Klebsiella Pneumoniae
Pyogenic Liver Abscess

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SUNY Downstate Surgery Grand Rounds
February 2, 2012
xx yo F presents to ED with one day h/o left shoulder pain and headache

- ROS:
  - Dizziness
  - blurred vision
  - poor PO intake.
  - No recent travel.
  - Seen in ED 2 months prior with abdominal pain

- PMH/PSH: Alzheimers, depression, cervical ca s/p hysterectomy, chemo/XRT
Case Presentation

• Vitals: 96.8 F, BP 118/75, HR 105
• Exam:
  – Lethargic
  – right facial droop
  – abdomen mildly tender
• Labs:
  – WBC 14 (30 bands)
  – Tbili 1.8
  – Cr 1.7
• Admitted to medicine for altered mental status
Case Presentation

• HD#1:
  – Temp 101F.
  – Vanco & Ceftriaxone started.
  – Blood Cultures & LP confirmed bacterial meningitis (Klebsiella pneumoneae)

• HD#3:
  – diarrhea.
  – WBC 5.
  – CT abdomen performed
  – surgery consulted
CT Findings

prior ED visit & current hospitalization
Percutaneous Drainage HD#5
Operative Management HD#8

- Failed nonoperative treatment despite 7 days of antibiotic coverage and percutaneous drainage
- Worsened abdominal pain
- WBC rose to 19K
- Bilirubin rose to 6.1
- CT findings revealed interval enlargement of abscess, perihepatic fluid
Operative Findings
Postoperative Course

- Extubated POD#4 after TEE (no vegetations)
- Transferred to rehab POD#13
- Readmitted POD#39 with T 101 and abdominal pain, required percutaneous drainage
- Discharged to nursing home POD#48 with PICC for ceftriaxone
Pyogenic Liver Abscess

- Account for ¾ of liver abscesses in industrialized countries. 1-446:100,000
- Commonly from Gram negative rods (E. Coli, K. PNA)
- Associated with
  - complex biliary tract disease
  - intra-abdominal infection
  - neoplastic process
  - prior surgery
  - immunosuppression
Pyogenic Liver Abscess

- Symptoms include
  - Fever
  - Chills
  - abdominal pain
  - 2/3 of patients

- Physical exam reveals
  - abdominal tenderness in ½
  - jaundice in 1/5 of patients

- Mortality 4-22% overall
  - 19-42% with antibiotics alone
  - 3-21% with antibiotics and percutaneous drainage
### Worldwide Distribution & Timeline of Klebsiella Pneumonia Cryptogenic Liver Abscess

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>Singapore</th>
<th>Taiwan</th>
<th>Australia</th>
<th>San Diego, CA</th>
<th>Japan</th>
<th>Italy</th>
<th>Sweden</th>
<th>Newark, NJ</th>
<th>Buffalo, NY</th>
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</thead>
<tbody>
<tr>
<td><strong>43 pts</strong></td>
<td>51 pts</td>
<td>177 cases</td>
<td>13 pts</td>
<td>6 cases</td>
<td>5 cases</td>
<td>2 cases</td>
<td>1 case</td>
<td>1 case</td>
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<tr>
<td><strong>67% of cases</strong></td>
<td>64% of cases</td>
<td>CNS-ocular</td>
<td>21% of cases</td>
<td>4 Filipino</td>
<td>Familial</td>
<td>2 Asian immigrants</td>
<td>Vietnamese immigrant</td>
<td>Filipino immigrant</td>
<td>Vietnamese immigrant</td>
<td></td>
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Klebsiella Pneumoniae Liver Abscess (KP-LA)

- Emergence of capsular K1 serotype in Asia during 1980s
- Cryptogenic
- Associated with hyperviscosity and virulence genes magA, rmpA, and aerobactin which confer resistance to neutrophil phagocytosis and serum complement killing
- Unclear whether Asian genetics or environment confers risk. Possibly food-borne. Community-acquired.
- Mortality 3-32%

- Risk factors include age 50-70, male gender, and diabetes
- CT findings predicting KP-LA include: single, unilobular, or multilocular
- Complicated with metastatic infections (10-12%):
  - Ocular (6-13%)
  - CNS (1-7%)
  - Lung (12-16%)
  - Kidney (3-10%)
  - Spleen (5%)
  - Prostate (1%)
- Permanent disability in 70% of those with ocular/CNS infection
Treatment Algorithm

Pyogenic Liver Abscess

< 3 cm
Antibiotic therapy

> 3 cm

Unilocular
Percutaneous drainage plus antibiotics

Multilocular, complex
Primary surgical therapy
Resection or drainage
Surgical Management of Pyogenic Liver Abscess

- 28-42% failure rate with aspiration
- 11-39% failure rate with catheter drainage
- Risk factors predicting failure of initial percutaneous failure:
  - abscess larger than 5cm
  - multiloculation
  - low serum albumin
  - rupture at presentation
- Overall rate of surgical drainage 11-17%
- Morbidity 27-41% (PNA, DIC, ARF, MI, bile leaks)
- Mortality 5-28% with surgical drainage vs. 4% with hepatectomy