



Fever and rash in children

Dr mostafavi N

Departement of pediatric infectious disease
Isfahan University of Medical Sciences

Introduction

- ▶ Many disease have cutaneous findings(infectious, allergic, rheumatologic, skin, ...)
- ▶ Difference in age, type of rash, distribution of rash, other findings such as fever, and course of disease guides to the diagnosis
- ▶ Wide spectrum of findings
- ▶ At the end of this class You should know the common causes and the important notes in the diagnosis of fever and rash

Types of Rash

- ▶ Vesicular
- ▶ Petechial
- ▶ Maculopapular
 - Morbiliform
 - Rubelliform
 - Scarlatiniform
 - Nonspecific

Fever and vesicular rash

- ▶ Chicken pox
- ▶ Hand foot mouth disease
- ▶ Insect bite and other infection

Chicken pox

- ▶ History of exposure 14–16 days ago
- ▶ Crops of macula, papula, vesicule, pustule, and crusted papula in 4 days
- ▶ Mostly on face, head, neck, trunk; and proximal extremities
- ▶ Severe pruritis
- ▶ Fall of crusts within 1–2 wks. and temporary hypopigmentation



Chicken pox



Chicken pox



Hand foot mouth disease

- ▶ Coxsakievirus A serotypes
- ▶ Fecal oral rout
- ▶ Usually no or mild fever
- ▶ Macules and vesicles on faucial pillars, tongue, buccal mucosa and sometimes gingiva, and lips
- ▶ Macules, papules and vesicles 1–10 mm on the hands, feet, buttocks and upper thighs
- ▶ Sometimes painfull
- ▶ Resolve in about 3–4 d.



Hand foot mouth disease



Fever and petechia

- ▶ Thrombocytopenia (Immune, malignancy, ...)
- ▶ Coagulation disorders
- ▶ Meningococccemia
- ▶ Viral infections
- ▶ Pressure petechia
- ▶ Henoch–shoenlein purpura

Meningococemia

- ▶ *Neisseria meningitidis*
- ▶ Petechia mostly on trunk, lower portion of body, soft palate, and palpebral conjunctiva
- ▶ Rapid progression to purpura and ecchymosis within 6 hrs.
- ▶ Generally ill, hypotensive and meningeal signs
- ▶ Abnormal CBC, CRP, PT, PTT, BS, VBG



Meningococemia



Viral and pressure petechial

- ▶ Enteroviruses, respiratory viruses, measles, EBV, CMV, parvovirus
- ▶ Nonprogressive, mostly on face and upper trunk
- ▶ Well-appearing with normal vital signs
- ▶ Normal CBC, CRP, BS, ABG, and Coagulation tests



Henoch–Schönlein purpura

- ▶ Age 3–10 yr.
- ▶ Symmetrical crops of petechiae, palpable purpura, and ecchymosis in pressure dependent area and buttocks
- ▶ Palpable purpura+ arthritis/ abdominal cramp /proteinuria or hematuria / suggestive biopsy
- ▶ Localized subcutaneous edema in dependent and periorbital areas
- ▶ Sometimes fever
- ▶ NL CBC, PT, PTT



Henoch-Schönlein purpura



Fever and morbiliform rash

- ▶ Measles
- ▶ Drug eruption
- ▶ Other viral diseases with severe rash
- ▶ Kawasaki disease

Measles

- ▶ Incubation: 6–21 day
- ▶ Unvaccinated child
- ▶ 1ST stage (2–4 d): fever+ cough, conjunctivitis, coryza+ koplic spot
- ▶ 2nd stage: high fever (3–4 d.) +erythematous maculopapular confluent rash on face then neck, upper trunk, lower trunk and extremities, sparing palms and soles for 2–4 d.
- ▶ 3rd stage: darkening and brownish color of rash then fade and fine desquamation after 6–7 days
- ▶ Continue of cough for 1–2 wks.



Koplic spot:

Gray-white, sand grain-sized dots on the buccal mucosa opposite the lower molars



Drug reaction with eosinophilia and systemic symptoms (DRESS)

- ▶ Extensive maculopapular and coalescing erythematous rash on face, trunk and extremities, sometimes pruritis
- ▶ Fever, malaise, lymphadenopathy, sometimes visceral involvement(liver, kidney, lung)
- ▶ 2– 6 wks. After the initiation of drug
- ▶ Antiepileptics, Allopurinol, Antibiotics



Antiepileptics, Allopurinol, Antibiotics, (2013), 41, 80-85

DRESS



Fever and rubelliform rash

- ▶ Rubella
- ▶ Roseola
- ▶ Erythema infectiosum
- ▶ Enteroviruses rash
- ▶ Kawasaki disease

Rubella (3-day measles)

- ▶ Eliminated after vaccination
- ▶ 2–3 wks. after exposure in unvaccinated individuals
- ▶ Pin point maculopapular rash on face then trunk then extremities
- ▶ Disappearance after 3–5 d.
- ▶ Posterior occipital lymphadenopathy
- ▶ Low grade fever
- ▶ Sometimes mild conjunctivitis and small red spots on soft palate (Forchheimer)



Erythema infectiosum (Fifth disease)

- Parvovirus B19, mostly 5–15 yr
- Infectious phase: fever, malaise, myalgias, and headache, Aplastic crisis in hemolytic anemias, for 7–10 d
- Post infectious phase (fifth disease): 7 to 10 d. after infectious phase)
- Fever, coryza, diarrhea
- 3 stage rash in 1–2 weeks:
 1. Fiery red rash on the cheeks (slapped-cheek appearance)
 2. Symmetric, maculopapular, truncal rash after 1–4 days on trunk and extremities
 3. Fading of rash as central clearing and a lacy, reticulated rash for 1–6 wks (mean, 11 d)
- Sometimes recurrence of rash with exercise, bathing, rubbing, or stress
- mildly pruritis, No desquamate, Often no fever, Sometimes arthralgia, arthritis



Fifth disease



Roseola infantum (exanthema subitum)

- ▶ Human herpes virus 6 & 7
- ▶ Peak age: 6–13 mo., mostly <2 yr.
- ▶ Transmission by saliva of asymptomatic adults
- ▶ 3 stages:
 - Abrupt high fever(>40° C)+ fussiness+ occipital lymphadenopathy for 3–5 d.
 - Abrupt resolve of fever
 - Rose-colored faint pink rash on neck and trunk then on face and extremities for 1–3 d.
- ▶ Sometimes eyelid edema, uvulopalatoglossal junction macule (Nagayama spots) , bulging fontanelle, upper respiratory or gastrointestinal symptoms during fever
- ▶ Leukopenia, neutropenia, thrombocytopenia, sterile pyuria



Roseola infantum



Enteroviruses

- ▶ More than 90 serotypes
- ▶ Sometimes fever 1–2 d.
- ▶ Generalized maculopapular, sometimes urticarial rash sometimes after decline of fever



Scarlatiniform rash

- ▶ Scarlet fever
- ▶ *Arcanobacter hemolyticum* infection
- ▶ Kawasaki disease

Scarlet fever

- ▶ Erythrogenic toxin of streptococcus group A(> 20 serotypes)
- ▶ Mostly in 5–15 yr.
- ▶ High fever+ Sand–paper like (fine papular that fade on pressure) on neck the trunk and extremities for 5–7 day
- ▶ Exudative or erythematous pharyngitis, White then red strawberry tounge, Pastia sign (accentuated rash on elbow, axilla, and groin), cervical lymphadenopathy
- ▶ Desquamation period : 1–3 w, from face then downward, sometimes sheet like in palms and soles
- ▶ Treatment : benzatine penicillin G
- ▶ Complications: Acute rheumatic fever, Post streptococcal glomerulonephritis



Scarlet fever

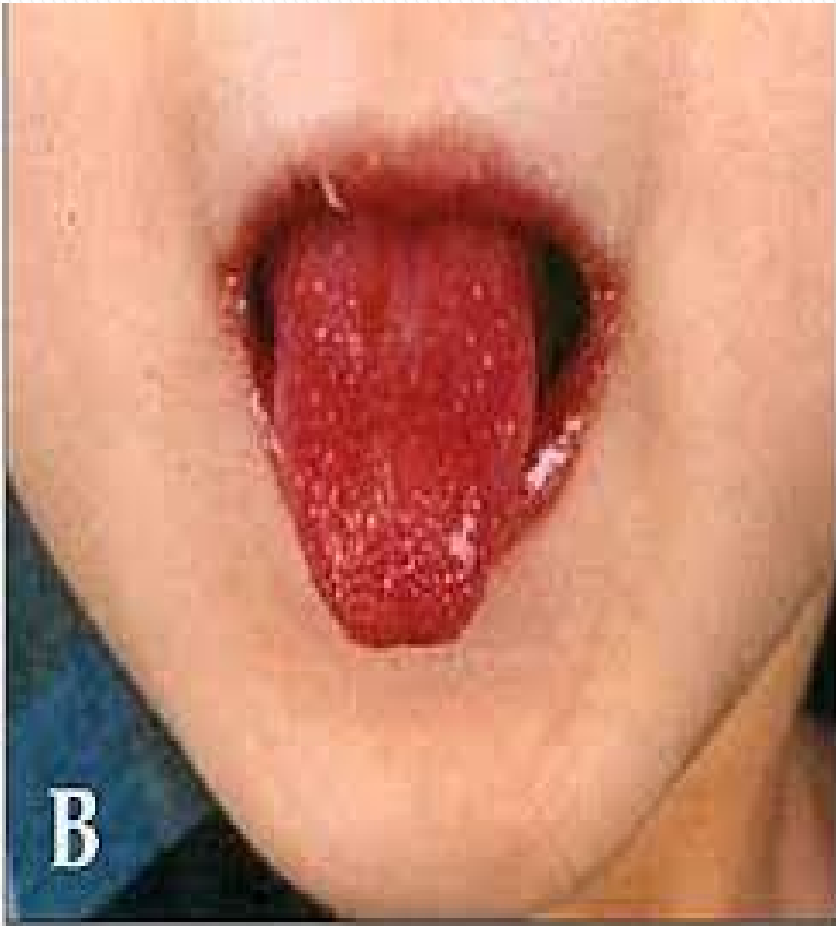


Kawasaki disease

- ▶ Unknown etiology
- ▶ All rash except petechial and vesicular/pustular/bulla rash
- ▶ High fever > 3-5d.
- ▶ 5 Clinical criteria: rash, bilateral bulbar conjunctivitis, oral erythema, extremity edema/ erythema/ desquamation, unilateral cervical lymphadenopathy
- ▶ 6 Laboratory criteria: Elevated WBC, PLT, ALT, urin WBC, decreased Hb, albumin
- ▶ Risk of Cardiac involvement: coronary aneurysm/ dilatation/ loss of tapering, decreased LV function, MR, pericardial effusion
- ▶ Complete form: fever+ 4 of 5 criteria
- ▶ Incomplete form: fever+ 2 or 3 criteria + elevated ESR/CRP + 3 of six laboratory criteria / cardiac involvement



Kawasaki disease



Kawasaki disease



THANK YOU