact cause remains unknown, but may be due to an intrinsic cause such as abnormality of the collagen or muscle. Secondary causes such as strictures from iatrogenic causes, inflammation, or tumor are less common. The presence of crossing vessels are important to note for surgical planning, but are not usually the cause of UPL obstruction. Typically presents with pyelectasia with abrupt narrowing at the UPL. Symptoms include intermittent abdominal pain and flank pain after drinking large volumes of fluid or fluids with diuretic effect. Treatment with retrograde endopyelotomy or surgical pyeloplasty may be indicated in symptomatic patients or in patients with asymmetric or impaired renal function.

Bowel

Acute diverticulitis
Diverticulitis is a gut infection affecting 5-10% of population over 45 years of age and 80% of people over the age of 85 years. Typical CT findings of acute diverticulitis include segmental wall thickening with inflammatory changes in the adjacent fat. The key to distinguishing diverticulitis from other inflammatory conditions is the presence of diverticula in the involved colon segment. CT can identify the presence of associated complications such as diverticular abscess, pericolic abscess, or peritonitis. Of note, sometimes it may be difficult to distinguish acute diverticulitis from acute appendicitis. Treatment with resection of the involved colon is typically required. Treatment typically includes oral antibiotics in uncomplicated diverticulitis with a clear liquid diet. Complicated diverticulitis may require percutaneous abscess drainage and/or surgery.

Mesentry

Omental infarction
Omental infarction occurs due to the abundance of collateral vessels in the omentum. The right inferior portion of the omentum is more vulnerable to omental infarction due to more tenuous blood supply. Primary omental infarction is often hemorrhagic resulting from vascular compromise. Secondary omental infarction may occur after traumatic injury as a result of surgical trauma or inflammation, often occurring near surgical site rather than right lower quadrant. CT findings include mild haziness in the fat layer in the colon to early in mild infarction or fatty infarction, large, (50-150) encapsulated mass, with soft tissue stranding adjacent to the colon. Treatment is pain management with NSAIDs.

REFERENCES

Fig. 1. 60-year-old woman presents to the ER with left flank pain. A. Axial image in lung window shows a small focal consolidation in the basilar segment of the left lower lobe. B. Coronal reconstruction of the abdominal pelvis on this CT urographic study protocol shows a small retroperitoneal cyst in the superior pole of the left kidney.

Fig. 2. 45-year-old woman presents to the ER with left upper abdominal pain. A. Axial image from common-enhanced CT with oral contrast shows a round soft tissue mass just inferior to the spleen with adjacent fat stranding. B. Sagittal image shows an intrahepatic origin from the splenic artery terminating along the superior aspect of this round soft tissue mass.

Fig. 3. 45-year-old woman presents with fever. A. Axial image on an urgent emergency CT shows a normal-appearing colon. B. Coronal image shows an area of stranding extending into the perirenal portion of the left kidney.

Fig. 4. 65-year-old man presents to the ER with left upper abdominal pain. A. Axial image on an urgent emergency CT shows a normal-appearing colon. B. Coronal image shows a normal-appearing spleen with normal splenic vasculature.

Fig. 5. 65-year-old man presents with left upper abdominal pain. A. Axial image on an urgent emergency CT shows a normal-appearing colon. B. Coronal image shows a normal-appearing spleen with normal splenic vasculature.

Fig. 6. 25-year-old man presents to the ER with left upper abdominal pain. A. Axial image on an urgent emergency CT shows a normal-appearing colon. B. Coronal image shows a normal-appearing spleen with normal splenic vasculature.