COMPLICATIONS OF LIVER DISEASE

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Objectives
- Distinguish between hepatitis and fibrosis
- Review common causes of cirrhosis
- Complications of cirrhosis
  - GI bleeding
  - Ascites
  - Encephalopathy
  - Malnutrition

Case
- 51 yo woman with ALT 3x ULN persistently
- PMHx: Cholecystectomy
- No metabolic risk factors other than obesity (BMI 32)
- No EtOH, laid off from work
- Cause of elevated ALT? What investigations would you send?

How does liver disease present?
- Abnormal liver enzymes
- Acute hepatitis
- Jaundice
- Fulminant liver failure
- Complications of cirrhosis

Enzymes don’t tell function!
- INR
- Albumin
- T. Bilirubin

Cirrhosis
- Cirrhosis refers to irreversible fibrosis of the liver
- Eventually results in loss of function
- Cirrhosis may be present with normal liver enzymes
Liver Biopsy

Fat=Steatosis
Fibrosis
Cirrhosis
Inflammation=Hepatitis

Causes Liver Disease

Causes
- Toxic
  - EtOH, Meds
- Infectious
  - HCV, HBV
- Metabolic
  - NAFLD, Hemochromatosis, Wilson disease
- Autoimmune
  - PBC, PSC, AIH

Common causes
- Alcohol
- NAFLD
- HCV

How much is too much?
- Pts who drink more than their doctor!
- Men vs. women
- Patients underestimate
  - Get collateral history
- CAGE questionnaire
  - Cut down
  - Annoyed
  - Guilty
  - Eye-opener

"My doctor said I could have one drink per day"

Obesity by Province (2004)
Obesity Trends* Among U.S. Adults
BRFSS, 1990, 2000, 2010
(*BMI ≥30, or about 30 lbs. overweight for 5’4” person)

HCV Epidemiology: Canada

SVR is Important Because it is Associated with Fewer HCV-Related Complications

Workup
- Step 1
  - Meds (Statins, NSAIDS), EtOH
  - Viral: HBsAg, Anti-HBs, Anti-HBc, Anti-HCV
  - Hemochromatosis: Ferritin, T Sat
- Step 2
  - ANA, ASMA, Quantitative Igs
  - AMA
  - Celiac testing: Anti-TTG, IgA levels
  - Wilson disease: ceruloplasmin
  - Consider alpha1 AT, Thyroid, Adrenal insuff

Complications

Signs of liver disease
Jaundice
- Accumulation of bile pigment
  - Hemolytic
  - Hepatocellular
  - Obstructive
- "Scleral icterus" → Face → MM → Entire skin
- Most sensitive area: Conjunctiva under lower lid
- First detectable: tBili 20-30

Signs of liver disease

Common myths
- Myth: Some alcohol is ok
  - Puts pts at risk of decompensation
- Myth: Tylenol is dangerous in cirrhosis
  - NSAIDs, Opioids carry much more risk
- Myth: Protein should be restricted
  - This leads to malnutrition and does not prevent encephalopathy

Complications of Cirrhosis

"Portal Hypertension"

Ascites
What Are The Common Causes of Ascites in North America?

- Cirrhosis: 81%
- Peritonitis: 2%
- Tuberculosis: 2%
- Heart failure: 3%
- Neoplasm: 10%
- Nephrosis: 1%
- Pancreatic: 1%
- Circulatory: 81%

**Ascites**
- Low salt diet: 2 grams/day
- Diuretics:
  - Spironolactone
  - Lasix
- Paracentesis
- TIPS shunt

**Encephalopathy**
- Spectrum of disease:
  - Sleep/wake reversal
  - Coma
- Avoidance sedatives
- Hydration
- Treatment specific cause:
  - Infection
  - Bleeding
- Lactulose
- Metronidazole

**Grades of Encephalopathy**

<table>
<thead>
<tr>
<th>Grades</th>
<th>Mental Status</th>
<th>Neuro Sign</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Subclinical</td>
<td>Impaired psychomotor testing</td>
<td>None</td>
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<tr>
<td>1</td>
<td>Mild confusion, Irritability</td>
<td>Incoordination</td>
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<tr>
<td></td>
<td>Attention Inverted sleep habits</td>
<td>Tremor</td>
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<tr>
<td></td>
<td></td>
<td>Impaired handwriting</td>
</tr>
<tr>
<td>2</td>
<td>Drowsiness</td>
<td>Asterixis</td>
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<tr>
<td></td>
<td>Amnesia</td>
<td>Ataxia</td>
</tr>
<tr>
<td></td>
<td>Disorientation to time</td>
<td>Dysarthria</td>
</tr>
<tr>
<td>3</td>
<td>Somnolent</td>
<td>Hyperreflexia</td>
</tr>
<tr>
<td></td>
<td>Disoriented to place</td>
<td>Muscle rigidity</td>
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<tr>
<td></td>
<td>Marked confusion</td>
<td>Babinski</td>
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<tr>
<td>4</td>
<td>Coma</td>
<td>No response to pain</td>
</tr>
</tbody>
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**GI bleeding**
Risks of Varices and Variceal Bleeding

Endoscopic Photo: Varices Without Stigmata

Band Ligation

Esophageal varices

Recurrent Variceal Bleeding: Prevention Strategies

Risk of rebleed is 70%
**Subjective Global Assessment**

- **History**
  - Weight change: Amount and Pattern
  - Dietary intake
  - Significant GI symptoms
  - Functional capacity
- **Physical exam**
  - Loss of SC fat: Triceps, Midaxillary line, Interosseous, deltoid
  - Muscle wasting: Quadriceps and deltoids
  - Edema and ascites

**Nutritional Status**

- Important for survival
- Balanced diet
- Small frequent meals
- Bedtime snack
- Supplements
  - Boost
  - Ensure

**Reasons for liver transplant**

- Severe ascites
- Severe GI bleeding
- Encephalopathy
- Malnutrition
- Liver Synthetic dysfunction (INR, Bili, Cr)
  - MELD score
- Hepatocellular Carcinoma
Diseases leading to liver transplant
- Viral: Hepatitis C, Hepatitis B
- Alcohol
- Hepatocellular carcinoma
- Bile duct diseases: PSC
- Autoimmune: PBC, AIH
- Metabolic: Hemochromatosis
- Other toxins: Tylenol, Amanita

Transplant outcomes to consider
- Short-term survival of patient
- Long-term survival of patient
- Long-term survival of graft

Take-home points
- Workup of elevated liver enzymes should include testing for HCV, esp in baby boomers
- Beware of progression from liver inflammation to liver cirrhosis
- Pts with cirrhosis should have US Q 6 months
- Most with cirrhosis are stable for years, some may require transplant
- Effective therapy is available for HCV

Questions?