Tumors of the Pancreas, Biliary Tract, and Liver
Resident Teaching Conference

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October 23, 2009
Plan

- Case presentation #1
- Case presentation #2
- Select SESAP questions
Liver Mass - Evaluation

Question 1
A native Korean patient presents with right upper quadrant pain and a palpable liver, and has stigmata of chronic liver disease upon physical exam. How will you manage this patient?

Question 2
A 35-year-old woman who has taken birth control pills (BCPs) for 20 consecutive years is now found to have a 4 cm solid mass in her liver. How will you manage this patient?

Question 3
A 50-year-old healthy man has an elevated carcinoembryonic antigen (CEA) 3 years after having a colon resection for a T2, N0, M0 colon cancer. How will you proceed with this patient?

Question 4
A 23-year-old woman presents with right upper quadrant pain. On ultrasound she is found to have a 4 cm hemangioma in the left lateral section of her liver, and no gallstones. How will you proceed with this patient?

Question 5
A 50-year-old woman presents with right upper quadrant pain and is found to have a 10x10 cm hepatic cyst with internal septations on abdominal ultrasound. How will you proceed with this patient?
Case Presentation #1

- 78 y/o F
- Transferred to VUMC ED with:
  - 1 month epigastric pain
  - 48 hrs n/v
  - 10 lb weight loss over past month
  - OSH notes a pancreatic mass on US as well as cholelithiasis

- PMHx:
  - HTN, ovarian tumor, urinary incontinence, goiter

- PSHx:
  - R oopherectomy, thyroidectomy, bladder operations x4

- Meds:
  - Premarin, Benazepril, Provera, Atenolol
Case Presentation #1

- Physical Exam
  - Tachycardic (110s)
  - Right upper quadrant tenderness, negative Murphy’s sign

- Labs
  - WBC 20
  - Creatinine 0.65
  - Tbili 1.1, AlkP 499, AST 43, Lipase 96
Case Presentation #1

Management

- Underwent perc cholecystostomy tube
- EUS for pancreatic mass – 4.6x4.8 simple cyst
  - FNA - few inflammatory cells, no malignany
- Home with drain
- Cytology sent from initial drain placement
  - Returns “carcinoma with variable squamous differentiation”
Case Presentation #1

Management

- No evidence of distant disease
- Taken to OR for resection
  - Cholecystectomy with en bloc segment 4b and 5 liver resection
  - Distal gastrectomy
  - Right hemicolecctomy
Case Presentation #1

- **Post-operative course**
  - **Final pathology**
    - Poorly differentiated cholangiocarcinoma involving adjacent colon and stomach wall (Stage IIIb)
  - **Home after ~3 weeks**
  - **2 months post-op**
    - New liver lesions noted, asymptomatic PE, palliative care
Gallbladder Cancer

- Rare – 6,000-7,000 cases annually
- Prevalence in asymptomatic patients
  - <0.01% (Japanese study)
- Elderly females
- Adenocarcinoma >80%
Gallbladder cancer

- “Porcelain” gallbladder
  - Classically 25 – 60% risk of cancer
  - More recent series do not show this association
  - Slight increase risk possible with partial calcification (~7%)

- Choledochal cysts
  - Increased risk of cancer throughout biliary tree, especially gallbladder
  - Resection recommended
Clinical findings & diagnosis

- Mainly found during workup of right upper quadrant pain or treatment for cholelithiasis
- ~50% not known pre-op
- Symptoms consistent with biliary colic
- More systemic symptoms/signs (jaundice, weight loss, ascites) ominous
- Labwork – normal or consistent with biliary obstruction
Gallbladder cancer

- Imaging
  - Ultrasound
    - Thickened wall, mass within/replacing gallbladder
    - 50-70% will have stones
    - Evaluate for adenopathy, biliary obstruction as well
  - CT scan
    - Asymmetric thickening of gallbladder wall, mass or hepatic invasion
    - Poor at evaluating nodal disease
Gallbladder cancer

**Imaging**
- **ERCP**
  - Evaluate extent of biliary involvement
  - Relieve obstruction
- **MRCP**
  - Complete assessment of biliary tree, vasculature, hepatic parenchyma and nodal involvement
### TABLE 2: TNM staging of gallbladder cancer

<table>
<thead>
<tr>
<th>Primary tumor (T)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tx</td>
<td>Primary tumor cannot be assessed</td>
</tr>
<tr>
<td>T0</td>
<td>No evidence of primary tumor</td>
</tr>
<tr>
<td>Tis</td>
<td>Carcinoma in situ</td>
</tr>
<tr>
<td>T1</td>
<td>Tumor invades the lamina propria or muscle layer</td>
</tr>
<tr>
<td>T1a</td>
<td>Tumor invades the lamina propria</td>
</tr>
<tr>
<td>T1b</td>
<td>Tumor invades the muscle layer</td>
</tr>
<tr>
<td>T2</td>
<td>Tumor invades perimuscular connective tissue; no extension beyond the serosa or into the liver</td>
</tr>
<tr>
<td>T3</td>
<td>Tumor perforates the serosa (visceral peritoneum) and/or directly invades the liver and/or one other adjacent organ or structure, such as the stomach, duodenum, colon, pancreas, omentum, or extrahepatic bile ducts</td>
</tr>
<tr>
<td>T4</td>
<td>Tumor invades the main portal vein or hepatic artery or invades two or more extrahepatic organs or structures</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regional lymph nodes (N)</th>
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<tbody>
<tr>
<td>Nx</td>
<td>Regional lymph nodes cannot be assessed</td>
</tr>
<tr>
<td>N0</td>
<td>No regional lymph node metastasis</td>
</tr>
<tr>
<td>N1</td>
<td>Regional lymph node metastasis</td>
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</table>

<table>
<thead>
<tr>
<th>Distant metastasis (M)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mx</td>
<td>Distant metastasis cannot be assessed</td>
</tr>
<tr>
<td>M0</td>
<td>No distant metastasis</td>
</tr>
<tr>
<td>M1</td>
<td>Distant metastasis</td>
</tr>
</tbody>
</table>

**Stage grouping**

<table>
<thead>
<tr>
<th>Stage</th>
<th>T</th>
<th>N</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0</td>
<td>Tis</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage I</td>
<td>T1</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IB</td>
<td>T2</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IIA</td>
<td>T3</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IIB</td>
<td>T1</td>
<td>N1</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>N1</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>T3</td>
<td>N1</td>
<td>M0</td>
</tr>
<tr>
<td>Stage III</td>
<td>T4</td>
<td>Any N</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IV</td>
<td>Any T</td>
<td>Any N</td>
<td>M1</td>
</tr>
</tbody>
</table>

Figure 8  Illustrated are the anatomic divisions of the liver according to IHPBA/AHPBA-sanctioned terminology, including first-order divisions (hemilivers), second-order divisions (sections), and third-order divisions (segments).
Case presentation #2

- 58 y/o female presents to your clinic with the following CT scan
A 14x12x13cm lesion. Arterial phase shows peripheral enhancement that washes out in portal and venous contrast phases.
Case presentation #2

- What do you want to know about this patient?
  - History
  - Physical examination
  - Labwork
- What is the differential?
- Other imaging?
- Biopsy?
Case presentation #2
Diagnosis – hepatic adenoma

- Taken to OR
  - Bilateral subcostal incisions
  - Lesion noted segments IV, VII, VIII
  - Attempted enucleation, however, given adherence to right and middle hepatic veins, patient underwent right trisegmentectomy
  - Final pathology – 19 x 15 x 7 cm hepatic adenoma
Figure 8  Illustrated are the anatomic divisions of the liver according to IHPBA/AHPBA-sanctioned terminology, including first-order divisions (hemilivers), second-order divisions (sections), and third-order divisions (segments).
Solid hepatic tumor on ultrasound in a normal liver

Contrast enhanced MRI (CT)

- Haemangioma or FNH
- Adenoma
  - Stop OC use
  - Symptoms or ≥ 5 cm
    - < 5 cm
      - Observation
      - Observation
        - Observation
          - Observation
  - No symptoms
    - Observation
      - Observation
        - Observation
          - Observation

- Possibly malignant or diagnostic uncertainty
  - Resectable
  - Unresectable
    - Biopsy

Best Practice & Research Clinical Gastroenterology
Vol. 21, No. 6, pp. 983–996, 2007
Which of the following is the most accurate predictor of increased risk for morbidity and mortality in a cirrhotic after abdominal operation?

1. Child’s Class
2. Child-Turcotte-Pugh score
3. MELD score
4. APACHE II
5. APACHE III
MELD score

A Model to Predict Poor Survival in Patients Undergoing Transjugular Intrahepatic Portosystemic Shunts

Michael Malinchoc,1 Patrick S. Kamath,1 Fredric D. Gordon,2 Craig J. Peine,3 Jeffrey Rank,4 and Pieter C. J. ter Borg5

Hepatology Vol. 31, No. 4, 2000

- Developed in 2000
- Bilirubin, creatinine, INR
- Superior to CPT score for prediction of risk in cirrhotic patients
Predicting mortality in cirrhosis

- **Child-Pugh class (Child’s class)**
  - A – score 5-6
  - B – score 7-9
  - C – score > 9

<table>
<thead>
<tr>
<th>Points</th>
<th>Class</th>
<th>1-year Survival</th>
<th>2-year Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 – 7</td>
<td>A</td>
<td>100%</td>
<td>85%</td>
</tr>
<tr>
<td>7 – 9</td>
<td>B</td>
<td>81%</td>
<td>57%</td>
</tr>
<tr>
<td>10 – 15</td>
<td>C</td>
<td>45%</td>
<td>35%</td>
</tr>
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</table>

A 70-year-old woman presents with RUQ pain. The ultrasound and CT scan shown are obtained.
The next procedure should be:

1. Lap cholecystectomy
2. Open cholecystectomy
3. Percutaneous biopsy of the gallbladder
4. Open cholecystectomy with en bloc partial hepatectomy
5. cholecystectomy
A 51-year-old man has intermittent bloating and epigastric pain associated with eating fried foods. Abdominal examination is unremarkable. RUQ ultrasound examination reveals a 6-mm fixed, solitary projection in the gallbladder lacking an acoustic shadow.

The preferred management at this time would be:

1. Repeat US in 3 months
2. Biliary excretion study, eg, HIDA scan
3. Endoscopic ultrasound
4. Lap cholecystectomy
5. Open cholecystectomy
Name the liver lesion
Name the liver lesion
Name the liver lesion
Name the liver lesion
Name the liver lesion
<table>
<thead>
<tr>
<th></th>
<th>Haemangioma</th>
<th>FNH</th>
<th>Adenoma</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>30–50</td>
<td>20–40</td>
<td>All ages</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>F &gt; M</td>
<td>F ~ M</td>
<td>F &gt;&gt; M</td>
</tr>
<tr>
<td><strong>US</strong></td>
<td>Hyperechoic</td>
<td>Varied</td>
<td>Varied</td>
</tr>
<tr>
<td><strong>CT</strong></td>
<td>Strongly enhances</td>
<td>Central scar</td>
<td>Capsule</td>
</tr>
<tr>
<td><strong>MRI</strong></td>
<td>CSF intensity</td>
<td>Liver intensity</td>
<td>Liver intensity</td>
</tr>
<tr>
<td><strong>Angiogram</strong></td>
<td>Hypervascular</td>
<td>Hypervascular</td>
<td>Hypervascular</td>
</tr>
<tr>
<td><strong>Scintiscan</strong></td>
<td>RBC uptake</td>
<td>Uptake</td>
<td>Decreased uptake</td>
</tr>
<tr>
<td><strong>Calcification</strong></td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Rupture</strong></td>
<td>Rare</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

FNH, focal nodular hyperplasia; US, ultrasound; CT, computed tomography; MRI, magnetic resonance imaging.
A 36 y/o previously healthy woman who was wearing a seatbelt is hemodynamically normal on arrival after a MVC. CT shows a mass in her liver. The MRI show was obtained 2 days later.
The best recommendation would be:

1. No intervention
2. Percutaneous drainage
3. Colonoscopy to identify a primary malignancy
4. Embolization of the right hepatic artery
5. Resection of the right lobe of the liver
The single best test to determine a hepatic hemangioma is:

1. Transabdominal ultrasound
2. Endoscopic ultrasound
3. CT
4. MRI
5. Laparoscopy