Gallstone Disease
case study

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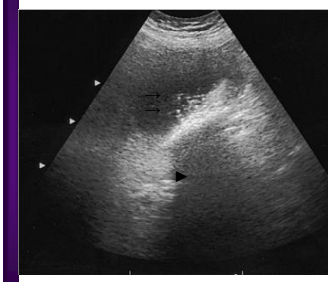
Case 1

- 46yo F, RUQ pain x4hr, after a fatty meal, radiating to the R scapula, also nausea. Pt is pain-free now.
- No prior episodes
- Minimal RUQ tenderness, no Murphy's
- WBC 8, LFT normal
- RUQ U/S reveals cholelithiasis without GB wall thickening or pericholecystic fluid
- Diagnosis: ?

Case 1

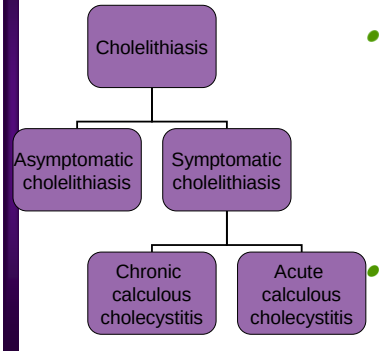


- → denotes gallstones
- ► denotes the acoustic shadow due to absence of reflected sound waves behind the gallstone

Symptomatic cholelithiasis

- "biliary colic"
- The pain occurs due to a stone obstructing the cystic duct, causing wall tension; pain resolves when stone passes
- Pain usually lasts 1-5 hrs, rarely > 24hrs
- Ultrasound reveals evidence of the likely etiology: gallstones
- Exam, WBC, and LFT normal in this case
- Treatment: Laparoscopic cholecystectomy

Spectrum of Gallstone Disease



- Symptomatic cholelithiasis can be a herald to:
  - an attack of acute cholecystitis
  - or ongoing chronic cholecystitis
- May also resolve

Case 2

- Same case, except pt has had multiple prior attacks of similar RUQ pain
- No fever or WBC
- Ultrasound reveals gallstones, thickened GB wall, no pericholecystic fluid
- Diagnosis: ?

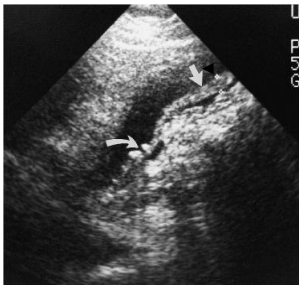
Chronic calculous cholecystitis

- Recurrent inflammatory process due to recurrent cystic duct obstruction, 90% of the time due to gallstones
- Overtime, leads to scarring/wall thickening
- Treatment: laparoscopic cholecystectomy

Case 3

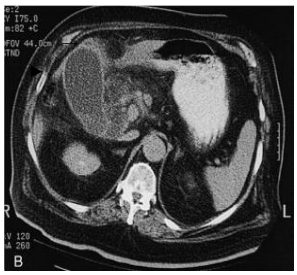
- Same pt, now > 24hrs of RUQ pain radiating to the R scapula, started after fatty meal, nausea, vomiting, fever
- Exam: Palpable, tender gallbladder, guarding, +Murphy's
- WBC 13, Mild ↑LFT
- U/S: gallstones, wall thickening (>4mm), GB distension, pericholecystic fluid, sonographic Murphy's sign (very specific)
- Diagnosis: ?

Case 3



- Curved arrow
  - Two small stones at GB neck
- Straight arrow
  - Thickened GB wall
- ◄
  - pericholecystic fluid = dark lining outside the wall

Case 3



- → denotes the GB wall thickening
- ► denotes the fluid around the GB
- GB also appears distended

Acute calculous cholecystitis

- Persistent cystic duct obstruction leads to GB distension, wall inflammation & edema
- Can lead to: empyema, gangrene, rupture
- Pain usu. persists >24hrs & a/w N/V/Fever
- Palpable/tender or even *visible* RUQ mass
- Nuclear **HIDA** scan shows nonfilling of GB
  - If U/S non-diagnostic, obtain **HIDA**
- **Tx**: NPO, IVF, Abx (GNR & enterococcus)
- Surg: Cholecystectomy usu within 48hrs

Case 4

- 87yo M critically ill, on long-term TPN, RUQ pain, fever, ↑WBC
- Ultrasound: GB wall thickening, pericholecystic fluid, **no gallstones**
- Diagnosis: ?

Acute acalculous cholecystitis

- In 5-10% of cases of acute cholecystitis
- Seen in critically ill pts or prolonged TPN
- More likely to progress to gangrene, empyema, perforation due to ischemia
- Caused by gallbladder stasis from lack of enteral stimulation by cholecystokinin
- **Tx**: Emergent cholecystectomy *usu* open
- If pt is too sick, perc cholecystostomy tube and interval cholecystectomy later on

Complications of acute cholecystitis

Empyema of gallbladder	Pus-filled GB due to bacterial proliferation in obstructed GB. Usu. **more toxic, high fever**
Emphysematous cholecystitis	More commonly in men and diabetics. Severe RUQ pain, generalized sepsis. Imaging shows air in GB wall or lumen
Perforated gallbladder	Occurs in 10% of acute chol'y, usually becomes a contained abscess in RUQ
	Less commonly, perforates into adjacent viscus = cholecystoenteric fistula & the stone can cause SBO (**gallstone ileus**)

Case 5

- 46yo F p/w RUQ pain, jaundice, acholic stools, dark tea-colored urine, **no fevers**
- Known history of cholelithiasis
- Exam: unremarkable
- WBC 8, T.Bili 8, AST/ALT NL, HepB/C neg
- Ultrasound: Gallstones, CBD stone, dilated CBD > 1cm
- Diagnosis: ?

Choledocholithiasis

- Can present similarly to cholelithiasis, except with the addition of jaundice
- DDx: cholelithiasis, hepatitis, sclerosing cholangitis, less likely CA with pain
- **Tx**: Endoscopic retrograde cholangiopancreatography (ERCP)
  - Stone extraction and sphincterotomy
- Interval cholecystectomy after recovery from ERCP

Case 6

- 46yo F p/w **fever, RUQ pain, jaundice** (**Charcot's triad**)
- If also **altered mental status** and signs of **shock** = **Raynaud's pentad**
- VS tachycardic, hypotensive
- ABC's, Resuscitate
  - 2 large bore IV, Foley, Continuous monitor
  - 1-2L fluid bolus, repeat until resuscitated
- Diagnosis: ?

Cholangitis

- Infection of the bile ducts due to CBD obstruction 2ndary to stones, strictures
- Charcot's triad seen in 70% of pts
- May lead to life-threatening sepsis and septic shock (**Raynaud's pentad**)
- **Tx**: NPO, IVF, IV Abx
- Emergent decompression via ERCP or perc transhepatic cholangiogram (PTC)
- Used to require emergency laparotomy

Case 7

- 46yo F p/w persistent epigastric & back pain
- Known history of symptomatic gallstones
- No EtOH abuse
- Exam: Tender epigastrum
- Amylase 2000, ALT 150
- Ultrasound: Gallstones
- Diagnosis: ?

Gallstone pancreatitis

- 35% of acute pancreatitis 2ndary to stones
- Pathophysiology
  - Reflux of bile into pancreatic duct and/or obstruction of ampulla by stone
- ALT > 150 (3-fold elevation) has 95% PPV for diagnosing gallstone pancreatitis
- **Tx**: ABC, resuscitate, NPO/IVF, pain meds
- Once pancreatitis resolving, ERCP w stone extraction/sphincterotomy
- Cholecystectomy before hospital discharge