Various presentations of acute gallbladder: What an ED radiologist must know

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OBJECTIVES

- Acute gallbladder pain is one of the most common presenting complaints to ED and includes a myriad of clinical conditions ranging from cholecystitis to neoplasms to cholelithiasis.
- Accurate diagnosis is essential to avoid delays in proper treatment and management, and therefore understanding the radiologic features in these clinical conditions is essential.
- Ultrasound, CT scan, MRI and nuclear medicine scans are used for evaluating the acute gallbladder and in differentiating these various conditions.

ACUTE ACALCULOUS CHOLECYSTITIS

- Acute inflammation of gallbladder (GB) not related to gallstone, usually secondary to ischemia.
- Ultrasound features are similar to acute calculous cholecystitis except for absence of impacted gallstone.
- GB wall thickening (> 4 mm), GB wall enhancement, pericholecystic fluid, pericholecystic fat stranding.
- Larger stone may cause biliary obstruction with focus intrahepatic/duodenal dilation.
- Treatment: Supportive care, antibiotics, anticoagulation.
- CT: GB wall thickening, pericholecystic fluid/abscess.
- MRI: T2WI: High signal pericholecystic fat, T1WI C+: “thin sign” of increased hepatic enhancement.

ACUTE CALCULOUS CHOLECYSTITIS: OBSTRUCTION

- Typical presentation is acute abdominal pain and fever due to inflammation of gallbladder secondary to calculus obstructing cystic duct wall, progresses to gangrenous cholecystitis and perforation.
- Obstructive calculous cholecystitis.
- Calcific/soft tissue/water density, “bull’s eye” sign: Rim of bile surrounding a stone, dilatation of cystic duct, pericholecystic fluid.
- MRI: T2WI: Calcified GB, high signal pericholecystic fat, T1WI C+: “thin sign” of increased hepatic enhancement.

ACUTE CALCULOUS CHOLECYSTITIS: INFECTION

- Infarction of intra/extrashepatic bile duct walls, usually due to biliary obstruction and infection.
- Bacterial cholangitis due to obstruction, GCT: distended GB wall thickening +/− echogenic gallbladder lumen.
- Indirect: Locally distended GB wall + watery/dilute bile, GB wall enhancement.
- CT: GB wall thickening, pericholecystic fluid/abscess, intraluminal membranes, gas in GB wall.
- MRI: T2WI: Stones (hypointense), bile (hypointense), MRCP: Low signal filling defects (stones) within increased signal bile ducts, irregular peribiliary, proximal dilation of bile ducts, multiple small hyperintense hepatic lesions - cholangitic abscesses.
- Ultrasound: Gallbladder distension, dilatation of bile and extrahepatic bile ducts (in 75% of cases), Pericholecystic thickening of bile duct wall, multiple small hyperintense foci of liver parenchyma, pericholecystic fluid.
- CT: GB wall thickening, pericholecystic fluid/abscess.
- MRI: T2WI: Multiple small hyperintense lesions symmetric/von blue in liver parenchyma.

REFERENCES