Gastroparesis and Liver Masses

Christopher L. Bowlus, MD
University of California Davis
School of Medicine
Disclosures

• I have no disclosures related to the topics of this presentation.

• I will be discussing off-label use of metoclopramide, domperidone, and macrolide antibiotics
Gastroparesis

• Syndrome of delayed gastric emptying
  – Absence of mechanical obstruction
  – Cardinal symptoms of
    • Nausea, vomiting, early satiety, bloating, upper abdominal pain

• Incidence (per 100,000 person-years)
  – Men 2.4
  – Women 9.8

• Prevalence (per 100,000 persons)
  – Men 9.6
  – Women 38
Etiology

• Idiopathic
  – Viral?

• Dysautonomia
  – Diabetic neuropathy
  • ~1% of Type 2 DM
  – Amyloid neuropathy
  – Primary autonomic neuropathy

• Post-surgical
  – Fundoplication
  – Roux-en Y

• Infiltrative
  – Scleroderma
  – Amyloidosis

• Medications
  – Narcotics
  – TCA

• CNS Disorders
  – Parkinsonism
  – Multiple sclerosis

• Spinal cord injury
Clinical Presentation

- Nausea
- Vomiting
- Abdominal Pain
- Early satiety
Evaluation

• Exclude mechanical obstruction
  – EGD
  – Less often CT or MR enterography
    • Small bowel follow through if above not available

• Assess gastric motility
  – Gastric emptying study
  – Wireless motility capsule ("Smart Pill")
  – $^{13}$C breath test
Gastric Emptying Study

• Before the test
  – Stop all medications that might affect gastric emptying
  – Blood glucose < 275 mg/dL

• During the test
  – Measure at at time 0, 1h, 2h, and 4h
    • Going to 4h increases sensitivity from 33% to 58%
Interpretation of GES

• Positive test (may vary by institution)
  – > 10% retained after 4 hours
  and/or
  – > 60% at 2 hours

• Severity (at 4 hours)
  – 10 - 15% (Mild)
  – 15 - 35% (Moderate)
  – > 35% (Severe)
Differential Diagnosis

- Psychiatric illness
- Rumination syndrome
- Functional dyspepsia
- Cyclic vomiting syndrome
  - Cannabinoid hyperemesis
Gastroparesis - Treatment

• Initial Management
  – Dietary Modification
  – Hydration/Nutrition
  – Optimize glycemic control
  – Prokinetic medications

• Refractory Symptoms
  – Decompression
  – Surgery
  – Gastric electrical stimulation
Dietary Modification

• Reduce fat
  – Slows gastric emptying

• Reduce non-digestible fiber (fruits & vegetables)
  – Requires effective antral motility

• Small frequent meals

• Homogenized
Hydration and Nutrition

• Assess and replace
  – hypokalemia
  – metabolic alkalosis
  – micronutrient
  – vitamin deficiency
Optimize Glycemic Control

• Acute hyperglycemia reduces gastric emptying and efficacy of prokinetic agents

• Avoid incretins (exenatide and pramlintide)
  – Delay gastric emptying
  – DPPIV inhibitors do not affect gastric emptying
Prokinetic Agents

• Use 15 minutes before meals and at bedtime

• Prefer liquid preparations is available.
Metoclopramide

• FDA approved for gastroparesis for no more than 12 weeks
  – Unless benefits outweigh risk

• Risks
  – Anxiety, restlessness, depression, hyperprolactinemia, QT prolongation
  – Extrapyramidal side effects
    • 0.2% dysontia
    • 1% tardive dyskinesia
  – Written consent prior to treatment

• 5 mg doses titrated to effect (40 mg max dose)
• Consider drug holidays
Domperidone

• Not easily available in US
  – Patients can obtain from Canada
• Requires FDA IND
• Limited data of efficacy
• Increased risk of arrhythmias
  – Prolonged QT
• Drug-drug interactions
Macrolide Antibiotics

• Erythromycin
  – Increases gastric motility and emptying
  – Liquid formulation 40 to 250 mg TID before meals
  – IV formulation if acute setting
  – Tachyphylaxis after 4 weeks of use

• Azythromycin
  – Similar effect on gastric emptying
Cisapride

• Effective in open label trials

• Associated with cardiac arrhythmias and death

• Available through limited access from manufacturer
Decompression and feeding

• Percutaneous endoscopic gastrostomy (PEG) Tube
  – Decompress for pain relief

• Percutaneous endoscopic jejunalostomy (PEJ) Tube
  – Feeding

• Parenteral feeding
  – Last resort
Surgery

- Surgically placed jejunostomy
- Subtotal gastrectomy
Gastric Electrical Stimulation

- Compassionate use only
  - Requires IRB approval

- Improves symptom severity and gastric emptying in diabetics
Gastroparesis Summary (1)

• Syndrome of delayed gastric emptying without mechanical obstruction

• Typical presentation includes nausea, vomiting, abdominal pain, and early satiety

• Evaluation includes EGD and gastric emptying study
Gastroparesis Summary (2)

- Initial treatment is dietary modification
  - Low fat, soluble fiber

- In diabetics, optimize glycemic control

- Medical options are limited
  - Metoclopramide use with caution
  - Erythromycin for short term use

- Refractory cases
  - PEG or PEJ Tube
  - Gastric electrical stimulation
Liver Masses

- Solid versus Cystic versus Abscess
- Broad differential diagnosis
- Frequently incidental finding on imaging
- Usually can be managed without biopsy
# Common Solid Liver Masses

## Benign
- Hemangioma
- Focal nodular hyperplasia (FNH)
- Hepatic adenoma
- Nodular regenerative hyperplasia (NRH)
- Regenerative nodules

## Malignant
- Hepatocellular carcinoma
- Cholangiocarcinoma
- Metastatic disease
Clinical Presentation

• Majority are asymptomatic
  – Abdominal pain is frequent but typically unrelated to mass, which is an incidental finding

• Exam is usually normal
  – Exception is cirrhosis!
    • Think HCC
Diagnostic Approach (1)

• Non-invasive testing is correct in 98% of cases

• Is there underlying liver disease?
  – Cirrhosis or Hepatitis B or Fatty Liver

• Is there extrahepatic malignancy?
  – Colon or stomach
  – Breast, ovaries, bronchus, kidney
Diagnostic Approach (2)

• Undiagnosed liver disease
  – Alpha-1 antitrypsin
  – Hemochromatosis
  – Wilson disease
  – AIH Hepatitis

• Size of the mass
  – < 1 cm is hard to classify
Imaging Studies

• 4 Phase MRI or CT
  – Base/Arterial/Venous/Portal (Delayed)

• Ultrasound typically not helpful
Hepatic Hemangioma

- Hypodense lesion
- Peripheral early enhancement
- Isodense on delayed images
Focal Nodular Hyperplasia

- Common and usually asymptomatic
- Benign
- Central scar is typical
- Can be multiple and large
Hepatic Adenoma

• Typically found in young women

• Associated with OCP

• Low malignant potential
Hepatic Metastases

- Multiple hypovascular lesions on arterial phase
Hepatocellular Carcinoma
Simple Liver Cyst

- Congenital
- Benign
- Occasionally symptomatic
- Surgery is treatment of choice if symptoms require
Polycystic Liver Disease

- Usually associated with PCKD

- Massive enlargement of liver but normal function

- Rarely requires transplant
Amebic Liver Abscess

- Caused by *Entamoeba histolytica* found in tropics
- Abdominal pain and fever
- Serologies available
- Treatment with antibiotics
Hydatid Cysts

• Caused by *Echinococcus granulosus* or *E. multilocularis* found in dogs

• Antibody tests are available
Summary

• Most liver mass lesions and cysts are
  – Asymptomatic
  – Benign
  – Identified on routine imaging for other reasons

• Evaluate risk factors for specific lesions
  – Solid
    • Liver disease, cirrhosis, hepatitis C
    • OCP
    • Known malignancy
  – Cystic
    • Family history of cystic disease
    • Travel