Intrahepatic Cholestasis of Pregnancy (ICP)

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September 18th, 2012
A Case Review on L&D: Patient L.L.

- **Identifying data**: 29 year old F, G4P2012

- **CC**: Presented on 8/30/12 at 09:35 for scheduled IOL secondary to ICP.

- **EDD**: September 16th, 2012
Past history

- **Gyn Hx**: LMP 12/11/11. No STDs, no abnormal PAPs

- **OB Hx**:
  - 5/30/2001: NSVD in Ecuadorian Hospital. To 8lb F at 40 wks. Uncomplicated.
  - 4/12/2003: NSVD in Ecuadorian hospital. 9lb M. 2 hour second stage per patient.
  - 2008: SAB at 5 weeks.
Prenatal course

- **PNC**: 12 visits.
  - PPW: 149-173lbs
  - BP range: 100-120/48-74
  
  - 7/11/12: c/o pruritis from head to toe X14 days.
Focused lab assessment

Labs:
- 7/31/12 (32 wks) ➔ LFT results:
  - AST/ALT: 40/65 (31/54 on 2/14/12)
  - Alk Phos: 486 (111 on 2/14/12).

Then ordered: Bile acids =12. Started on Actigall 300mg BID.

Fetal Surveillance
- Twice weekly NSTs, weekly biophysical (WNL)
Additional hx on admission

- **PMH:** Anemia
- **PShx:** Cholecystectomy in 2009.
- **Allergies:** NKDA
- **Medications:** Actigall, PNV, Iron
Case review continued:

- **Social Hx**: Spanish speaking female. 2 children in Ecuador. Works as full time housecleaner. Denies drugs, alcohol or smoking. Lives at home with boyfriend. Denies domestic violence.

- **ROS**: weight gain. Not pruritic on admission.
Case review cont’d:

- **Physical exam pertinent positives:**

  Well appearing, Spanish speaking Female in NAD.

  OB: Gravid abdomen, FHR heard

  Fetal exam: HR-145. Accels present, moderate variability.

  Est weight: 7.5. Fundal height: 38cm. No contractions.


  Skin exam: No rashes. +excoriations
Hospital/Labor course:

- Pt. admitted on 8/30/12 at 0935 for induction 2/2 ICP
- 09/3/12 14:20: ROM
- 09/3/12 22:00: Onset of labor
- 09/4/12 03:33: Fully dilated
- 09/4/12 03:39: effective 2nd stage to NSVD live boy. OA to LOA, nuchal cordX1 loose. Atraumatic delivery of shoulders/body through cord. Infant placed on mother’s abdomen and bulb suctioned. Spontaneous cry and respirations noted. Cord clamped/cut, blood obtained.
- 09/4/12 03:45: Spontaneous delivery of placenta, complete and in tact with central cord. Fundus massaged to firm, pitocin infused via IV
## Timeline of Labor:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8/30</td>
<td>09:35</td>
<td>Admitted for IOL 2/2 ICP</td>
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<tr>
<td>9/3</td>
<td>14:20</td>
<td>ROM, clear fluid</td>
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<tr>
<td>9/3</td>
<td>22:00</td>
<td>Onset labor</td>
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<tr>
<td>9/4</td>
<td>03:33</td>
<td>Fully dilated</td>
</tr>
<tr>
<td>9/4</td>
<td>03:39</td>
<td>Delivery</td>
</tr>
<tr>
<td>9/4</td>
<td>03:45</td>
<td>Placenta delivered</td>
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</tbody>
</table>
Hospital/Labor Course:

- Total EBL: 250ccs.
- 1st degree laceration of perineum repaired.
- Apgar: 9-9
- Mom and baby bonding well, breast feeding initiated. FOB at bedside.
Intrahepatic Cholestasis of Pregnancy (pruritis gravidarum, obstetric cholestasis)

- **Cholestasis**: Impaired flow of bile acids. (secretion/reuptake by hepatocytes)

- **Bile Acids**:
  1. emulsify fats in blood: aid w/absorption.
  2. route of bilirubin excretion
Cholic acid  Chenodeoxycholic acid
Circulation of Bile Acids

Liver

Cholesterol
(chenodeoxy-) cholic acids

Gall bladder
(empties on feeding)

Duodenum

Systemic circulation

Portal circulation

95%
5%

90%
10%

Ileum

Feces

2-10um/L

http://ahdc.vet.cornell.edu/clinpath/modules/chem/images/ba.gif
Intrahepatic Cholestasis of Pregnancy

- **Incidence**: 0.1-15%

- **Pathogenesis**:

  1. Genetics/Familial: *Chile (14%) in Araucanian Indian women (24%). FH of cholelithiasis in 50% of ICP cases.*

  2. Hormones:
     - Estrogens → interferes with bile acid secretion across basolateral hepatocyte membrane into liver (peak in third trimester; multigestation).
     - Progesterones → Potentiates estrogen effects
       *Inhibits hepatic glucoronyl transferase, reducing clearance of estrogen*

  3. Environment → Seasonal variability
Clinical Manifestations:

- Onset in 2\textsuperscript{nd} (20\%) / 3\textsuperscript{rd} (80\%) trimesters

- Symptoms: Pruritis without primary lesions.
  - Generalized
  - Extensor surfaces
  - Palms/soles
  - Worse at night
Physical Exam:

- Severity of skin findings correlates with duration/degree of pruritis
- Secondary skin lesions (linear/papular excoriations)
- Abdominal pain/signs of liver failure are rare
- <10% with jaundice

(If jaundiced: r/o acute liver disease of pregnancy, preeclampsia (inc. LFTs), hyperemesis gravidarum, hepatitis, drug reaction, gallstone/obstructive biliary disease)
Excoriations: Papular

http://www.jfponline.com/Pages.asp?AID=5438
Excoriations: Linear

http://www.jfponline.com/Pages.asp?AID=5438
Labs:

- Total serum bile acids (TBA)
  - ***THE MOST SENSITIVE INDICATOR OF ICP***
    (http://www.jfponline.com/Pages.asp?AID=5438)
    - (cholic acid > chenodeoxycholic acid)

- Serum aminotransferases (hepatitis panel?)

- +/- Alk phos, total/direct bilirubins, GGT.

- Ultrasound: Normal in ICP

- **Diagnosis:** 2\textsuperscript{nd}/3\textsuperscript{rd} trimester + pruritis + elevated bile acids and/or aminotransferases.
Treatment:

- Ursodeoxycholic acid (Actigall):
  - First line.
  - 500mg BID or 300mg TID (15mg/kg/day) until delivery
Treatment continued: How does ursodeoxycholic acid (Actigall) work?

- What is Actigall? A natural bile acid that displaces more harmful ones from the blood stream.
- Reduces levels in umbilical cord and amniotic fluid as well.
- Safe for mom and baby
- Others: soothing baths, emollients, primrose oil, corticosteroids, (antihistamines rarely effective).
Complications of ICP for Mom:

- Fat soluble vitamin deficiency if extreme (Vit K)
- Use oral contraceptives: rarely causes recurrence. Check LFTs after 3-6 months of contraception.
- Risk of recurrence: 60-70% (variable severity).
Complications of ICP for baby: decreased fetal elimination of toxic bile acids

- Fetal prematurity (20-60%).
- Meconium stained amniotic fluid
- Intrauterine demise, stillbirths (1-2%).
- ARDs (bile acids entering lungs)

Can we predict complications? No antepartum test to reliably predict fetal demise
Complications of ICP for fetus cont’d:

- Degree of bile acid levels may help predict fetal risk (Largest study of 693 F directly related risk to bile acid levels. No complications until levels >40micromol/L)

- Not a contraindication for breastfeeding.
When to deliver ICP patients?

- No official consensus.

- 37 vs. 38 wks vs. earlier???
  - 37 wks: 90% of demises occur in utero at median 38 weeks.
  - <37 wks: unremitting, nonrelievable pruritis, jaundice, h/o prior fetal demise due to ICP with ICP in current pregnancy. Test for lung maturity via amnio. If immature, course of steroids prior to induction.
  - Will have increased C/S rates with earlier deliveries.
  - Journal of Family Practice: Weekly non-stress tests beginning at 34th week (UpToDate: no official recommendations)
http://www.aafp.org/afp/2007/0115/p211.html
www.AAFP.org
UptoDate.com, *Intrahepatic Cholestasis of Pregnancy.*
www.wikipedia.com