Management of Acute Cholangitis

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Case Presentation

- 94 yo woman w/ choledocholithiasis with 1 day hx of RUQ abd pain
- Fevers, chills, nausea & vomiting
- PMHx: HTN, DM, colon cancer
- SHx: left hemicolecetomy

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On Physical Exam

- Vitals: Tm 103 F  BP 165/71  HR 93
- Skin: Midline abd scar
- Abd: soft, ND, RUQ tenderness, (+) Murphy’s sign, no hernias
- Back: no CVAT
Labs

- CBC: 20.5>13.7/45<224
- BMP: 135/4.6/105/22/15/1<226
- LFT: 6/2.7/121/135/271/2.0 A 43 L 91
- U/A: normal
Hospital Course

- Choledocholithiasis, acute cholecystitis & ascending cholangitis
- IV resuscitation and IV antibiotics
- Failed ERCP and PTC
- IR performed temporizing percutaneous cholecystostomy
Open Cholecystectomy

- Cholecystostomy tube removed
- Cholecystectomy
- CBD exploration & T-tube placement
- Jackson – Pratt drain
Post – Op Course

- POD#2: Extubated
- POD#3: Transferred to floor
- POD#4: Tolerated regular diet
- POD#7: Normal T-tube cholangiogram
- POD#8: Discharged to home
Acute Cholangitis

- Acute ascending cholangitis (AAC)
- History of AAC management
- Management options
- Conclusion
History of Cholangitis

- 1877 – Dr. Jean-Martin Charcot recognized triad of symptoms
- 1958 – Dr. Benedict Reynolds recognized a more severe form
U.S. Epidemiology

- 20 million U.S. adults have gallstones
- Cholangitis relatively uncommon
- Choledocholithiasis primary etiology
- 1-3% after biliary instrumentation
- Median age 50 – 60 years
AAC Pathophysiology

- Ascending bacterial infection
  - E. coli, Klebsiella, Enterobacter
- Biliary obstruction and stasis
  - Intact sphincter of Oddi
  - Unimpeded efflux of bile from CBD
  - Immunoglobulin A & bile salts
- Instrumentation & foreign body
# Diagnostic Criteria

<table>
<thead>
<tr>
<th>Table 4</th>
<th>TG13 Diagnostic criteria for acute cholangitis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Systemic inflammation</strong></td>
<td></td>
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<tr>
<td>A-1. Fever and/or shaking chills</td>
<td></td>
</tr>
<tr>
<td>A-2. Laboratory data: evidence of inflammatory response</td>
<td></td>
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<tr>
<td><strong>B. Cholestasis</strong></td>
<td></td>
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<tr>
<td>B-1. Jaundice</td>
<td></td>
</tr>
<tr>
<td>B-2. Laboratory data: abnormal liver function tests</td>
<td></td>
</tr>
<tr>
<td><strong>C. Imaging</strong></td>
<td></td>
</tr>
<tr>
<td>C-1. Biliary dilatation</td>
<td></td>
</tr>
<tr>
<td>C-2. Evidence of the etiology on imaging (stricture, stone, stent, etc.)</td>
<td></td>
</tr>
</tbody>
</table>

- **Suspected diagnosis:** one item in A + one item in either B or C
- **Definite diagnosis:** one item in A, one item in B and one item in C

- A-2 Abnormal white blood cell counts, increase of serum C-reactive protein levels, and other changes indicating inflammation
- B-2 Increased serum ALP, r-GTP (GGT), AST, and ALT levels

**Do NOT delay management!**
## Comparison

### Table 3: Retrospective comparison of various diagnostic criteria of acute cholangitis in a multicenter study in Japan

<table>
<thead>
<tr>
<th></th>
<th>Charcot’s triad (%)</th>
<th>TG07 (%)</th>
<th>The first draft criteria (with abdominal pain and history of biliary disease) (%)</th>
<th>TG13 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>26.4</td>
<td>82.6</td>
<td>95.1</td>
<td>91.8</td>
</tr>
<tr>
<td>Specificity</td>
<td>95.9</td>
<td>79.8</td>
<td>66.3</td>
<td>77.7</td>
</tr>
<tr>
<td>Positive rate in acute cholecystitis</td>
<td>11.9</td>
<td>15.5</td>
<td>38.8</td>
<td>5.9</td>
</tr>
</tbody>
</table>
Diagnosis

- **Sonogram**
  - 1st imaging study of choice
  - CBD dilatation

- **ERCP**
  - Diagnostic AND therapeutic
  - Sphincterotomy, stone extraction, stent insertion
Diagnosis

- **MRCP**
  - Detect CBD stones (90–95% concordance)
  - Post-cholecystectomy & failed ERCP

- **CT scan**

- **EUS**
  - High sensitivity for CBD stones, but unknown role for cholangitis
Management

- 15 – 20% non-responsive to conservative therapy
- Risk factors for suppurative AAC
  - Impacted stones
  - Active smoker
  - Age > 70 yrs
  - Gallbladder stones
Management

- Resuscitation & correct coagulopathy
- Antibiotics 1 – 2 weeks (85% respond)
  - Fluoroquinolones + Flagyl
  - PCN + B-lactam combination
- Goal: Biliary decompression
## Criteria for severity assessment of acute cholangitis

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Mild (grade I)</th>
<th>Moderate (grade II)</th>
<th>Severe (grade III)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset of organ dysfunction</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Response to initial medical treatment&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<sup>a</sup> Consisting of general supportive care and antibiotics
### Timing of Biliary Drainage

**Table 8** Timing of biliary drainage among patients with acute cholangitis diagnosed with TG13—multicenter analysis of acute cholangitis for revision of TG07 Severity assessment criteria for acute cholangitis

<table>
<thead>
<tr>
<th>Timing of drainage/treatment for etiology</th>
<th>Grade III</th>
<th>Grade II</th>
<th>Grade I (with early drainage)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within 24 h</td>
<td>41</td>
<td>116</td>
<td>140 (135)</td>
<td>297</td>
</tr>
<tr>
<td>24–48 h</td>
<td>9</td>
<td>13</td>
<td>41 (41)</td>
<td>63</td>
</tr>
<tr>
<td>After 48 h</td>
<td>20</td>
<td>48</td>
<td>94</td>
<td>162</td>
</tr>
<tr>
<td>Drainage (−)</td>
<td>2</td>
<td>39</td>
<td>60</td>
<td>101</td>
</tr>
<tr>
<td>Total</td>
<td>72 (11.6 %)</td>
<td>216 (34.7 %)</td>
<td>335 (53.8 %)</td>
<td>623</td>
</tr>
</tbody>
</table>

() indicates the number of cases that have early drainage and treatment of etiology
Decompression Indications

- Persistent abdominal pain
- Hypotension despite resuscitation
- Fever > 102 F
- Mental confusion
Biliary Drainage

- Endoscopic
- Percutaneous transhepatic
- Surgical
ERCP

- Treatment of choice

Dye is injected through a catheter into the pancreatic or biliary ducts.
ERCP

- Nasobiliary catheter if coagulopathic
- Internal stent permits adequate drainage even without sphincterotomy
- Lithotripsy for stones > 2 cm diameter
PTC

- Alternative when ERCP unavailable, unsuccessful or contraindicated
Surgical Decompression

- Rarely performed
- CBD exploration for difficult stones
- Choledochotomy + T-tube for emergency
  - Lower mortality rate than CCY + CBD exploration
Comparison of Drainage

- **Endoscopy Drainage**
  - Morbidity: 10%
  - Mortality: 5%

- **Percutaneous Technique**
  - Morbidity: 20%
  - Mortality: 10%

- **Surgery**
  - Morbidity: 80%
  - Mortality: 30%
Summary

- Result of biliary stasis & infection
- 80% respond to conservative therapy
- ERCP first line drainage therapy
- CBD stones removed in 90-95% after sphincterotomy
True or false: Management of acute cholangitis should be delayed until Tokyo Guidelines 2013 diagnostic criteria is met.

FALSE
What percentage of cholangitis patients fail conservative management (IV antibiotics)?

A. 100%
B. 75%
C. 50%
D. 20%
E. 1%
After IVF resuscitation & IV antibiotics, which is the preferred first line treatment for acute cholangitis?

A. Watchful waiting

B. Laparoscopic cholecystectomy alone

C. ERCP with sphincterotomy or stenting

D. Percutaneous transhepatic cholecystostomy

E. CBD exploration
References


Yeom DH et al. What are the risk factors for acute suppurative cholangitis caused by common bile duct stones? Gut Liver 2010;4:363.