Acute Cholecystitis

12 Acute cholecystitis cases (including 5 gangrenous at cholecystectomy) – in 8 gallbladder (GB) wall edema missed or deemed not significant; 3 made findings but undercalculated acute cholecystitis; 1 missed pericholecystic fluid

63 y.o. 10 mos RUQ pain

Interpreted as cholecystitis without evidence of cholecystitis. Gallbladder wall edema (arrow) was noted, as well as GB gallbladder distention or Sonographic Murphy sign. Follow up HIDA scan showed acute cholecystitis which was confirmed on pathology.

PEARLS: Sonographic signs of acute cholecystitis include:
• GB distention – convex wall
• Wall edema – Sensitive but not specific, can be seen in systemic disease. Most missed finding in our QA cases – important sign if third spacing has been excluded.
• Stones – acalculous cholecystitis only 10% of acute cholecystitis
• Pericholecystic fluid
• Sonographic Murphy sign

69 y.o. 2 days RUQ pain

US report noted non-mobility gallbladder neck stone, sludge (thick arrow), GB wall thickening (thin arrow), mild distention, and pericholecystic fluid (thick arrow), but hedged on the diagnosis of acute cholecystitis. Infraoperatively, gangrenous cholecystitis was diagnosed.

PEARLS: Resitive Indices (RI)
• To measure RIs, obtain waveform of arcuate or interlobar arteries - to measure normal RI and evaluate for slow flow
• To see appendix, must set depth of view deep enough to image into peritoneal cavity.

Biopsy proven cholangiocarcinoma with extrapleural extension (circle) on CT missed on preceding ultrasound with hyperechoic regions adjacent to gallbladder (arrow) attributed to local fatty sparing.

Evaluate liver contour for irregularity.
Extrapleural, perihilar region = potential blind spot

47 y.o. 3 weeks intermittent RUQ pain

8 Renal transplant cases: 4 incorrect resistive indices; 1 missed hydronephrosis; 1 AV fistula overcall; 1 renal vein thrombosis overcall; 1 iliac artery called main renal artery

Interpreted as mild fullness of the renal pelvis. Dilated renal calices (Circles), compatible with grade 1 hydronephrosis not diagnosed

72 y.o. s/p renal transplant, ARF and jaundice

Noise mistaken for diastolic flow (arrow) resulting in inappropriately normal resistive index (box). RI actually elevated - acute rejection

Conclusions
We found the top five emergency radiology abdominal ultrasound QA issues of which to be aware are misdiagnoses related to acute cholecystitis, liver lesions, renal transplant related, and portal vein thrombosis as well as technical factors that may hinder appropriate diagnosis.

References

Portal Vein Thrombosis

8 Portal vein thrombosis cases: 3 missed thrombosis, 2 overcalled with slow flow; 1 tumor thrombus called bland

Thrombus at the confluence of the splenic and portal veins (arrow) missed on US (left), detected on subsequent MRI (right)

51 y.o. male, acute abdominal pain, jaundice

US (left) called occlusive hepatic occlusion as thrombosis of main and right portal veins. Scale, however, is improperly set too high. MRCP (right) from same day shows no thrombus.

PEARLS
• Assess entire portal vein if possible
• Adjust scale - slow flow can give false positive
• Suspect tumor thrombus if portal vein is expanded. Look for blood flow within the thrombus.

Technological Factors
9 Technical: 5 vascular (not angle corrected/incorrect scale), 3 did not follow standard protocol- incompletely imaged organ (kidney) → missed tumor, 1 wrong depth → not deep enough to see appendix

36 y.o. pregnant 8, RLQ pain - Evaluate appendix

To see appendix, must set depth of view deep enough to image into peritoneal cavity.

PEARLS
• Follow a standard protocol helps prevent missed findings
• Adjust depth and focus to cover the structure you wish to evaluate
• Vascular
• Angle correct to measure appropriate velocities
• Decrease scale to evaluate for slow flow

Renal Transplant

40 y.o. S/p renal transplant with fever

 erotica: 1432-1438.

Dilated renal calices (black arrow), consistent with grade 1 hydronephrosis not diagnosed

Sonographic Murphy sign frequently negative, possibly due to denervation of gallbladder wall secondary to necrosis.

To see appendix, must set depth of view deep enough to image into peritoneal cavity.