Petechiae - punctate lesion secondary to organism invading capillary endothelial cell > inflammation > lose integrity of cap wall > hemorrhage
- above nipple line common due to increase pressure secondary to cough/emesis
- meningococcemia / RMSF until proven otherwise

Bacterial infections

A) Meningococcemia - N. meningitidis bacteremia

- Epidem.: transm.= resp. droplets, usually < 2, winter / spring
- Prodrome: malaise, fever, URI, myalgia
- Symptoms: fever, arthralgia, meningismus, shock, DIC
- Rash: macs/pap/pet/purp., distrib. usually trunk & extrem., also palms/soles
- Dx: BC (> 90% +), CSF (1/3 +), stain skin (85% +), low plt.
- Tx: supportive, Ab (PCN, Claforan), tx DIC

B) Rocky Mountain Spotted Fever - Rickettsia rickettsii

- Epidem.: 2/3 <15yo., vector = infected tick (dog tick in east), Apr.- Sept. : only 2/3 aware of bite, > SE, male > in west, female/child > east
- Hx: gradual or acute onset, incubation 3-14 days ( 7 )
- Prodrome: anorexia, irritab., malaise, chills
- Symptoms: HA, myalgia, photophobia, edema, HSM, neuro., hyponatremia, shock, renal failure
- Rash: appears by day 4 (2-6), first on wrist/ank. > palms/soles > trunk : eryth. blanching macules > 1-3d. deep red papule > petech./purp. (13% no rash)
RMSF cont.

- Dx: clinical, immunofluorescent studies of skin, IFA (serology), low plt.
- Tx: supportive, tetracycline, chloramphenical, prevention (constant checks)
- **Ehrlichiosis** - E. equi (deer tick), < rash, leukopenia, tx: doxy., tetracycline

C) Staph Scalded Skin Syndrome

- **Epidem.:** Staph aureus ( phage grp. 2 ) > colonizes nose, conjunct., umbilicus > exfoliative exotoxin > hematogenous > skin
  - infants < 2, any season
- **Symptoms:** abrupt onset - fever, URI, conjunct., irritability
- **Rash:** tender erythroderma, first perioral, neck, intertriginous areas
  - widespread 1-2 days > bullae > **Nikolsky’s sign** (skin removed by light stroking)
    - cleavage w/in the epidermis (granular layer)
  - no mucous memb. involvement, rash heals 5-7 days
- **Dx:** clinical, stain/bx of bullae, BC
- **Tx:** supportive, cool compresses, oxacillin / dicloxacillin

D) Toxic Shock Syndrome

⇒**Epidem.**: *Staph. Aureus* (phage grp. 1 ), *Grp. A Strep*, both sexes, majority secondary to high absorbing tampons, ? pathogenesis, other risk: burns, bites, wounds
⇒**Rash:** within 24 hrs. of fever - scarlatinoform erythroderma (nontender), maybe petechial
  - desquamation in 1-2 weeks espec. palms & soles
⇒**Hypotension**
⇒3 or more of following:
  1. GI - NV
  2. Muscular - myalgia, increase CPK
  3. Renal - increase Cr.
  4. Mucosal membrane - vagina, conjunct. hyperemia, strawberry tongue
  5. Hepatic
  6. CNS - AMS
  7. Thrombocytopenia
⇒**Dx:** clinical, cultures
⇒**Tx:** supportive, antistaph. / antistrep Ab
⇒**Strep TSS:** exotoxin A, less severe prodrome, tender rash, scarlatinoform, > focal infection, > BC +, > coagulapathy, > gangrene, > mortality, Tx: Naf / Clindamycin
E) Scarlet Fever

- Epidem.: Grp. A Strep. > erythrogenic toxin, > school-aged, fall to spring
- Symptoms: fever, abd. pain, sore throat, rash
- Findings: cervical LA, exudative pharyngitis, strawberry tongue
- Rash: Within 24 hrs. of symptoms, neck > trunk & extremities
  - diffuse erythematous papules (sandpaper) that blanch > desquamation day 4
  - Pastia’s lines - petechiae in intertriginous areas
- Dx: clinical, culture  
  Tx: PCN

F) Strep / Rheumatic fever

⇒ Major criteria: carditis, chorea, polyarthritis, subcut. nodules, & erythema marginatum
⇒ Minor criteria: fever, arthralgia, + hx., prolonged PR interval, > WBC, > WSR
⇒ **Erythema marginatum**: 10-15% have rash, also in JRA, mainly trunk & extrem.
  - pink macs/paps fade centrally > nonpruritic rings w/ elevated reticulated or serpiginous borders
  - spreads rapidly & fades rapidly

G) Cat Scratch Disease

- Epidem.: Bartonella henselae - gr. neg. rickettsia, > males, < 21, transm.. by kittens
  - hx. contact w/ cat > 90%, evidence of cat scratch in 2/3
  - incubation 3-30 days (7-12d)
- Rash: red papule @ inoculation site > crusted, vesicular
- Findings: Lymphadenopathy 1-4 weeks later - tender, red, indurated
  - Parinaud’s oculoglandular syndrome - unilat. conjunctivitis w/ preauricular nodes
- Complications: pneumonitis, CNS (enceph. w/ out cells), abscesses, thrombocytopenia
- Dx: clinical, Warthin-Starry silver stain, serum Ab to B. henselae 85%
- Tx: resolve spont. 2-4 months, aspirate nodes, Ab early (gent., bactrim, cipro, rifampin)

H) Lyme Disease
Treponemal infection - spirochete Borrelia burgdorferi
- Epidem.: transmitted by Ixodes ticks, entire U.S., may - august, 1/3 recall tick bite
- Acute / Early phase: malaise, fever, HA, meningitis
  - **Erythema migrans** - 75%, 3-32 days after bite, start as red mac/pap > annular > enlarges rapidly (hot, itchy) > disappears w/in 2 months > thighs, buttocks, groin & axilla > multiple rings 1/3
- Late phase: if untreated complications: Neuro. 15%, Cardiac 5-8%, Rheum. 50%
  1. **Neuro.** - 1 month later, Guillain Barre, peripheral neuropathy, Bell’s palsy
  2. **Cardiac** - 3-21 wks. later (1 mo.), AV block (brief)
  3. **Rheum.** - 4-6 wks. later, joint swelling > knee, 10% chronic
- Dx: clinical, histology, serology (EIA, IFA, IGM)
- Tx: prevention w/ inspection, Ab shorten duration (tetra., doxy., amoxil)

**Exanthematous diseases**

**A) Varicella - chickenpox**
- Epidem.:< 10, fall to spring, highly contagious, resp. droplets & direct contact
- Incubation: 8-21 days
- Prodrome: one day if any
- Rash: papules > vesicles on eryth. base > umbilicated > crusted (different stages noted)
  : starts on face > trunk & extrem., pruritic, oral lesions
- Complications: superinfection (Grp. A Strep), pneumonia, CNS, Reye’s
- Dx: clinical   Tx: sympt., acyclovir if immunosuppressed

**B) Rubeola (Measles)**
- Epidem.:RNA paramyxovirus, infant to young adult, winter/spring, resp. droplets
- Incubation: 8-12 days > fever > cough, conjunctivitis, coryza (CCC) w/in 24 hrs.> Koplik spots by day 3 > day 4 rash
- Rash: erythem. macs/paps become confluent / starts on face > body then fades by day 7-10
- Complications: pneumonia, encephalitis   Dx: clinical, serology   Tx: symptomatic

**C) Rubella (German measles)**
⇒ Epidem.: rubella RNA virus, adolesc. - young adult, resp. droplets
⇒ Incubation: 14-21 days, minimal prodrome
⇒ Rash: rose pink papules on face > body in one day > fade by day 3
⇒ Other findings: post. cervical nodes, Forchheimer’s spots (palatal petechiae)
⇒ Complications: encephalitis, arthritis, thrombocytopenia, cong. rubella syndrome
⇒ Dx: clinical, serology       Tx: symptomatic

D) Erythema infectiosum (Fifth Disease)

- Epidem.: Parvo-virus B-19, > 5-15yo., winter / spring
- Incubation: 6-14 days, minimal prodrome
- Rash: 1) **Slapped-cheek** appearance  
  2) Erythematous mac/pap. on trunk / extrem. w/in 2-3 days  
  3) Reticular pattern secondary to central fading  
  4) Rash waxes & wanes, usually resolves w/in a month
- Complications: hemolytic anemia, hydrops fetalis
- Dx: clinical, serology       Tx: symptomatic

E) Roseola infantum (Sixth disease)( exanthem subitum )

- Epidem.: herpes virus 6, < 3yo., sporadic, incub. 5-15 days
- Findings: high fever 3-5 days > rash starts with defervescence
- Rash: pink mac/pap on trunk > extremities (non-coalescent) > fades in hrs. to 2 days
- Other: leukopenia by day 3, febrile seizures, usually looks quite well
- Dx: clinical       Tx: symptomatic

F) Mononucleosis

- Epid.: EBV virus (DNA herpes family), 15-25, direct contact (saliva), incub. 30-50d.
- Prodrome: 3-5 days HA, fatigue
- Symptoms: fever, pharyngitis, LA, spleen 50%, liver 20%, supraorb. edema
- Rash: 10-15%, 4-6th day, mac/pap, trunk  
  80-90% ampicillin rash
- Dx: clin./serology/heme (anemia, thrombocytopenia, atyp. lymphs., incr. LFT’s)
- Complications: splenic rupture, Neuro (Bell’s palsy, GB)       Tx: symptomatic

**Hypersensitivity Syndromes**
A) Serum Sickness

* Allergic reaction to drugs (PCN, sulfa, salic.)
* 7-14 days after Ag > fever, LA, myalgia, arthritis, splenomegaly
* Rash: 90% urticarial
* Self-limiting, subsides in 2-3 weeks       Tx: supportive

B) Erythema multiforme

* Hypersensitivity syndrome characterized by skin & mucous membrane involvement
* Multiple etiologies:
  - **Infectious**: Herpes*, Mycoplasma*, Tb, Strep, Mono, yersinia
  - **Chemicals**: terpenes, perfumes, nitrobenzene
  - **Systemic disease**: CVD, leukemia, lymphoma
  - **Antibiotics**: PCN, INH, sulfa, tetracycline
  - **Anticonvulsants**: dilantin, tegretol, phenobarbital
  - **Other**: rads, foods
  - **Idiopathic**: > 50%
* Pathogenesis unknown
* Rash: 1-3 wks. after exposure > symmetric, palms, soles, extensor surfaces
  : urticarial, vesicobullae, eryth.paps (**target lesions** = hallmark)
* Mucous membrane involvement

1) Erythema multiforme minor

- benign, self-limiting, **herpes** most common etiology, mucous memb. absent or just one
  surface one lesion last 1 week - eruptions continue for 2-3 weeks (overall course 1 mo.)
- Treatment: supportive

2) Erythema multiforme major (Stevens-Johnson)

- **Mycoplasma & drugs** most common etiology, prodrome 1-14d. - high fever
- Extensive bullae, muc. memb. severe (at least 2 surfaces), last 6 weeks, 5-15% mortality
- Eye complications: conjunct., uveitis, corneal ulceration
- Tx: supportive, ? steroids, ophthalmologic consultation

C) Toxic Epidermal Necrolysis

⇒ Drug-induced exfoliative disorder, rare in children
⇒ Prodrome > tender erythroderma > Nikolsky’s sign / bullae
⇒ Necrosis @ basal cell layer of epidermis = subepid. separation (unlike SSS)
⇒ Mucous membrane involvement
⇒ Dx: skin bx Ts: as a burn pt., ? steroids

D) Erythema nodosum

♦ Delayed cell-mediated hypersensitivity syndrome
♦ > 10, > females, spring / fall
♦ Multiple etiologies:
  Infectious: Strep, Tb Noninf.: sarcoid, UC, crohn’s
  Drugs: sulfa, dilantin, BCP Idiopathic
♦ Clinical: fever, arthralgia, red, tender nodules > pretibial
♦ Dx: clinical, bx
♦ Tx: rest, sympt.
### Vasculitic disorders

#### A) Kawasaki disease

- ? etiology, diffuse vasculitis, winter / spring, 6mo. - 6yo
- Clinical criteria: Fever > 5 days and 4 out of 5 of the following:
  1. Bilateral conjunctival injection (nonpurulent)
  2. Polymorphous exanthem
  3. Cervical lymph node > 1.5 cm
  4. Changes in extremities: edema, erythema palms/soles, desquamation
  5. Changes of oropharynx: fissured lips, strawberry tongue, diffuse erythema (nonexudat.)
- 3 stages:
  1. Acute febrile - 1-14 days, may see diarrhea, asep. meningitis, liver
  2. Subacute - 10-30d. w/ key features, also irritable., peak thrombocytosis
  3. Convalescent- resolves 45-60th day, nl WSR
- Rash: 3-5th day, extremities, no vesicles or bullae
- Complications: GI - GB dilatation, pancreatitis
  Cardiac - EKG changes, myocarditis, aneurysm (> male, < 2, wbc>30, WSR > 100 and/or elevated > 5 weeks, fever > 15 days)
- Dx: clinical, labs, EKG, Echo
- Tx: aspirin 100 mg/kg/d for 2 wks., IVIG 2 gm/kg over 12hrs.

#### B) Henoch-Schonlein Purpura

- Vasculitis with deposition of IgA immune-complexes following a URI
- Age 2-11, spring / fall, > males
- Skin, joints, GI, renal
  - **Rash**: crops of mac/pap on buttocks, extensor surfaces > palpable purpura
  - **Rheum**: 2/3 of pts., periarticular involvement, transient
  - **GI**: 75% of pts., abd. pain, melena, intussusception
  - **Renal**: 20-50%, can be up to a month into the disease, 1% ESRD
    - Other: edema of scalp, feet/hands, scrotum
- Dx: nl platelet count, UA, anemia
- Subsides in 6 weeks, some reoccurrences
- Tx: prednisone
References

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