The GALLBLADDER (Biliary Tract)

Disease
Differential Diagnosis
Diagnostic Tests (labs)

Objectives
- Describe the range of biliary tract diseases.
- Describe the classic history and physical exam findings for a patient with biliary tract disease.
- List the typical laboratory findings for different biliary tract diseases.
- Discuss the appropriate treatment for patients with diseases of the biliary tract.

Medicine or Quackery
The art of medicine is in amusing a patient while nature affects the cure.
Doing nothing is very hard to do...you never know when you're finished.
I refuse to answer that question on the grounds that I don't know the answer.
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Function

Stores bile, secreted by the liver and transmitted from that organ via the cystic and hepatic ducts, until it is needed in the digestive process.

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Biliary Tract Disease

- Cholelithiasis
- Cholecystitis
- Acute cholecystitis
- Choledocholithiasis
- Cholangitis
- Acute pancreatitis secondary to gallstones

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Gallstones

- Concretions that form in the biliary tract, usually gallbladder
- Cholelithiasis are gallstones in the gallbladder.
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- **Choledocholithiasis**: presence of a gallstone in the common bile duct (CBD).
- Chronic gallstone disease: fibrosis and loss of function of gallbladder with predisposition to gallbladder cancer.
- **Biliary sludge**: suspension of precipitated particulate matter in bile.

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**Definitions**

- Acute cholecystitis is inflammation of the gallbladder.
- Acalculous cholecystitis occurs in <10% of cases.
- Cholangitis is inflammation of the bile ducts.
- Acute pancreatitis

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**Classic Presentation**

- Biliary colic: episodic pain due to gallstone obstruction of the neck of the gallbladder.
- Persistent pain (>6 hours)
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Risk factors

- Heredity
- Obesity
- Rapid Weight Loss, through diet or surgery
- Age over 60
- Female Gender
- Diet—very low calorie diets, prolonged fasting, and low-fiber/high-cholesterol/high-starch diets.

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Physical Exam

- Biliary colic—RUQ or epigastric discomfort
- Positive Murphy’s sign—the cessation of deep inspiration on palpation over the gallbladder
- Jaundice
- Elevated temperature
Differential Diagnosis - When cholecystitis/biliary colic suspected also consider:

- AAA, abdominal aortic aneurysm
- Cholangitis
- Gastritis
- Hepatitis
- Mesenteric ischemia
- MI, myocardial infarction
- SBO, small bowel obstruction
- Pancreatitis
- Ectopiasia (pregnancy)
- UTI, urinary tract infection (pregnancy)
- Cholelithiasis and renal calculi
- Diverticula and IBD

Labs (normal ranges)

- Amylase: 30 - 118
- Lipase: 6 - 51
- Total Bilirubin: 0.3 – 1.2
- Direct Bili (jaundice): 0 – ...
- WBC: 4.0 - 11.0
- Alanine Aminotransferase (ALT): 10 - 49
- Aspartate Aminotransferase (AST): 6 - 40
- Metabolic Panel (Liver Tests)

Laboratory Studies in Biliary Tract Disease

<table>
<thead>
<tr>
<th>Lab</th>
<th>Cholelithiasis</th>
<th>Choledocholithiasis</th>
<th>Acute cholecystitis</th>
<th>Cholangitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBC</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal ↑ or ↓ (if septic)</td>
<td>Normal</td>
</tr>
<tr>
<td>Temperature (F)</td>
<td>Normal or slightly ↑</td>
<td>Normal or slightly ↑</td>
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<tr>
<td>Sodium (mEq/L)</td>
<td>Normal or slightly ↑</td>
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<tr>
<td>Potassium (mEq/L)</td>
<td>Normal or slightly ↑</td>
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<tr>
<td>Calcium (mg/dL)</td>
<td>Normal or slightly ↑</td>
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<tr>
<td>Phosphate (mg/dL)</td>
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<tr>
<td>Creatine (mg/dL)</td>
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<td>Normal or slightly ↑</td>
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</tbody>
</table>
Pancreatitis

Three or more positive factors detected within 48 hrs of onset suggest severe pancreatitis. This system has been validated for pancreatitis caused by gallstones and alcohol.

- Modified Glasgow criteria for predicting severity – P.A.N.C.R.E.A.S
  - Paco2 <60mmHg
  - Age >65 years
  - Neutrophilia (WBC >10)
  - Calcium <2mmol/L
  - Renal function: Urea >16mmol/L
  - Enzymes: LDH >600iu/L, AST >200iu/L
  - Albumin <32g/L
  - Sugar BSL >10mmol/L

Other Labs

- Elevated WBC expected…not reliable, >15,000 may indicate perforation/gangrene.
- Prothrombin time (PT) and activated partial thromboplastin time (aPTT) not expected to be normal unless sepsis or possible cirrhosis present.
- Coagulation profiles helpful if therapeutic/surgical intervention needed.
- If febrile need 2 sets of blood cultures.
- Urinalysis for belly pain to exclude pyelonephritis and renal calculi.
- Pregnancy test...

Imaging

- Ultrasound
- CT
- HIDA scan
- MRCP
- ERCP
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So…what now?

- Listen to the history
- Consider patient’s risk factors
- Look at the patient
- Look at the test results

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And…remember

- Never go to a doctor whose office plants have died.
- Everybody wants to go to heaven…but nobody wants to die.

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Medical Care

- Although surgery is RX for acute cholecystitis, need to stabilize patient.
- ERCP for patient with evidence of CBD stones on US/MRCP; dilated CBD; elevated LFTs, pancreatitis.
- Medical therapy for gallbladder colic
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The 4 A’s

- ANTIBIOTICS
- ANALGESIA
- ANTI-INFLAMMATORY AGENTS
- ANTIEMETIC AGENTS

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Further Treatment

- Definitive treatment for symptomatic cholelithiasis is surgery.
- Choledocholithiasis is treated with surgical or endoscopic (ERCP) removal of stone.
- Cholecystitis may need to be delayed but surgery is the treatment.

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Special Considerations

- Atypical presentations in diabetics, elderly, and children...all patients diagnosed with acute cholecystitis need hospitalization for IV fluids, antibx and CCY w/ in 24-72 hours.
- Gallstones are symptomatic during pregnancy; 2nd trimester is safe for CCY.
- Uncommon for gallstones in children but could have congenital or biliary anomalies, or hemolytic (pigment) stones.
- Gallstone incidence with age, can be asymptomatic...serious complications without colic.
- Acalculous cholecystitis, occurs in the critically ill and localized pain/tenderness may not always be present.
Summary

- Lab tests are not always reliable.
- Acute cholecystitis should be suspected.
- RUQ pain lasting more than 6 hours should NOT be considered benign biliary colic.
- Don’t forget to include non-biliary causes for RUQ pain in your differential diagnosis.

References

- Trowbridge RL, Rutkowski NK, Shojania KG. Does this patient have acute cholecystitis? JAMA 2005;293:90786.
The greatest pleasure in life is doing what people say you cannot do…

Q&A