WORKSHOP: The Pregnant Traveler

Kaiser National Travel Medicine Conference
Walnut Creek, CA
October 15, 2010
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Information in Obstetrics

- Not controlled studies, but attentive observation
- Requires a balance between caution and *chutzpah (D. Carroll, MD)*

Pre-travel issues

- Advisability of the trip
- Airline requirements
- In-flight considerations
- Medical care
- Immunizations
- TD
- Malaria
Additional issues for the pregnant traveler

- Health insurance
- Cabin humidity
- Exercise during long flights
- Radiation exposure
- Obstetric care at destination country
  - Copy medical records

Trauma

- Accidents
  - Loss of balance
  - Lack of coordination
  - > 50% of fetal losses occur with "insignificant" trauma
- Increased blood loss.
- Delay of care
  - Common cause of fetal death is death of the mother.

Travel & pregnancy: contraindications

- Complicated pregnancy
- Hypertension
- History of pre-term labor
- Diabetes
- Cardiac arrhythmias
- History of intrauterine growth restriction (IUGR)
Case #1
• 28 y.o. physician has been planning for 2 years to attend a family reunion in Cusco & Machu Picchu x 1 week then visit the Galapagos and scuba dive for 1 week.

Case #1
• Finds out 6 weeks before the trip that she is pregnant. Will be 12 weeks pregnant at the time of the trip.

She is healthy and active, with no medical problems. She has been previously been immunized against yellow fever, meningococcal meningitis, hepatitis A and B, polio and oral typhoid. She is an experienced traveler and asks about altitude acclimatization.

Early Considerations
• Is it a normal, healthy pregnancy?
• Airline regulations
• Insurance
  – Medical
  – Medevac
Altitude & pregnancy

- Extreme altitude (>12,000ft/3658 m) not advised
- Moderate altitude OK, though late term possible risks
- Short exposure at moderate altitude probably OK
- Acetazolamide – Pregnancy class C drug
- The issue is often remoteness from care

Air Travel

- Airline regulations
- Altitude = 1500-2500 m
- DVT
- Edema
- Abdominal distension
- Motion sickness
  - Dimenhydrinate(meclizine) safe
  - Ondansetron
  - Ginger

Radiation and air travel

- Cosmic Radiation
- Body provides no significant shield to fetus
- Usual radiation dose 0.005-0.01mSv/hr flight (vs. 1 CXR = 0.03mSv)
- Flight attendants : max dose =1mSv/ 9 mos pregnancy ( 100-200 flight hrs)

→ negligible risk under normal solar conditions
Case #2

- 34 year old G2P3 woman is going to visit game parks in South Africa for an anniversary present when she finds out she is 6 wks pregnant. Her first pregnancy was remarkable for 30 wk twins, second was full term. She is healthy and they plan to leave in 8 weeks.
Vaccination & pregnancy

• Routine
  – Tetanus-diphtheria (Td) preferred Tdap
  • Defer Tdap until post-partum
  • May give Tdap at discharge, minimum 2 yrs from last Td
  – Influenza vaccine is indicated if pregnant in any trimester during influenza season

“Contraindicated” Vaccines

• Live Viruses
  – Mumps, measles, rubella
  – Varicella
  – Yellow fever
• Those apt to cause adverse reactions
  – Oral typhoid

Vaccination & pregnancy

• Yellow fever
  – Postpone travel if possible
  – Safety not established, but can be give if travel is unavoidable
  – Early studies suggested possible increased abortion risk - not reproduced in later reports
Yellow fever vaccine & pregnancy

- Mass vaccination campaign, Brazil Feb, 2000
  - 480 women identified
  - Mean vaccine administration at 5.7 wks gestation
  - Miscarriage and malformation rates were same as background (2-3%)
  - No IgM or PCR positive infants at birth

Vaccine 2006 Feb 27;24(9):1421-6

Recommended Vaccines

- Tetanus/diphtheria
- Influenza
- Hepatitis A
- Hepatitis B
- Typhim Vi
- Pneumococcus
- IPV

Hepatitis A

- Risk of abruption & prematurity

- Prevention
  - Immune globulin?
    - Ross L. Acta Paediatr 1995 Dec;84(12):1436-7
  - Vaccine
Hepatitis E and pregnancy

- Enterically transmitted, non-A, non-B hepatitis
- 15-25% case-fatality ratio in pregnancy
- Major cause of hepatitis outbreaks

Mosquito Protective Measures

- Screens & bednets
- Clothing
- Repellents
- Permethrin
- Sprays & coils

Insect Repellents & Insecticides

- DEET
  - Crosses the placenta
  - Accumulates in fat & brain
  - Dose-dependent toxicity
  - Safe in 2nd & 3rd trimesters
- Cosmetics
- Permethrin
- Piperdine
**Malaria**

- Mosquitoes prefer pregnant women
  - Due to increased skin temperature?
  - Due to increased CO2 production?

**Malaria Morbidity in Pregnancy**

- **Mother**
  - Higher level of parasitemia
  - Cerebral malaria
  - Anemia
  - Hypoglycemia
  - Relapse

- **Infant**
  - LBW
  - Prematurity
  - Abruptio
  - Thrombocytopenia
  - Seizures
  - Splenic rupture

**Malaria Chemoprophylaxis during Pregnancy**

- **Chloroquine**: 500 mg q. wk *
- **Mefloquine**: 2nd & 3rd trimesters; data in first trimester
- **Doxycycline**: ? contraindicated
- **Primaquine**: Contraindicated
- **Atovaquone/Proguanil**: increasing safety data

*Start 2 wks before entry to malarious area, continue 4 weeks after return.
Dengue & pregnancy

• Is the disease in pregnancy different?
  – Probably not, but may look like toxemia or HELLP syndrome
• Early dengue infection may go unrecognized due to miscarriage
• Serious dengue disease in newborn when at or near term


Case #3

A 32 year old woman who is 18 weeks pregnant with her first child seeks advice on a 2 week trip planned to Costa Rica in 6 weeks.
The pregnancy was complicated by two episodes of first trimester bleeding.
Ultrasound has confirmed a normal placenta and the bleeding resolved with hydration and bedrest for one week.
The flight is 8 hours long and she is planning to stay in small hotels on the Nicoya Peninsula.

Traveler Education

• Thromboembolism
• Vomiting & diarrhea
• Urinary symptoms
• Toxemia
• Bleeding
• Contractions
• Rupture of membranes
• Fever
**Pregnancy & insurance**


  - Long-distance travel is common in pregnancy, and women are not always adequately prepared in terms of insurance and travel advice
    - Half had traveled abroad in this pregnancy
    - > 1/3 of the women traveled without sufficient insurance
    - Only 1/3 sought advice prior to travel

**Medical Kit for the Pregnant Traveler**

- Medical supplies
  - BP cuff/thermometer
  - Urine dip sticks
  - Water disinfectants
  - Rehydration packets
  - Support hose
- Include medications for
  - Morning sickness, motion sickness
  - Heartburn/indigestion
  - Constipation/Diarrhea
  - Hemorrhoids
  - UTI, vaginitis

**During the Trip**

- Diarrhea and dehydration
- Malaria prophylaxis?
  - Mosquito measures – DEET, screens, airconditioning, clothes, permethrin
- Foreign medical care
**Diarrheal Illness**

- Decreased acidity & motility
- Dehydration & ketosis
- Premature labor
- Shock

**Diarrheal Illness**

- Treatment
  - Oral Hydration
  - Antimotility agents?
  - Antibiotics?
  - Parenteral fluids?

**Anti-infectives**

- Use with caution
  - Fluoroquinolones
  - Clarithromycin
  - Sulfá
  - Metronidazole
  - Itraconazole
  - Fluconazole
- Avoid
  - Tetracyclines

- Use freely
  - Penicillins
  - Cefalosporins
  - Erythromycin
  - Azithromycin
  - Nitrofurantoin
  - Nystatin
Case #4
A 39 year old woman is traveling to her family’s home in Delhi to spend three months. She is bringing her 6 month old and 4 year old. She is breastfeeding the 6 mo. old and has come for travel advice for the family.

Antimalarials & breastfeeding
• All drugs are present in breast milk
• A/P contraindicated in mom when infant is <11 kg
• Doxycycline OK for short-term use
• PQ OK if both have normal G6PD levels
  ** Infant needs antimalarial too**

Breastfeeding & travel
Drugs : Check for safety
  Practicalities :
    Breast care
    Breast pumps-batteries, hand pump or electric
    Milk is safe for 4 hours at room temp
    Treatment/recognition of mastitis
Breastfeeding travelers

• Little data
• Medications
  – Check for breast milk excretion & infant side effects
• Vaccines
  – Generally no contraindications except theoretical with YF
• Equipment

Vaccinations & breastfeeding

• Very little data available
• Generally, no contraindications, except:

  Yellow fever
  Vaccination of nursing mothers should be avoided because of the theoretical risk for transmission of RTS virus to the breastfed infant. Where travel to high-risk yellow fever endemic areas cannot be avoided or postponed, nursing mothers can be vaccinated.

  Vaccines (smallpox)
  Women who are breastfeeding should not be given this vaccine. If there is a smallpox outbreak, recommendations on who should get vaccinated may change.

Summary Points

• There may be ways other than medications & vaccines to prevent disease.
  – Itinerary
  – Accommodations
  – Clothing
  – Food & water
• Virtually all medications and vaccines are less harmful than the diseases they prevent or treat.
Summary Points

• The likeliest problems in a pregnant traveler are not vaccine preventable.
  – Diarrhea
  – DVT

• With a sick mom, delay in treatment is the most common cause of maternal or fetal death.