Pre-Operative Services Teaching Rounds 5
Feb 2011

Deborah Richman MBChB FFA(SA)
Director – Pre-Operative Services
Department of Anesthesia
Stony Brook University Medical Center, NY
drichman@notes.cc.sunysb.edu
• **Liver disease**
  ○ History
  ○ Physical
  ○ Labs
  ○ Risk

• **Cataract**
  ○ History and physical
  ○ Associated diseases
  ○ Labs
  ○ Anesthesia
Case

59yr old male for left cataract surgery

- **PMH:**
  - DM type 2
  - Hepatitis C, 30 years ago
  - Low platelets

- **PSH:**
  - Mitral valve repair 6 months earlier complicated by pleural effusion

- **SH:**
  - Last alcohol 18 months ago
Meds:
- Sotalol
- Pantoprazole
- Spiranolactone
- Furosemide
- Folate
- Metformin

Yellow font denotes findings in our patient
Hepatitis C

- **Blood transfusion**, IV drug abuse, tattoos, STD.
- Acute – rarely liver failure
- Chronic (almost 100%)
- **Chronic active** (60-80%) raised AST/ALT
- **Cirrhosis** (20+% of chronic Hep C at 20 years)
- Hepatocellular cancer (5%)
- Associated infections
- Commonest indication for liver transplant in USA
Review of systems – Hx of hepatitis

- Follow up
- Treatment (antiviral)
- Cirrhosis (fibrosis and scarring)
- Jaundice / urine / stools /pruritis
- Ascites
- Encephalopathy
- Oesophageal varices
- Alcohol and toxins
- Meds
Exam

- General:
  - *Jaundice*
  - Oedema
  - Pallor
  - Clubbing
  - Muscle wasting
  - Low BP – postural hypotension

Spider naevi
Palmar erythema
Orthodeoxia
Jaundice

Peripheral edema

Palmar erythema

Clubbing
Exam (cont)

- Abdomen
  - Ascites (assoc pleural effusion)
  - Caput medusa
  - Superficial veins
  - Hepatosplenomegaly

- CNS
  - Confusion
  - Flapping tremor (Asterixis)
  - Handwriting

- Hormonal
  - Gynaecomastia (incr. estrogen – less metabolism)
  - Testicular atrophy

- Dupytren’s contracture
Veins flowing away from portal hypertension

Ascites
Caput medusa
Jaundice
Spider nevi
Veins
Gynaecomastia
Labs

- Chemistry Na 132, Cr 1.15
- LFTs AST/ALT 69/82
- CBC HB 11 plts 81000
- INR 1.5
- CXR
- ECG
- $O_2$ sats
Morbidity/Mortality in cirrhosis

High

○ Bleeds
  • low platelets from hypersplenism 2º portal hypertension
  • INR prolonged – synthetic function of liver

○ Infections
  • Immunoglobulins
  • Wound healing

○ Liver failure
  • Ischemia

○ Toxins
Risk

- **Liver disease**
  - Type and Severity as determined by Child Pugh score
  - Cirrhosis especially high risk
    (associated risk factors in addition: high ASA score, high Creatinine, preop GI bleeding, anemia, hypoxemia, malnutrition, portal hypertension, infection)

  Child- Turcotte 1964
Modified Child-Pugh classification of the severity of liver disease according to the degree of ascites, the plasma concentrations of bilirubin and albumin, the prothrombin time, and the degree of encephalopathy. A total score of 5-6 is considered grade A (well-compensated disease); 7-9 is grade B (significant functional compromise); and 10-15 is grade C (decompensated disease). These grades correlate with one- and two-year patient survival: grade A - 100 and 85 percent; grade B - 80 and 60 percent; and grade C - 45 and 35 percent.
Child Pugh Score

<table>
<thead>
<tr>
<th>Points</th>
<th>Class</th>
<th>Disease</th>
<th>One year survival</th>
<th>Two year survival</th>
<th>Perioperative mortality 1997(^1)</th>
<th>Perioperative mortality 2010(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6</td>
<td>A</td>
<td>Well compensated</td>
<td>100%</td>
<td>85%</td>
<td>10%</td>
<td>2%</td>
</tr>
<tr>
<td>7-9</td>
<td>B</td>
<td>Significant functional compromise</td>
<td>81%</td>
<td>57%</td>
<td>30%</td>
<td>12%</td>
</tr>
<tr>
<td>10-15</td>
<td>C</td>
<td>Decompensated</td>
<td>45%</td>
<td>35%</td>
<td>82%</td>
<td>12%</td>
</tr>
</tbody>
</table>

2. Telem et al. Hepatol 2010
All in abdominal surgery.
Our patient’s score:

- 1 for No ascites
- 1 for No encephalopathy
- 1 for INR = 1.5
- 2 for Albumin = 3.2
- 1 for Bilirubin = 1.8

6 = Total

Child A
Risk (cont)

- Surgery type
  - Cardiac
  - Hepatic
  - Emergent
  - Abdominal
  - Large blood loss
Risk (cont)

- Anesthesia
  - Hepatotoxins
    - Halothane (20% metabolized)
  - Liver blood flow –
    - Portal vein 90%
    - Hepatic artery
  - Analgesics and sedatives and hepatic encephalopathy

- Infection

- Hypotension
Other Risk assessment

- MELD
- APACHE
- Quantitative assessment of liver function with dynamic tests
- Child score superior
Contraindications to elective surgery in patients with liver disease


- Acute alcoholic hepatitis
- Acute viral hepatitis
- Child's class C cirrhosis
- Fulminant hepatic failure
- Severe chronic hepatitis
- Severe coagulopathy (prolongation of the prothrombin time >3 seconds despite vitamin K administration; platelet count < 50,000/mm3)
- Severe extrahepatic complications:
  - Acute renal failure
  - Cardiomyopathy, heart failure
  - Hypoxemia
- Mild chronic hepatitis – not increased risk
- NASH – may have slightly increased risk
- Alcoholic – some increase
  - Abstinence recommended
- Wilson’s / Hemochromatosis – other organ involvement
- Autoimmune hepatitis – steroids
- Drug induced hepatitis
Drug induced liver injury

- 10% of all ADRs (adverse drug reactions)
- Commonest cause of drug therapy withdrawal
- Commonest cause of acute liver failure
- Cause of acute jaundice in up to 50% of patients
Other sequelae of cirrhosis

- Hepatopulmonary syndrome (intrapulmonary vascular dilatations)
  - Platypnea
  - Orthodeoxia
  - Hyperdynamic circulation
- Pleural effusions / ascites
- Pulmonary hypertension

- Cardiac failure
  - High output
- Fluid retention
- Electrolyte abnormalities
- Hepatorenal syndrome
- Clotting
- Drug effects – metabolism/interaction
- Varices
  - Oesophageal
  - Haemorrhoids
Optimize

- Gastroenterologist input
- Treat hepatitis
  - Abstain from toxins
  - Steroids
  - Interferon
- Control ascites
  - Tap
  - Diuretics
- Encephalopathy
  - Protein load
  - Beta blocker for decreasing variceal bleed
  - No role for prophylactic lactulose and neomycin
- Clotting
  - Vit K
  - FFP
  - Platelets
- Nutritional status
- Cardiac failure
- Liver transplant
Cataract

- Most common
- >1 000 000/yr in USA
- Low risk, ambulatory, local anesthesia
- <30 minutes
Causes

- ‘Senile’
- Trauma
  - Associated with other eye surgeries
  - Ex premies
- Steroids
- Diabetes
- Syndromes
Role of routine testing in cataract surgery

Low risk surgical procedures with minimal hemodynamic changes
• 19,557 Cataract operations
  Randomized into 2 groups
  No testing (n=9408) and Routine testing (n=9411)

• 3% overall rate of complications (bradycardia and hypertension most common)
• Similar rate in both groups
• Eliminating testing does NOT increase adverse outcome – testing does NOT improve safety

Role of routine testing in cataract surgery

Good History
- Procedure and indication
- PMH
- PSH
- Allergies
- Medications

And Physical
- Vitals
- Heart
- Lungs
- Level of Consciousness
Positioning: Supine

Anesthesia options

- GA (traditionally)
  - Now reserved for uncooperative
    - Child
    - Developmentally disabled
    - Dementia
  - Risk of movement
    - Parkinson’s
    - Cough
- Retrobulbar block
- Peribulbar block
- Subtenon injection
- Topical
- With sedation
Retrobulbar block
Subtenon block

- Conjunctiva
- Sclera
- Tenon’s Capsule
- Sub-Tenon’s Space
Incision can be as small as 2mm.

Surgical instrument using ultrasonic energy to remove a cataract.
IOL (now foldable)
Summary

- Cataract
- Common low risk surgery
- LA/sedation
- Basic ‘Jaccho’ H&P
- Cause of the cataract
- Can the patient lie flat and still for 40 minutes?
- No labs
- Stable disease even ASA 4 can go ahead if optimised

- Cirrhosis
- Significant mortality
- Child Pugh score
  - INR
  - Bilirubin
  - Albumin
  - Ascites
  - Encephalopathy
- Delay /cancel if risk
- Optimize