L4 : Infectious disease
Fever and rash

Learning objectives
At end of lecture, you should know:

- *Common diseases in pediatrics that present with fever with rash*
- *How can differentiated between according to clinical presentation*
- *Approach to management through diagnostic tests , treatment and prevention*

Chickenpox
primary varicella zoster infection

- Is an acute infectious disease. It is caused by **varicella-zoster** virus (VZV), which is a DNA virus
- Is a highly contagious infection
- It is spread from person to person via inhalation of aerosols from vesicular fluid and respiratory secretions. Airborne transmission has also been reported

Clinical Features

- The peak age of disease is 5-10 yr.
- **Incubation period** : 10-21 days
- Illness usually begins 14-16 days after exposure
- **The prodromal period** fever, malaise, headache , anorexia and occasionally mild abdominal pain
- Temp. elevation 37.8-38.9 but may be as high as 41
- **Rash** :
    - Appears 24-48 hr after the prodromal symptoms as intensely pruritic erythematous macules, seen first on the trunk. Then rapidly spreads to the face and extremities while it evolves into papules, clear fluid-filled vesicles, clouded vesicles and then crusted vesicles.
    - Several crops of lesions appear and simultaneous presence of skin lesions in varying stages of evolution is characteristic of varicella.
    - The rash lasts 3-7 days and leaves behind hypopigmented or hyperpigmented macules that persist for days to weeks.

Clinical course

- Systemic symptoms persist for 2-4 days after appearance of the rash.
- The period of infectivity lasts from 24 to 48 hr before the rash until all the vesicles are crusted

Complications

- Bacterial superinfection
    - Staphylococcal Streptococcal
    - May lead to toxic shock syndrome or necrotising fasciitis
- Central nervous system
    - Acute Cerebellar(ataxia)
    - Meningoencephalitis

  Neurological symptoms usually begins 2-6 days after the onset of rash or after resolution of rash

- In immunocompromised
    - Haemorrhagic lesions
    - Pneumonia
    - Progressive and disseminated infection
    - Disseminated intravascular coagulation

Diagnosis

- Clinical picture
- Leukopenia
- PCR
- Serological test :IgM and IgG antibodies detection

Treatment

- **Acyclovir therapy:**
    - Is not recommended routinely for treatment of uncomplicated varicella in other wise healthy child but it could be used to treat uncomplicated varicella in individual at increased risk for moderate to severe varicella
    - Administration of oral acyclovir (20 mg/kg/ dose four times a day for 5 days) within 24 hr of onset of rash in healthy children reduces the duration of rash
    - IV acyclovir (10 mg/ kg every 8 hr for 7 days) is given to patients with complicated varicella and for illness in high risk patients (neonates, immunocompromised children, pregnant women).

Post exposure prophylaxis

- Isolation
- Oral acyclovir
- Live attenuated varicella vaccine for healthy individual (3-5 days after exposure)
- High-titer anti-VZV immune globulin (VZIG) for postexposure prophylaxis is recommended for high-risk : immunocompromised children, newborn exposed to varicella

Neonatal varicella:

May develop in newborn of mothers with varicella occurring 5 days before or 2 days after delivery

Congenital Varicella:

Is an extremely rare disorder in which affected infants have distinctive abnormalities at birth (congenital) due to the maternal varicella zoster) early during pregnancy

Scarlet fever

Is an upper respiratory tract infection which is caused by an infection with pyogenic exotoxin (erythrogenic toxin)-producing *Group A β-hemolytic streptococcus*
Mainly affects children between the ages of 5 and 15 years.
Transmission: from person to person by respiratory droplet

Three main clinical manifestations are:

- Acute fever
- Pharyngitis
- Diffuse and red exanthematous rash:
    - Rash appears 24-48 hr after onset of symptoms
    - Start around the neck and spreads over trunk and extremities
    - Its diffuse ,finely papular ,erythematous eruption producing bright-red discoloration
    - Accentuated more in creases of elbow, axilla and groin
    - The skin has goose-pimple appearance and feel rough
    - After 3-4 days the rash begins to fade and followed by sheetlike desquamation may occur around fingernail ,palms and soles

Other Characteristic's features of scarlet fever

- The cheek are often erythematous with pallor around mouth
- The tongue is usually coated and the papillae are swollen ,red and prominent giving a strawberry appearance
- **Examination of the pharynx** will reveal throat redness with whitish spots and swollen tonsil

Diagnosis

- Clinical picture
- History of recent exposure to GAS infection
- Evidence of GAS infection
    - **Throat culture**
    - **Streptococcal rapid antigen detection tests**
    - **Increasing streptococcal antibody titer (ASO titer antistreptolysin O assay(≥4-fold rise)**
- White blood cell count reveals leukocytosis

Treatment

- Antibiotic therapy for patient with GAS infection can prevent acute rheumatic fever, shorten course of illness, reduce transmission to others and prevent suppurative complications
- Penicillin or Amoxilline is the drug of choice (except patient who allergic to penicillin ,can use cephalsporine or macrolide)

Antibiotics	Dose
Oral penicillin V	250-500mg/dose 2 or 3 times daily for 10 days
OR parenteral therapy for those who are poor compliance with oral therapy in form of :	
Benzathine penicillinG	600.000IU -1.2million IU Single IM injection

Complications of *Group A β-hemolytic streptococcus* infections

- Non Suppurative complications
  - **Acute rheumatic fever**
  - **Acute post streptococcal glomerulonepheritis**
- Suppurative complications
  - **Cervical lymphadenitis**
  - **Peritonsillar abscess**
  - **Retropharyngeal abscess**
  - **Otitis media**
  - **Sinusitis**
  - **Mastoiditis**

Hand-Foot-Mouth Disease

Is a common viral illness primarily affecting children below 5 yr. It is caused by Enterovirus. The most common causes of hand foot mouth disease is coxsackie virus

Erythema infectiosum

Fifth disease

Is a common exanthematous illness of childhood caused by parvovirus B19.
The peak age is between 5 and 15 yr
The characteristic rash first appears as erythematous flushing on the face in a 'slapped cheek' appearance

References

1. **Nelson Textbook of Pediatrics**
2. **Nelson essentials Textbook of Pediatrics**
3. **Illustrated textbook of pediatrics**