

L3 Infectious disease
Exanthematous disease
Fever & rash

Learning objectives

At the end of lecture ,students 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*

Fever with Rash

Fever with rash is a common and vexing problem. It may signify serious disorder or could be mild illness

✚ **There is infectious and noninfectious causes of fever with rash:**

Type of rash	
Macular or Maculopapular rash e.g. Measles, rubella, roseola infantum, erythema infectiosum Parvovirus ('slapped cheek') Systemic onset JRA	Petechial and/or Purpuric rash Meningococemia, Henoch-Schonlein purpura
Diffuse erythema with peeling or desquamation : Stevens-Johnson syndrome ,Kawasaki disease ,Scarlet fever, staphylococcal	Urticaria rash Scabies, insect bites ,pediculosis
Vesicular ,bullous ,pastular Chickenpox, Cocksackie (hand-foot-mouth disease), Herpes infection, impetigo	Nodular rash Erythema nodosum

Factors that assist in evaluation include:

- The nature of the rash(macular, maculopapular, vesicular, nodular, urticaria or purpuric) ,distribution , progression of the rash, involvement of mucous membranes
- Epidemiological factors, season, history of exposure, incubation period, age, vaccination status, prodromal symptoms, relation of rash with fever, drug intake and associated symptoms

Measles (Rubeola)

- Measles is a common, serious and highly contagious exanthematous illness
 Caused by measles viruse ,RNA virus belonging to the Paramyxovirus family
- The virus is transmitted through contact with droplet spread from the secretions of the nose , throat and conjunctiva
- Patients are infectious from 3 days before to 4-6 days after onset of rash

Clinical Features

- The disease is most common in preschool children
- Infants are protected by transplacental antibodies
- **The incubation period** is around 10 days.

- **The prodromal period** is characterized by fever, rhinorrhea, conjunctivitis, photophobia and a prominent cough .
- **Koplik spots**
 - Considered as pathognomonic of measles, appear opposite the lower second molars on the buccal mucosa.
 - Appearing 1-4 days prior to onset of rash as gray or white lesions resembling grains of sand with surrounding erythema.
- **Measles rash**
 - Usually apparent on the 4th day with rise in fever, appears as faint reddish macules behind the ears, along the hairline and on the posterior aspects of the cheeks
 - Rapidly becomes maculopapular and spreads to the face, the neck, chest, arms, trunk, thighs and legs over the next 2-3 days.
 - It then starts fading in the same order that it appeared and leaves behind branny desquamation and brownish discoloration, which fade over 10 days.

Course of measles

- Modified measles, seen in immune individuals, is a milder and shorter illness
- Hemorrhagic (black)measles is sever form characterized by a purpuric rash and bleeding from the nose, mouth or bowel
- **Complications** are more frequent in the very young, malnourished and immunocompromised pt.

Respiratory	Neurological
Pneumonia Secondary bacterial infection Otitis media Tracheitis	Febrile convulsions EEG abnormalities Encephalitis: is occur as an acute complication either due to
Other	<ul style="list-style-type: none"> • Immunologically mediated process or • Consequent to direct invasion of the brain (in immunocpromised)
Diarrhoea Hepatitis Appendicitis Corneal ulceration Myocarditis	Both manifested as CNS signs and symptoms Subacute sclerosing panencephalitis (SSPE): is a chronic complication of measles seen several years after infection and an outcome is nearly always fatal

Diagnosis

- Leukopenia is characteristic
- Viral isolation(blood ,respiratory secretions) and culture
- Serological test
 - IgM antibodies which appears 1-2 days after onset of rash and remain detectable for about 1 month
 - Four-fold rise in IgG antibodies

Treatment for measles

- Is symptomatic (Antipyretic, maintenance of hygiene, ensuring adequate fluid and caloric intake and humidification)

- Children who are admitted to hospital should be isolated
- Vitamin A, which may modulate the immune response (once daily for two days) :

- > **200,000 IU for 12 month and older**
- > **100,000 IU for 6mo. Through 11 mo.**
- > **50.000 IU for younger than 6mo**

Prevention

- Vaccine

Post exposure prophylaxis

- Isolation
- Immunoglobuline is indicated for susceptible household contacts of measles patient ,especially infant younger than 6mo of age, pregnant women and immunocompromised persons (within 6 days after exposure)
- MMR vaccine within 72 hr. of exposure for all susceptible healthy children >12 mo .

Roseola Infantum

Exanthem subitum , Sixth disease

- Is a common childhood exanthematous illness caused by human herpes virus (HHV)-6 and less commonly by HHV-7 which are DNA viruses
- The peak age for roseola is between 6 mo. and 3 yr
- The prodromal period is characterized by fever and upper respiratory signs and symptoms

The classic clinical illness

- The incubation period is 9 to 10 days
- Is characterized by high fever of 38-40°C lasts 3-4 days
- Fever declines abruptly and is followed by development of a rash within 12-24 hr
- The rash is discrete erythematous and maculopapular which first appears on the trunk and then spreads to the face, neck and proximal extremities
- The rash is nonpruritic, rarely becomes confluent and fades in 3-4 days
- Fever may associated with febrile seizures in 5-10% cases

:Diagnosis

- History
- Documentation of HHV-6 by PCR, viral culture

Treatment

- Symptomatic : maintain adequate hydration and antipyretic

Prognosis : excellent

Rubella

German measles , 3 days measles

- Caused by Togavirus , RNA virus
- Respiratory transmission
- Is a mild often exanthematous disease of infant and children that is typically more severe and associated with more complications in adults
- Most common in preschool and school age

Clinical manifestations

- Incubation period 14-21 days
- Prodrome with low-grade fever, headache, malaise, red eye
- lymphadenopathy(suboccipital,postauricular,ant.cervical)
- Maculopapular rash
- Arthralgia / arthritis common
- Communicability: 7 days before to 5-7 days after rash onset

Rash

- Discrete skin rash :is 1st manifestation of rubella in children
- Its begins on the face and neck as small ,irregular pink macule that coalesce and it spreads to involve the torso and extremities as discrete macule
- The rash of rubella last 3 days and resolve without desquamation

Diagnosis

- Rubella IgM ,IgG antibodies
- Viral culture
- PCR
- Thrombocytopenia rarely occur

Treatment

- No specific treatment

Prevention

- MMR vaccine
- Isolation (7 days after onset of rash)

Rubella Complications

- Encephalitis
- Thrombocytopenia
- Arthritis
- Other rare complications : progressive rubella panencephalitis

Congenital rubella syndrome (CRS)

Result from maternal transplacental spread of rubella virus to the fetus that cause fetal damage.

Clinical features

- Cataract
- Cardiac abnormalities (PDA,PS)
- Deafness
- Intrauterine growth restriction
- Jaundice ,purpura, HSM
- Microcephaly, mental retardation, meningoencephalitis
- Radiolucent bone disease

Diagnosis

- Can be confirmed by: detecting specific IgM Antibody in neonatal serum, or by culturing rubella virus from the nasopharynx or urine

Management of children with CRS is more complex and requires team work