Educational Session: Emergency Management of Biliary Tract Disorders

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Emergency Management of Biliary Tract Disorders

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Case

- 36 yo WF
- RUQ pain/N/V x 8 hours
- Ate fried chicken prior to pain
- Similar sx 2 months ago - resolved
- Tender RUQ
- + Murphy’s

The spectrum of GB disease

Asymptomatic
Biliary Colic
Acute Cholecystitis
Choledocholithiasis
Cholangitis
Bad
The spectrum of GB disease

Asymptomatic
Biliary Colic
Cholelithiasis
Expectant Management
Cholelithiasis
Choledocholithiasis
Acute Cholecystitis
Cholangitis

Bad

Outpatient
\text{ surgery f/u}

Biliary Colic
Choledocholithiasis

Acute Cholecystitis
Cholangitis

Admit or close f/u

Bad
The spectrum of GB disease

Asymptomatic
Biliary Colic
Acute Cholecystitis
Admit, IV antibiotics, early cholecystectomy
Bad

Cholelithiasis

Who's at risk?

Cholesterol stones – common
- Risk factors: age, female, obesity, parity, OCPs, family hx, rapid wt loss
- Not usually radio-opaque

Pigment stones – less common
- Hemolysis, Sickle Cell
- Radio-opaque
**Cholelithiasis**

- Vast majority asymptomatic
- 1% per year have complications
- **Biliary Colic**
  - = symptomatic cholelithiasis
  - most common manifestation of cholelithiasis

**Biliary Colic**

- Stone passage into cystic duct
- RUQ or epigastric pain/N/V
  - assoc. with meals in ~50%
  - episodes last several min to a few hrs
- RUQ tender
  - No G/R or Murphy's

**Biliary Colic**

**Treatment**

- Outpatient surgery referral
- Symptom prevention
- Analgesia
  - NSAIDs
  - Opioids
  - Anticholinergics / antispasmodics
**Biliary Colic**

**Treatment - NSAIDs**

- Cystic duct and GB motility is prostaglandin mediated
- ASA improves GB ejection fraction
- Indomethacin decreases bile viscosity

*Digestion* 58(4), 1997  
*Digestive Diseases & Sciences* 40(8), 1995

**Biliary Colic**

**Treatment - NSAIDs**

- NSAIDs superior to placebo in several studies
- May prevent progression to acute cholecystitis
- RCT - 234 patients
  - Ketorolac efficacy similar to meperidine
  - Fewer side effects


**Biliary Colic**

**Treatment - opioids**

Morphine or Meperidine?

- Biliary tract manometry in patients undergoing elective cholecystectomy:
  - Meperidine increases Sphincter of Oddi pressure more than morphine

*Anaesthesia* 1980;29:26-9  
*Arch Int Med* 1998;158:2399
Biliary Colic
Treatment - Antispasmodics

- Rosen’s: first-line
- They do not work
- Atropine vs. placebo
  - 0.6 mg IM
  - No difference
- Glycopyrrolate vs. placebo
  - No difference

Annals Emerg Med 22(8), 1993
Annals Emerg Med 45(2), 2005

Acute Cholecystitis

Acute Cholecystitis
Cystic Duct Obstruction
GB distention
Inflammation, Ischemia, Infection
ACUTE CHOLECYSTITIS
Acute Cholecystitis
Clinical Presentation

- Biliary colic pain that does not go away
- Guarding/rebound
- Murphy's
- Fever
- Leukocytosis

Acute Cholecystitis
Treatment

- Analgesia
  - IM Diclofenac vs. Placebo in 34 pts
    - Significantly better improvement in pain, fever, abd tenderness, hospital LOS

  *Euro J Surg 157(2), 1991*

- Antibiotics
  - E. coli, klebsiella, enterococci, anaerobes
  - Many acceptable regimens

  *J Hepatobiliary Pancreat Surg 2007;14:59-67*
**Acute Cholecystitis**

**Treatment**

- Admit
- Surgery
  - Early lap chole = favored approach

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**Is it Biliary Colic or Acute Cholecystitis?**

- Ultrasound is the best test
  - Sonographic Murphy’s
  - Pericholecystic fluid
  - GB wall thickening >4mm
  - non specific
  - Distention

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**Biliary Colic or Cholecystitis?**
Biliary Colic or Cholecystitis?

- Ultrasound is the best test
  - Sensitivity, PPV, NPV > 90%

...but does everyone need one?

NEJM 158(26), 2008
AJR 192, 2009
Biliary Colic or Cholecystitis? Classic Teaching

• Clinical findings in AC:
  - Constant, long lasting RUQ pain
  - Fever
  - ↑ WBC
  - Murphy’s sign

Biliary Colic or Cholecystitis? Clinical Findings - The Evidence

• Retrospective Chart Reviews
  - T > 100.4 29%
  - WBC > 11,000 68%
  - Fever or ↑ WBC 72%
  - Murphy’s 95% (48% specific)


Biliary Colic or Cholecystitis? Clinical Findings - The Evidence

• Duration of symptoms - no evidence
• Response to treatment - no evidence
**Biliary Colic or Cholecystitis?**  
Liver Function Tests

- Elevated LFTs
  - More likely to be elevated in AC than in biliary colic
  - Median values no different
  - Likely not useful in distinguishing AC from BC

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**JAMA Rational Clinical Exam:**
"Does this patient have acute cholecystitis?"

- "No single clinical or laboratory finding had a LR sufficiently low to rule out the diagnosis."
- "Similarly, individual symptoms, signs, and laboratory results were without LR+ sufficiently high to rule in the diagnosis."

*JAMA* 289(1), 2003

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**JAMA Rational Clinical Exam:**
"Does this patient have acute cholecystitis?"

- "Clinical Gestalt"
  - LR+ 25-30
JAMA Rational Clinical Exam:
“Does this patient have acute cholecystitis?”

• If your gestalt says, “no way,” you probably do not need an ultrasound.

• If it says, “yes” or “maybe,” get the US.

Biliary Colic or Cholecystitis?
Is CT good enough?

Cholelithiasis
- ~75% sensitive
- ~100% specific

Br J Radi 76(2), 2003

Biliary Colic or Cholecystitis?
Is CT good enough?

Cholecystitis
• Retrospective review 123 pts who had RUQ US + CT within 48hrs
  - Atypical patients?
  - Clinical Dx = Gold Standard
  - US 83% sensitive for AC
  - CT 39% sensitive
  - Both were very specific

Radiology 213(3), 1999
Biliary Colic or Cholecystitis? Is CT good enough?

Cholecystitis

- Retrospective review 75 pts
- CT 92% sensitive for AC

AJR 2002;178:275-81

Biliary Colic or Cholecystitis? Is CT better?

- Pericholecystic stranding
- Better evaluation of pancreas
- Emphysematous AC

Biliary Colic or Cholecystitis? Is CT good enough?

- Misses some stones
- Sensitivity for AC poorly characterized
- May have some advantages

"US should be the primary imaging technique for patients clinically suspected of having acute cholecystitis"

- American College of Radiology

Radiology 2009;253:31-46
**Biliary Colic or Cholecystitis?**

**EDP Ultrasound**

- Not a simple yes-no question
- Experience level
  - For many of us, this is not the best option


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**Biliary Colic or Cholecystitis?**

Clinically uncertain and US unavailable

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CT and good d/c instructions

or

Observe and US in am

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**Case #2**

- 96 yo female
- RUQ/epigastric pain x 2 days
- Intermittent RUQ pain x 9 mo
- N/V/fever/chills
- Vitals: 101°F 72 180/76
- Markedly tender upper abdomen
Case #2

- WBC 20,000
- Bilirubin 3.9
- Transaminases mildly elevated

Stones in the Common Bile Duct:

Choledocholithiasis and Cholangitis
**Choledocholithiasis**

- Obstruction of the common bile duct
- Symptoms of biliary colic
- May progress to
  - Gallstone pancreatitis
  - Cholangitis

**Choledocholithiasis**

**Diagnosis**

- ERCP = gold standard
- MRCP also very good
- Not helpful in the ED

**Choledocholithiasis**

**ED Diagnosis**

- Suspect in:
  - RUQ / epigastric pain
    - Longer lasting and less responsive to therapy than biliary colic
  - Jaundice
**Choledocholithiasis**

**ED Diagnosis**

- LFTs
  - Elevated transaminases and bilirubin

- CT or US
  - CBD stones difficult to visualize
    - US 25-60 % sensitive
  - Indirect evidence
    - CBD dilation
    - Cholelithiasis
  - Equally good tests

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**Choledocholithiasis**

**Management**

- Surgical or GI consultation
- Admit or close follow-up

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**Cholangitis**

- Obstruction + infection of the biliary tree
- 10-50% mortality

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**Cholangitis**

**Clinical Findings**

- **Charcot’s Triad**
  - Fever 90%
  - RUQ pain 90%
  - Jaundice 65%

- **Reynold’s Pentad**
  - Charcot’s triad + hypotension + AMS
Cholangitis
Treatment

- Fluid resuscitation
- Antibiotics

Cholangitis
Treatment

- Biliary Tract Decompression
  - Urgently in severely ill patients
  - ERCP - tx of choice
  - Surgery
  - Percutaneous cholecystotomy

Cholangitis or Uncomplicated Choledocholithiasis?

- Radiography generally not helpful
  - Biliary obstruction in both
- Must rely on clinical picture
  - Fever (90%)
  - Leukocytosis
  - Ill appearance
Case #3

- 45 yo diabetic male with RUQ pain x 3 days
- Hx prior intermittent RUQ pain
- Anicteric
- T 101°

Cholangitis or Cholecystitis?

- Cholangitis:
  - more ill appearing
  - jaundice more common
    - 65% of cholangitis; 2% of AC

- RUQ pain + Fever = workup

Cholangitis or Cholecystitis?

- LFTs
- Ultrasound or CT
  - Evidence of CBD stone
**Putting it all together**

An approach to the patient with RUQ/epigastric pain

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**Summarizing the work-up**

- Those with apparent biliary colic need no ED work up.
- CBC, LFTs are useful, *but not diagnostic*
  - WBC suggests AC or cholangitis
  - Bili, transaminases suggest CBD stone

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**Summarizing the work-up**

- Ultrasound = modality of choice
  - CT poorly sensitive for stones
  - CT for AC not well studied, but may be insensitive
    - More sensitive for severe disease?
  - CT as good as US for CBD pathology
Thank You.

Questions? Comments?
Please contact me at brbesing@iupui.edu

References

Cholecystitis


Tapp RJ, Balkovec NK, Rajanar K. Does This Patient Have Acute Cholecystitis? JAMA. January 1, 2003;289(1):80-86.
References

Choledocholithiasis/Cholangitis


Imaging


Imaging


References

Medical Treatment


Surgical Treatment

