Case Presentation and Discussion on a Patient with Jaundice

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General Data:
17 year-old
Female

Chief Complaint:
“jaundice”
History of the Present Illness:

11 days PTR admitted at OB S/P NSD

8 days PTR Epigastric pain radiating to RUQ pain vomiting with 1 adult ascaris

7 days PTR tea-colored urine

5 days PTR jaundice fever, intermittent pale stools

1 day PTR US HBT – “normal size liver. Dilated CBD, with multiple echogenic foci, stone and/or ascaris”

Referred to Surgery
• Past medical history: unremarkable
• Personal and social history unremarkable
• Family medical history unremarkable
Physical Examination:

- Conscious, coherent, oriented
- BP = 90/60mmHg   CR = 91beats/min
  RR = 19cycles/min   Temp = 36.8°C
- Icteric sclerae
- Supple neck, no cervical lymphadenopathy
- Symmetrical Chest Expansion, Clear breath sounds
- Adynamic precordium, no murmur
Physical Examination:

- Flabby Abdomen, Normoactive bowel sounds, soft, no tenderness, no organomegaly (no hepatomegaly nor splenomegaly)
Salient Features

- 17 y/o, female
- s/p NSD (G1P1)
- Epigastric pain – RUQ area
- Vomiting of adult ascaris x1
- Tea-colored urine
- Jaundice – icteric sclerae
- Pale stools
- No organomegaly
- US of HBT findings: dilated CBD with echogenic foci
Clinical Diagnosis

A. Primary Clinical Diagnosis:
   Obstructive jaundice secondary to
   Biliary ascariasis with choledocholithiasis

B. Secondary Clinical Diagnosis:
   Obstructive jaundice secondary to
   choledocholithiasis
JAUNDICE

INCREASED QUANTITY OF BILIRUBIN PRESENTED TO LIVER

PREHEPATIC

DECREased HEPATOBILIARY EXCRETION OF BILIRUBIN

HEPATIC

POSTHEPATIC
JAUNDICE

INCREASED QUANTITY OF BILIRUBIN PRESENTED TO LIVER

PREHEPATIC

DECREASED HEPATOBILIARY EXCRETION OF BILIRUBIN

HEPATIC

POSTHEPATIC

Abdominal pain
Tea-colored urine
JAUNDICE

INCREASED QUANTITY OF BILIRUBIN PRESENTED TO LIVER
- PREHEPATIC

DECREASED HEPATOBILIARY EXCRETION OF BILIRUBIN
- HEPATIC
  - Abdominal pain
  - Tea colored urine
  - Jaundice
  - Pale stools
  - No hepatomegaly
- POSTHEPATIC
  - No hepatomegaly
JAUNDICE

INCREASED QUANTITY OF BILIRUBIN PRESENTED TO LIVER
- PREHEPATIC

DECREASED HEPATOBILIARY EXCRETION OF BILIRUBIN
- HEPATIC
- POSTHEPATIC
  - Benign
  - Malignant

Onset of jaundice
With associated abdominal pain
JAUNDICE

INCREASED QUANTITY OF BILIRUBIN PRESENTED TO LIVER

PREHEPATIC

Vomiting with ascaris US findings

DECREASED HEPATOBILIARY EXCRETION OF BILIRUBIN

HEPATIC

Benign
  
Ascariasis

Malignant
  
Stones

POSTHEPATIC
<table>
<thead>
<tr>
<th>CLINICAL DIAGNOSIS</th>
<th>CERTAINTY</th>
<th>TREATMENT MODALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstructive jaundice secondary to Biliary ascariasis with Choledocholithiasis</td>
<td>80%</td>
<td>OPERATIVE</td>
</tr>
<tr>
<td>Obstructive jaundice secondary to choledocholithiasis</td>
<td>20%</td>
<td>OPERATIVE</td>
</tr>
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</table>
Paraclinical Diagnostic Procedures

• Do I need additional paraclinical diagnostic procedure?
  – NO.
  – Obstruction in the CBD had been established.
  – Treatment for both clinical diagnosis will not differ.
Treatment

Pretreatment Diagnosis:

Obstructive Jaundice
secondary to
Biliary Ascariasis with Choledocholithiasis
Treatment

• Goals of Treatment:
  > relieve bile duct obstruction
  > eradicate parasitism
# Treatment Options

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Benefit</th>
<th>Risk</th>
<th>Cost</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ERCP</strong></td>
<td>-able to achieve primary treatment objective SR=71-98% CBD Clearance</td>
<td>-bleeding -perforation -pancreatitis</td>
<td>*12-15,000 pesos at Metropolitan Hospital *2-3,000 pesos at PGH</td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Open surgery</strong></td>
<td>-able to achieve primary treatment objective SR=90-100% CBD Clearance</td>
<td>-complications of anesthesia -bleeding -iatrogenic injury to biliary ducts</td>
<td>*20-30,000 pesos in private hospitals *free to charity pxs at OM</td>
<td>available</td>
</tr>
<tr>
<td><strong>Laparoscopic surgery</strong></td>
<td>-able to achieve primary treatment objective SR=85-100% CBD Clearance</td>
<td>-complications of anesthesia -bleeding -iatrogenic injury to biliary ducts -trocac and needle insufflation injuries</td>
<td>*40-60,000 pesos in private hospitals</td>
<td>Not available</td>
</tr>
</tbody>
</table>
OPEN SURGERY

- Most cost-effective treatment for the primary treatment objective.
# Treatment Options

## Eradication of Ascaris Infestation

### In the Intestine

<table>
<thead>
<tr>
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<th>Risk</th>
<th>Cost</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surgical</strong></td>
<td>+</td>
<td>Risk of anesthesia Leak</td>
<td>10,000</td>
<td>Available</td>
</tr>
<tr>
<td><strong>Medical</strong></td>
<td>+++</td>
<td>Minimal</td>
<td>50</td>
<td>Available</td>
</tr>
</tbody>
</table>
Preoperative preparation:

• Informed consent
• Psychosocial support
• Optimize patient’s health
  – IV antibiotics continued
  – PT determined
• Screen for any condition that will interfere with treatment
• Prepare materials
Supraumbilical Midline incision
Intra-operative Findings

- Gallbladder measured 8 x 4 x 3 cm, walls not thickened. No stones.
- Cystic duct measured 0.5cm.
- Common bile duct dilated to 2cm.
- IOC done.
Needle IOC

Opacification of Gallbladder, Biliary tree, with passage of contrast media to duodenum and intrahepatic ducts. Multiple filling defects in a dilated common bile duct.
• Cholecystectomy – done
  – Cystic artery ligated
  – Antegrade dissection of gallbladder from liver bed
  – Cystic duct tied, clamped, cut
Common Bile Duct Exploration

done:

- Extracted 3 dark brown stones.
- 2.5 cm elongated dark debris.
- Duct flushed with NSS proximally and distally

- T-tube placed, Completion cholangiogram requested.
Completion Cholangiogram

Good passage of contrast media proximally to intrahepatic ducts and distally to duodenum. No filling defects seen.
Operative procedure done:

- Needle IOC
- Cholecystectomy
- Common Bile Duct Exploration
- T-tube choledochostomy
• NSS wash
• Hemostasis checked
• OS and Instrument Count
• Midline incision closed with single layer fascial closure using vicryl 0 continuous
Post-operative Care

IV antibiotic continued for 24 hours
Diet started 1 day post-op. Given Mefenamic Acid 500mg/cap for pain.
Wound inspected/dressed regularly at least BID together with measurement of T-tube output.
Patient was Given Mebendazole as deworming on 3rd post op day.
Patient sent home on the 4th post-op day
- On Discharge:
  - Patient advised to monitor T-tube output daily
  - Advised on proper wound care
  - Scheduled for Tube cholangiogram
Final Diagnosis

Obstructive Jaundice
Secondary to
Biliary Ascariasis with
Choledocholithiasis
Discussion

Level of Prevention

Tertiary

Secondary

Primary

Choledocholithiasis

Brown pigment Stones

Biliary Ascariasis

Intestinal Parasitism 2’ to *Lumbricoides ascaris*

Reduction or elimination of a disease by interventions (commonly referred to as treatment) in symptomatic individuals identified after development of clinical manifestations of disease
**Discussion**

**Level of Prevention**
- **Tertiary**
  - Choledocholithiasis
    - Brown pigment Stones
    - Biliary Ascariasis
    - Intestinal Parasitism 2’ to *Lumbricoides ascaris*

**Primary**
- Secondary

Reduction or elimination of a disease by interventions (commonly referred to as treatment) in symptomatic individuals identified after development of clinical manifestations of disease.

Discussion on Choledocholithiasis and its associations with brown pigment stones, biliary ascariasis, and intestinal parasitism specifically related to *Lumbricoides ascaris*.
Reduction or elimination of a disease by interventions (commonly referred to as treatment) in symptomatic individuals identified after development of clinical manifestations of disease.
Discussion

**Level of Prevention**

- **Tertiary**

- **Secondary**

- **Primary**

**Choledocholithiasis**

- **Brown pigment Stones**

**Biliary Ascariasis**

**Intestinal Parasitism 2’ to *Lumbricoides ascaris***

Reduction or elimination of a disease by interventions in asymptomatic and at risk individuals identified prior to development of clinical manifestations of disease.
Discussion

Level of Prevention

Tertiary

Secondary

Primary

Choledocholithiasis

Brown pigment Stones

Biliary Ascariasis

Intestinal Parasitism 2’ to Lumbricoides ascaris

Reduction or elimination of a disease by measures intended to prevent or avoid onset of the disease.
Choledocholithiasis

Primary

- Brown Pigment Stone

Secondary

- Black Pigment Stone
- Cholesterol Stone
Brown Pigment Stone

- primarily in common bile duct
- Bacterial infection of bile precedes its formation
- Associated with biliary ascariasis
- Calcium bilirubinate in monomeric form and calcium soaps of fatty acids
Ascaris
Invasion of biliary tree

Obstruction +
Carry Bacteria

Conjugated Bilirubin

Unconjugated bilirubin

Lysolecithin + Palmitate + stearate

Calcium Bilirubinate

Calcium Soaps of Fatty Acids

Conjugated Bilirubin glucuronidase

Unconjugated bilirubin phospholipase

Lysolecithin + Palmitate + stearate

Calcium Bilirubinate

Calcium Soaps of Fatty Acids
Black Pigment Stone

- Mainly in the gallbladder
- Increased load of bilirubin presented to the liver
  - Excess unconjugated and conjugated bilirubin
- Calcium bilirubinate in polymeric form
Cholesterol

- Solubilization of Cholesterol in bile
- Cholesterol saturation
- Nucleation
- Growth
Biliary Ascariasis

• Rare
• Complication of ascaris infestation
• Can be:
  – Asymptomatic
  – Symptomatic
    • RUQ pain – biliary colic
    • Cholangitis

• Treatment
  – Medical
  – Surgical
Ascaris lumbricoides

- Largest intestinal nematode parasite of human
- 40cm in length
- Live for 1-2 years
Life Cycle

- Mature female 240T ova/day
  - Lumen of SI
- Swallowed to SI
- Lung
  - Portal circulation
- Ova mature in soil
  - 2-3 months
  - Swallow infective ova
- Larvae hatches in SI
• Primary Prevention
  – Control transmission
    • Sanitary facilities
    • Avoid use of human manure as fertilizer

• Secondary Prevention
  – Screening
  – Deworming

• Tertiary
  – Antihelminthics
  – Surgical
References:


MCQ

Direction: Choose the best answer.

1. What is the most commonly isolated bacteria in the common duct of patient with primary stone?
   A. Escherichia coli
   B. Pseudomonas aeruginosa
   C. Klebsiella sp.
   D. Salmonella typhii
   E. Corynebacterium sp.
2. What is the best initial procedure in defining the cause of obstructive jaundice in a 17 year old female?

A. ERCP
B. PTC
C. US
D. CT Scan
E. MRCP
MCR.

Direction: Write

“A” if 1, 2, and 3 are valid statements.

“B” if only 1 and 3 are valid statements.

“C” if only 2 and 4 are valid statements.

“D” if only 4 is a valid statement.

“E” if all are valid statements.
3. Boyet is a 4 year-old boy who lives in squater’s area which lack proper sanitary facility. His secondary prevention needs, include:

1. Washing hands before meal
2. Subject him to fecalysis in the nearby health center
3. Enroll him in the vaccination program of the community
4. Include him in the deworming program of the community
4. Generally, jaundice may be caused by:

1. hemolytic disease
2. infectious hepatitis
3. pancreatic malignancy
4. excess intake of carrots
5. Which of the following statements about choledocholithiasis are correct?

1. CBD stones usually originates in the gallbladder and migrate to common duct
2. CBD stones can form de novo in the duct system
3. calcium bilirubinate stone are associated with the presence of bacteria in the duct system
4. calcium bilirubinate are formed even on the absence of bacteria in the duct system