Acute Upper Quadrant Pain (Case-based approach)

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Abdominal/Pelvic Pain

• Most common presenting symptom
• Approximately 7% all ED visits
• Acute RUQ >>>> Acute LUQ
• Hepatobiliary disease – common & important
• Determining cause - clinical challenge

RUQ Pain

• Diagnosis based on clinical & labs: inaccurate
• Imaging critical to management
• Ultrasound should always be initial imaging test
• Accurate, safe, inexpensive, available, portable
Learning Objectives
1) Discuss the value of US in assessing the patient with acute RUQ pain
2) Identify the imaging features of acute cholecystitis and its complications
3) Describe other conditions that can cause acute pain in RUQ when GB normal

"Rule out Acute Cholecystitis"
• Acute cholecystitis and complications
• Choledocholithiasis and ascending cholangitis
• Recurrent pyogenic cholangiohepatitis
• Liver abscess
• Rupture/hemorrhage of liver masses

Acute Cholecystitis - Ultrasound
• Accuracy 88%
• Similar to scintigraphy
• BUT
• Will show complications, alternate diagnoses
• Scintigraphy more time consuming
Acute Cholecystitis

- 90% to 95% have cholelithiasis
- Calculus obstruction neck or cystic duct
- Variable degrees of infection and necrosis
- RUQ pain, tenderness, and guarding
- Spectrum: Mild to dramatic

Each of the following four patients presented with pain and tenderness in the right upper quadrant. Which of the following ultrasound appearances is most typical of acute cholecystitis?

1) 2) 3) 4)
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**Acute Cholecystitis: US findings**
- Most sensitive: sonographic Murphy’s sign in presence stones
- PPV 92%, 497 patients
  
  (Ralls et al, Radiology 1985;155:767-771)

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**Acute Cholecystitis: US findings**
- Gallbladder distension
- Diffuse wall thickening
- Pericholecystic fluid
- Secondary findings: Not sensitive nor specific

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**Acute Cholecystitis: US findings**
- **GALLBLADDER DISTENSION**
  
  Be reluctant to diagnose acute uncomplicated cholecystitis if GB not tensely distended
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Pitfalls/Mimics

Acute Hepatitis
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**Pitfalls/Mimics**

**Perforated Duodenal Ulcer**

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**Pitfalls/Mimics**

**Cirrhosis**

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**Pitfalls/Mimics**

**Acute Diverticulitis with Perforation**

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Acute Cholecystitis: US findings

[Image of ultrasound scan showing gallbladder with possible findings]

www.laparoscopy.com
Gangrenous Cholecystitis
• 2% to 38% of acute cholecystitis
• Asymmetric thickening GB wall
• Intraluminal membranes
• -ve sonographic Murphy’s sign: 66%
• Symptoms and signs may shift from RUQ
**Acute cholecystitis:**
1) Yes
2) No

**Gallbladder Perforation**
- 5% to 10% of acute cholecystitis
- 19% to 24% mortality
- Acute - generalized peritonitis
- Subacute - pericholecystic abscess
- Chronic - internal biliary fistula
An 84-year-old man presents to the emergency department in septic shock. An abdominal ultrasound is performed. What is the most likely diagnosis?

1) Perforated duodenal ulcer
2) Gallstone ileus
3) Emphysematous cholecystitis
4) Porcelain gallbladder

**Emphysematous Cholecystitis**

- Rare
- Gas forming bacteria
- Cholelithiasis often absent
- 38% patients diabetic - M:F 7:3
- Gangrene/perforation x 5
Bouveret’s Syndrome

Choledocholithiasis

• Ultrasound 70% sensitivity
  (Laing et al, AJR 1984;143:949-952)
• Dilated ducts improves detection
• Advances: Harmonic imaging
• Distal CBD: erect RPO
• Proximal/mid: supine/LPO
1) Doppler
2) CT
3) MR/MRCP

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**Ascending Cholangitis**
- Pain, fever, leucocytosis, elevated LFTs
- Ultrasound hallmark: bile duct wall thickening
- CBD obstruction (stones)
- Intervention

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**Septic Shock**
A 34-year-old woman presents to the emergency department with acute right upper quadrant pain and fever. Abdominal ultrasound demonstrates a liver mass. What is the most likely diagnosis?

1) Liver abscess
2) Hepatic adenoma
3) Hepatocellular carcinoma
4) Cavernous hemangioma
Liver Abscess

- Pyogenic or Amebic: Pain, fever, malaise
- No underlying cause in 50%, anaerobes
- Biliary tract, gut, bone, heart
- Percutaneous image guided drainage
Masses that Rupture and Bleed

- Adenoma, hepatocellular carcinoma, others
- Patient profile:
  - premenopausal woman on BCP
  - known cirrhotic, hepatitis B, C

Hepatic Adenoma

Hepatic Adenoma

Hepatic Adenoma
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Summary
• Be reluctant to diagnose simple acute cholecystitis if GB not tensely distended
• Look for stone in GB neck and cystic duct
• Remember possibility underlying GB cancer
• Air vs. Calcium: Character of shadowing

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Summary
• Straight to ERCP if CBD stone on US
• Include unenhanced CT for CBD stone
• Doppler cystic masses
• Early abscess ? solid on US - do CT
• Ruptured mass: adenoma/HCC - Patient profile

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Thank you