Varicella Exposure in Pregnancy

Week 98

Prepared by Annie Fu, MD

Reading Assignment:
ACOG Practice Bulletin # 151, June 2015
LEARNING OBJECTIVES

• Understand the background, clinical features, diagnostic testing, and management of varicella zoster exposure and infection in pregnancy
CASE VIGNETTE

• A 35 yo G2P1001 @ 16 weeks EGA presents with a rash and cough.
FOCUSED HISTORY

**HPI:** onset of diffuse, pruritic rash 5 days ago, now with worsening cough, subjective fevers at home. She denies recent travel. She denies recent sick exposures.

- **OBHx:** G1-FT NSVD
- **GynHx:** neg STIs, abnormal paps, fibroids, cysts
- **PMH:** denies
- **PSH:** denies
- **FH:** no history of cancer
- **SH:** current tobacco use (1/2 ppd); no EtOH or drug use; works as a kindergarten teacher’s assistant; lives with her husband and daughter and is safe at home
- **Meds:** PNV
- **All:** NKDA
PERTINENT PHYSICAL EXAM FINDINGS

**Vital Signs:** 120/80, P 120, RR 30, O2 Sat 90%, T 39.2 C

- **Gen:** NAD
- **HEENT:** clear oropharynx
- **Chest:** decreased breath sounds at bilateral bases, rhonchi at R lower lobe
- **CVS:** S1S2, tachycardia
- **Abd:** soft, NT, gravid
- **GU:** deferred
- **Ext:** WWP
- **Skin:** Diffuse vesiculopapular lesions on face, back, trunk, and extremities; most lesions crusted over
DIFFERENTIAL DIAGNOSIS

• Viral exanthem
  • Varicella (primary infection and herpes zoster), rubella, parvovirus, roseola, infectious mononucleosis, HIV

• Bacterial infections
  • Scarlet fever
  • Mycoplasma infection
OVERVIEW – VARICELLA ZOSTER VIRUS

• Highly contagious DNA herpesvirus
• Incidence of maternal varicella (2003-2010):
  • 1.21 per 10,000 pregnancies

• Transmission
  • Person-to-person: Respiratory or contact
  • Vertical transmission

• Clinical forms
  • Primary VZV infection*
    • Diffuse vesicular rash
    • +/- complications
    • <2% of cases are in adult population (>20 yrs); but account for 25% of deaths
  • Herpes Zoster
    • Reactivation of latent VZV infection, localized skin infection along dermatomal distribution
OVERVIEW – PATHOGENESIS (maternal infection)

• **Incubation period:** 10-20 days (mean 14 days) after exposure
  - Non-immune patient: 60-95% risk of becoming infected

• **Period of infectivity:** 48 hours before onset of rash until vesicular crusting

• **Symptoms:** 1-2 days viral prodrome (fever, malaise, myalgias), then intensely pruritic vesicular lesions (diffuse) that crust over in 3-7 days
  - Lesion progression: macules → papules-vesicles +/- pustular appearance → completion of crusted lesions by day 6 → resolution by 1-2 weeks afterwards
VARICELLA COMPLICATIONS

• Varicella pneumonia
  • 10-20% of pregnant women with VZV infection
    • Risk factors: smoking, >100 lesions
  • Maternal mortality: up to 40% (more commonly 1-2% with current treatment)
  • 3-5 days after onset of symptoms
  • Symptoms: cough, fever, dyspnea, pleuritic pain, tachypnea, ARDS

• Other
  • Neurologic (encephalitis, meningitis, cerebellar ataxia, ocular disease), renal (glomerulonephritis/AKI), cardiac (myocarditis), endocrine (adrenal insufficiency), death
  • Secondary bacterial infections (immunosuppressed populations usually)
FETAL AND NEONATAL INFECTION

• Congenital varicella syndrome
  • Overall risk: 0.4-2%
    • 1st trimester: 0.4%
    • 2nd trimester: 2% (almost 0% > 20 weeks)
    • 3rd trimester: 0%
  • Characteristics: chorioretinitis, microphthalmia, cerebral cortical atrophy, growth restriction, hydronephrosis, limb hypoplasia, cicatricial skin lesions

• Neonatal infection
  • Risk greatest with active maternal infection 5 days BEFORE and 48 hours AFTER delivery
  • 25-50% rates of infection, up to 30% mortality rates
    • Disseminated visceral and CNS disease usually fatal
    • Severe infections more common in preterm and LBW neonates
DIAGNOSIS

• **Usually a clinical diagnosis:**
  • Pruritic, vesicular rash

• **Laboratory testing:**
  • Viral DNA PCR testing from sample of fluid scraping of unroofed lesion
  • VZV culture from vesicular fluid (less sensitive, longer time to culture)
  • Serologic testing (VZV IgG) to rule out prior exposure
  • Chest x-ray: diffuse or miliary/nodular infiltrative pattern, peribronchial distribution

• **What about fetal testing?**
  • Ultrasonography after known infection (low sensitivity)
    • Hydrops, echogenic foci in the liver and bowel, cardiac malformations, limb deformities, microcephaly, IUGR
  • Viral DNA PCR testing from amniotic fluid, but positive result doesn’t correlate well with development of congenital infection
MANAGEMENT

• Maternal exposure
  • Seronegative or no history of VZV: VZIG, ideally within **96 hours of exposure** but can be given **up to 10 days**
  • Seropositive or known history of VZV: no VZIG indicated

• Maternal infection
  • *isolate from pregnant women*
  • What type of precautions should be initiated?
    • Airborne precautions and contact precautions
  • Work-up as indicated, consider CXR
  • Uncomplicated infection: acyclovir 800 mg PO 5 times a day x 7 days
  • Complicated infection: acyclovir 10 mg/kg q8 hr IV x 5-10 days
  • Treatment within 24 hours of exposure is most effective
  • Treatment does not impact congenital varicella syndrome rates

• Neonatal exposure
  • VZIG to infants exposed to women w/ active infection 5 days before and 2 days after delivery

• Neonatal infection
  • IV acyclovir to infant with symptoms within the 1st 2 weeks of life
MANAGEMENT - PREVENTION

• All nonpregnant women of reproductive age should be screened and vaccinated if no history or nonimmune serologies obtained

• All pregnant women should be screened and vaccinated after pregnancy if susceptible

• Vaccinations recommended, especially for those who interact with high risk populations

• Vaccination schedule
  • 12 years and older
  • 2 doses, 4-8 weeks apart

• Delaying pregnancy after vaccination:
  • 3 months
  • Termination not recommended even with exposure to VZV vaccine in early pregnancy
CASE VIGNETTE, CONTINUED

• What is your differential for this patient?
  • VZV infection, varicella pneumonia

• How do you manage this patient?
  • Isolation, airborne/contact precautions
  • Transfer to the hospital for inpatient management due to a complicated varicella infection presentation
  • Chest X-ray to assess for pneumonia
  • Acyclovir 10 mg/kg q8hr IV
BILLING AND CODING

• Diagnoses:
  • **O98.519**, Other viral diseases complicating pregnancy, unspecified trimester
  • **B01.9**, Varicella without complications
    • B01.2, Varicella pneumonia
    • B01.89, Varicella with other complications
  • **O35.3XX0**, maternal care for (suspected) damage to fetus from viral disease in mother, not applicable or unspecified
    • P35.8, Other congenital viral diseases

• CPT Code
  • In-hospital consult: bill as inpatient consult, 99251-5, at least 99253
EVIDENCE

• References