Rash Illness in Children

Supriya Jasuja, MD, MPH
Senior Medical Officer
Cook County Dept of Public Health
Causes of Rash in Children

• Infections
  – Viral infections
  – Bacterial infections
  – Fungal infections

• Allergic Reactions

• Local Irritants

• Poisonous Plants

• Autoimmune Disorders
Parvovirus

- **Fifth Disease/Erythema Infectiosum**
- **Transmission**
  - Respiratory secretions
  - Vertical transmission (mother to fetus)
  - Blood transfusion
- **Pathogenesis** - Virus replicates in red blood cells of the bone marrow → Anemia
Symptoms of Parvovirus

• Fifth Disease
  – Fever
  – Headache
  – Runny nose
• “Slapped cheek” rash
• Painful/swollen joints
Parvovirus
Syndromes of Parvovirus

- Fifth disease
- Arthropyathy
- Non-immune hydrops fetalis, intrauterine fetal death, or miscarriage
- Transient aplastic crisis in those with chronic hemolytic disorders
- Chronic pure red blood cell aplasia in immunocompromised individuals
Diagnosis and Prevention

Diagnosis

• IgG and IgM antibodies
• NAAT (immunocompromised)
• Pregnant women should seek medical evaluation

Prevention

• Wash hands, cover your cough
Measles Cases- United States
2001-2011

MMWR. May 27, 2011 / 60(20);666-668
Reported measles cases (N = 222) — United States, 2011

MMWR Vol 61, No 15;253-7 04/20/2012
Number of measles cases, by import status and week of rash onset (N = 222) — United States, 2011

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Measles in Suburban Cook County

• Measles Outbreak, 2008 (n=11)
  – **Index case** - Dupage County resident traveled to Italy
  – 11 cases of home schooled unvaccinated children

• Measles Case, 2011 (n=1)
  – Business man who traveled to Italy and France
  – No close contacts developed disease
Measles Epidemiology

• Reservoir - Human
• Transmission - Respiratory Airborne
• Temporal pattern - Peak in late winter - spring
• Communicability - 4 days before to 4 days after rash onset
Symptoms of Measles

• Incubation 7-14 days
• Prodrome
  – Stepwise increase in fever to 103°F or higher
  – Cough, coryza, conjunctivitis
  – Koplik spots
Measles
Symptoms of Measles

• Rash
  – 2-4 days after prodrome, 14 days after exposure
  – Persists 5-6 days
  – Begins on face and head
  – Maculopapular, becomes confluent
  – Fades in order of appearance
Complications of Measles

- Pneumonia
- Ear Infections
- Diarrhea
- Encephalitis
Measles Laboratory Diagnosis

- Positive serologic test for measles IgM antibody (Mayo Clinic)
- Isolation of measles virus from a clinical specimen (e.g., urine, nasopharynx)
- Significant rise in measles IgG by any standard serologic assay (e.g., EIA, HA)
Control Measures for Measles

• Report suspected/confirmed cases of measles to local health department (within 24 hours)

• Children should be kept out of school from symptom onset until 4 days after the appearance of a rash

• Investigation of contacts and source of infection
  – Immunization status
  – Lab evidence of immunity
  – Documented prior physician diagnosis of measles
Measles Prevention/PEP

Prevention

• 2 doses of MMR vaccination (12-15 months, 4-6 yrs)

Post Exposure Prophylaxis

• Live measles vaccine (within 72 hrs exposure)
• IVIG (within 6 days of exposure)
Varicella (Chickenpox) Epidemiology

- Reservoir - Human
- Transmission – Airborne, droplet.
  - Direct contact with lesions
- Temporal pattern - Peak in late winter - spring
- Communicability – 1-2 days before to 4-5 days after onset of rash. May be longer in immunocompromised people.
Varicella Clinical Features

• **Incubation period**- 14-16 days (range 10-21 days)

• **Mild prodrome** 1-2 days

• **Rash**
  – First appears on head → trunk → extremities
  – Successive crops over several days with lesions present in several stages of development
Unvaccinated child with chickenpox
Vaccinated child with Chickenpox
Complications of Varicella

- Secondary bacterial infection of skin lesions
- Central nervous system manifestations (meningoencephalitis, cerebellar ataxia)
- Pneumonia (viral or bacterial)
- Hepatitis, hemorrhagic complications, thrombocytopenia, nephritis occur less frequently
- Certain groups at increased risk for complications
  - Adults
  - Immunocompromised persons
  - Pregnant Women
  - Newborns

CDC. Prevention of Varicella. MMWR 2007; 56(No. RR-4); Arvin Clin Microb Rev 19
Diagnosis of Varicella

• **Diagnosis** of varicella (chickenpox) can be made on clinical basis alone by a physician

• **Laboratory testing recommended for:**
  – Mild/atypical presentation of varicella
  – Confirm varicella as the cause of outbreaks
  – Establish varicella as a cause of death
  – Determine susceptibility to varicella
Varicella Lab Diagnosis

- PCR to detect VZV in skin lesions (vesicles, scabs, maculopapular lesions)
- IgM ELISA
- Acute and convalescent sera showing a four-fold rise in IgG antibodies
Control Measures for Varicella

Reporting

• Report suspected/confirmed cases of varicella to local health department (within 24 hours)

Contagious Period

• Children should be kept out of school until lesions are crusted over

• Immunocompromised are probably contagious through the entire period that new lesions are appearing
Varicella Vaccine

- 2 doses of varicella vaccination (12-15 months, 4-6 yrs)
- Catch-up vaccination of children and adolescents who had previously received one dose
- 2 doses for all adolescents and adults without evidence of immunity
PEP of Varicella

- Varicella vaccine recommended for use in healthy persons without evidence of immunity within 3-5 days after exposure to varicella
- Varicella Zoster Immune Globulin (available product, VariZIG™) recommended for certain groups at high risk for severe disease within 96 hours after exposure

CDC. Prevention of Varicella. MMWR 2007; 56(No. RR-4)
Rash of what disease?

http://embedit.in/WCZfWLhMNO
Scarlet Fever Epidemiology

- **Group A Streptococcal Disease**
- **Reservoir** – Nasopharynx/ Skin
- **Transmission** - Respiratory droplets
- **Temporal pattern** - Peak in winter - spring
- **Ages** - Primarily 5-15 years
Symptoms of Scarlet Fever

• **Incubation period**: 1-4 days

• **Flu-like illness**
  – Fever, sore throat, headache, nausea, vomiting, abdominal pain, myalgias, and malaise
  – Whitish coating on the tongue or back of the throat
  – “Strawberry" tongue

• **Rash**
  – Upper trunk/axilla → generalized
  – Bright red underarm, elbow and groin skin creases
Scarlet Fever Rash
Complications of Scarlet Fever

• Rheumatic fever
• Kidney disease (inflammation of the kidneys, called post streptococcal glomerulonephritis)
• Ear infections (otitis media)
• Skin infections
• Abscesses of the throat
• Pneumonia
• Arthritis
Diagnosis/Treatment

Diagnosis
Throat culture for Grp A Strep (90% sensitive in acute infection)

Treatment- Antibiotics
Prevent acute rheumatic fever
Reduce spread of infection
Prevent poststrep glomerulonephritis
Shorten course of illness