Rubeola and Rubella

• Objectives
  – Describe clinical presentations
  – Describe the effect they have on pregnancy
  – Describe the effect pregnancy has on these
  – Discuss the management of these during pregnancy
Rubeola and Rubella

• Disclaimer
  – I have no financial interests
    • I can be bought
Measles (Rubeola)

Clinical Manifestations

Prodrome begins 10 days after exposure

Fever, nasal congestion, sneezing, conjunctivitis, and cough within first 24 hours.

Next 2-3 days accentuated conjunctivitis and photophobia.

Koplik spots then appear.

Rash appears 12-14 days after exposure, starts on head, the spreads downward.
Measles (Rubeola)

- Infectious from the onset of the prodrome until 3 days after the rash appears.
  - Concomitant with the appearance of circulating neutralizing antibodies.
Rubella (German Measles)

- Clinical illness usually mild with few complications
  - May be more severe in adults
- Incubation period 14-21 days.
- In adults, 1-5 day prodrome
  - Low grade fever, headache, malaise, mild conjunctivitis, cough and lymphadenopathy-suboccipital, postauricular, cervical
Rubella

- Rash can last 1-5 days and can be puritic.
- Ratio of subclinical to clinical infections is around 1:8.
  - Can lead to fetal infection
- Arthralgias with recurrence of symptoms can appear as rash fades.
Rubella

- Virus enters into the respiratory tract, spreads to the lymphatics.
- 7th to 9th day after exposure released into the blood and spreads to multiple tissues.
- 9th to 11th day viral excretions begins.
- Viremia peaks at 10-17 days, just before rash develops (16-18 days after exposure)
Rubella

- Nasopharyngeal shedding may be detected for up to 3-5 weeks
- Virus can be cultured from nasopharynx from 7 days before to 14 days after the onset of the rash
Rubella

- IgM antibodies detectable 5-10 days after the onset of the rash.
  - Peak about 20 days
  - Usually disappear by 50-70 days.
  - Occasionally low levels may persist for up to 1 year
Rubella

• IgG antibodies
  – Detectable 5-15 days after rash onset
    • May appear 1-2 days before rash
  – Peak 15-30 days after rash
  – Then decline to a low residual level
**Rubeola**

- **Complications**
  - Otitis, mild croup
  - Pneumonia with superinfection
  - Encephalitis, 1/1000 cases
    - Appears 3-7 days after the rash
  - Subacute Sclerosing Panencephalitis
    - 1/100,000
Rubeola in Pregnancy

- Maternal Effects
  - Early 20\textsuperscript{th} century, 15\% mortality mostly due to pneumonia was reported.
  - 1951 Australia 4.9\% mortality in pregnancy vs 1.7\% non pregnant.
    - Non difference in frequency of pneumonia but heart failure seemed to be the cause.
Rubeola in Pregnancy

- **Fetal Effects**
  - Premature labor
    - 1938—38% premature delivery (Oklahoma)
  - Spontaneous Loss
    - 1/7 in first trimester
    - 1/8 2nd trimester
    - 1/3 3rd trimester (Australian)
Rubeola in Pregnancy

- Prospective study 1957-1964
  - Fetal loss
    - 15.8% 1\textsuperscript{st} trimester
    - 3.4% 2\textsuperscript{nd} trimester
    - 5.9% 3\textsuperscript{rd} trimester
  - No difference from those of fetal deaths in control pregnancies
Rebeola in Pregnancy

- NIH
  - Measles exposure during pregnancy may cause adverse maternal and fetal effects
    - Most common effect-preterm labor
    - They site the deaths from the pneumonias
    - And they mention fetal loss
  - Because of the possible risk of fetal death some have recommended daily monitoring for 14 days following the rash.
Rubeola in Pregnancy

Fetal Effects
  - Has not been shown to cause birth defects
Rubella in Pregnancy

- Complications
  - Maternal
    - Thrombocytopenia
    - Encephalitis 1/6000
  - Fetal
    Congenital rubella syndrome
Rubella in Pregnancy

- **Risk to the fetus**

<table>
<thead>
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<th>GA</th>
<th>Infection</th>
<th>Defects</th>
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<td>&lt;11wks</td>
<td>90%</td>
<td>100%</td>
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<tr>
<td>11-12</td>
<td>67</td>
<td>50</td>
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<td>13-14</td>
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<td>17</td>
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<td>15-16</td>
<td>47</td>
<td>50</td>
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Congenital Rubella Syndrome

- Involves a combination of congenital heart, eye, and hearing abnormalities as first noted in 1941.
  - Since that time greatly expanded
- Can infect every organ
Congenital Rubella

- Transient Manifestations
  - Hepatosplenomegaly, hepatitis, thrombocytopenia, anemia, rash, cloudy cornea, adenopathy and more
  - Striated radiolucencies in long bones
- Referred to as the expanded rubella syndrome
Congenital Rubella

● Permanent Manifestations
  
  - CHD: PDA, Pulm Art Stenosis, Pulmonary valvular stenosis are the most common.
  - Eye Lesions: Retinopathy, cataracts
  - CNS: Microcephaly, mental retardation and motor retardation are common.
  - Deafness: Most common manifestation. Often the only significant consequence.
Diagnosis

- WHO recommends IgM antibody detection by ELISA for both Rubella and Rubeola
Management in Pregnancy

- **Rubeola**
  - Immune globulin is recommend for prophylaxis for non-immune, exposed obstetric patient and must be given within 6 days after exposure.
  - It does not prevent measles, but may suppress the measles-induced symptoms.
  - If close to delivery, also give to neonate.
  - Otherwise treatment is limited to symptomatic care.
Management in Pregnancy

- Rubella
  - No specific pharmacological treatment for acquired Rubella.
  - Immune Globulin within 72 hours of exposure may be given to the obstetric patient to suppress, but not eliminate, symptoms. Infants still get CRS.
  - Symptomatic relief.
PREVENTION

• MMR
  – First dose 12-15 mos. 2nd dose at 4-6 yrs.
  – Live attenuated viruses of all three
  – Screen during pregnancy
    • If antibody neg give MMR
MMR Vaccine

• Side effects of the MMR
  – Fever 5-10 days after 5-15%
  – Arthritis 10%
  – Arthralgia 25%
  – Rash 10%
  – Seizures 1/3000
  – Thrombocytopenia <1/30000
  – encephalitis/encephalopathy 1/1,000,000
MMR Vaccine

• Contraindication
  – Allergy to neomycin and gelatin
  – Previous hypersensitivity reaction to MMR
  – Moderate to severe acute febrile illness
  – Altered immunocompetence
  – Personal history of seizures of any etiology
  • Clin Obstet Gynecol June 2012
Summary

- Measles (Rubeola)
  - May cause adverse effects.
    - Preterm labor, probably increases severity of the disease (increase mortality), may increase fetal loss rate.
  - If exposed, check for immunity and if negative give immune globulin.
  - Does not lead to congenital anomalies.
Summary

- Rubella
  - Milder disease than Rubeola. Asymptomatic in up to ½ of those exposed.
  - Vertical transmission to fetus is very common. 85% in first 12 weeks. By 20th week congenital defects risk is minimal.
  - Consider termination.
Listeriosis

- Gram pos aerobic motile rod
  - Tolerates high and low temps
  - Replicates well in soil, dust, water, sewage, manure
  - Can grow in refrigerated foods and raw meat
  - Can survive for many months in soil
  - Pasteurization and disinfecting agents kill eliminate it
Listerosis

- Exposure to transient Listeria of the GI tract is common
  - Can be detected in 70% of healthy normal people
  - Detected in 44% of pregnant women
    - Single sampling in pregnant women will be positive in 4-12%

When entering body it enters GI mucosal cells thru phagocytosis—thus no disruption of the GI tract
  - Thus minimal symptoms

Incidence is 12/100,000 pregnancies. 12X higher than that of the general population
Listerosis

• Symptoms in pregnancy with invasive disease
  – Fever 65%
  – Mild flu like symptoms 32%
  – Backache/abd pain 21%
  – Muscle aches 4%
  – Sore throat 49%
  – Headaches 10%
  – vomiting/diarrhea 7%
Listeriosis

- Prognosis in pregnancy
  - Preterm birth is common thus mortality is related to gestational age (70% delivery before 35 weeks)
  - Spont Ab in 10-20%
  - IUFD in 11%
  - Abnml FHR tracing 33%
  - 75% with meconium stained amniotic fluid
  - Recurrent abortions had been attributed to this but further studies did not confirm
Listeriosis

• Diagnosis
  – Difficult due to lack of GI symptoms and non specific malaise and flu like symptoms
  – Leukocytosis of 3300 to 38000
  – Usually made from blood cultures or placental cultures (or other usually sterile body compartments)
  – Placenta can show micro-abscesses
Listeriosis

- Most sporadic cases and large outbreaks are due to contaminated foods
  - Particularly ready to eat meats
    - Hot dogs and dairy products such as soft cheese

All deli meats can be consumed safely if reheated until steaming hot

- Clean utensils after preparing meat dishes or cutting unprepared foods
- 44% reductions of the disease since the CDC, FDA began monitoring dairy products
Listeriosis

• Management of possible exposure in pregnancy
  – Asymptomatic
    • No testing. Advise patient to call back if she develops symptoms within 2 mos of eating the recalled food
  Mildly symptomatic but afebrile
    • Expectantly as above
    • Obtain blood cultures
      – Can empirically treat or wait for culture results
Listerosis

• Management of possible exposure in pregnancy
  - Febrile with or without other symptoms (100.6)
    • Obtain cultures
    • Start antibiotics

Recommend antibiotic is Ampicillan 2gms IV q6-8 hrs.
Listerosis

- Neonate also needs to be treated
  - Very similar to Group B strep with early onset disease and late onset disease
Listeriosis summary

- Food born illness caused by eating contaminated food
- Pregnant women are 12 x more likely to get listeriosis
- Manifest as a non specific flu like illness with fever
- Can result in severe fetal and neonatal infection
  - Leads to fetal loss, preterm labor, neonatal sepsis, meningitis and death
- If exposed in pregnancy and no fever manage expectantly
- If exposed in pregnancy and fever develops, obtain blood cultures and start therapy with ampicillan