

## Aetiology

Varicella-zoster virus (VZV) is a DNA virus in the herpesvirus group. Primary infection causes varicella (chickenpox). Following primary infection, remains latent in the dorsal root ganglia. Reactivation manifests as herpes zoster (shingles). The virus has a short env survival time.

## Epidemiology

- >80% seropositive for VZV antibodies by teens
- Higher adult incidence in tropics
- More common in winter & early spring
- 5% cases subclinical

## Clinical Features

- Usually mild in childhood (~1% complicated cases).
- More severe if adult or immunocompromised - Cx, dissemination and death can occur.
- Incubation period: 10-21 days (may be longer if immunocompromised)
- High infectivity (~90%) via resp secretions and vesicle fluid through respiratory tract or conjunctiva portals.
- Infectious period: 2 days before rash until all lesions crusted (usually ~7 days)
- May have 1-2 days prodrome (esp adults) before malaise & fever for 2-3 days.
- Pruritic generalised rash starts on head, trunk then moves to extremities. May involve mucous membranes. Crops of lesions progress rapidly from macules→papules→vesicles ("raindrop on rose petal") on an erythematous base before rupturing/crusting over.
- Rash often has lesions at different stages
- Rarely involves the viscera and joints

## Varicella in Pregnancy

### *Congenital Varicella Syndrome:*

- Higher risk if mother infected in 2<sup>nd</sup> compared to 1<sup>st</sup> first trimester (1.4% vs 0.55%)
- Overall risk is low (<2%) of primary maternal infections
- Features: Skin scarring, limb defects, ocular anomalies, neurologic malformations

### *Perinatal Varicella infection:*

- Maternal VZV onset 7d pre- to 2d post-delivery: up to 30% get severe neonatal varicella

## Investigations

- Vesicle fluid: direct fluorescent antibody (DFA) or PCR tests, viral culture
- Serology: latex agglutination assay (LA) or enzyme-linked immunosorbent assays (ELISA)

## Complications

- Secondary bacterial skin infection (Staphylococcus or Streptococcus)
- Pneumonia
- Acute cerebellar ataxia (1:4000)
- Encephalitis (1-20:100,000)
- Rarely aseptic meningitis, transverse myelitis, Guillain-Barré syndrome, thrombocytopenia, haemorrhagic varicella, purpura fulminans, glomerulonephritis, myocarditis, arthritis, orchitis, uveitis, iritis and hepatitis
- Reye syndrome in conjunction with aspirin use
- Breakthrough (wild type) varicella occurring >6wks post-vaccination usually milder
- Reactivation to shingles (30% lifetime risk)

## Prevention

- Live attenuated monovaccine avail since 2000 for persons  $\geq 1y$
- Recently combined MMRV vaccines avail for children  $\geq 1y$  &  $< 14y$
- Recent data suggests 2 doses  $\geq 1y$  of age, better than single in children  $< 14y$  (98 vs 94%)
- Given subcut (Priorix-tetra MMRV can also be given IM)
- Recommended schedules:
  - MMR @12mo, VV @ 18mo, MMR @ 4yr (prior to July 2013)
  - MMR @12mo, MMRV @ 18mo (Current schedule)
  - MMRV has small risk of fever/febrile convulsion if given as first MMR dose in children  $< 4y$ .
- Non-immune (negative Hx  $\pm$  serology) adolescents  $\geq 14y$  & adults req 2 doses  $> 4wks$  apart
- Vaccines contraindicated in & 28d prior to pregnancy, but ok if breast feeding
- Post-vaccination varicella rash is rarely infectious and only transmits a mild illness, so recommended in household contacts of immunosuppressed person.
- **CI**: pregnancy, anaphylaxis to varicella vaccine or any component of it, immunosuppression
- **SE**: injection site reactions, maculopapular/papulovesicular rash (in  $< 5\%$  usually within 5 to 26 days, earlier appearance more likely to be wild-type rather than vaccine VZV), fever & febrile convulsion (esp MMRV dose 1), rarely herpes zoster, very rare neuro SE.

## Management

*Supportive:* **Paracetamol** for comfort, antipruritics - oatmeal baths, antihistamines

### *Antivirals*

- Intravenous **aciclovir** (10 mg/kg IV q8h x7-10d)
  - High risk patients who are immunocompromised or on high dose steroids.
  - Systemic disease (for example affecting brain, heart, lungs).
  - New lesions appearing after 8 days.
- Oral **aciclovir** (800 mg 5x/day adults, 20 mg/kg up to 800 mg qds for children) :
  - Patients with a chronic medical condition (lung or heart disease for example).
  - Patients over 12 years of age with rash  $< 1d$  to reduce the complication rate.
  - When the patient is a secondary case in a household.
  - Pregnant patients, although use is not licensed. No evidence of teratogenicity.

### *Post-exposure prophylaxis*

- Used if significant ( $> 5m$  face-face contact or 1h in same room) varicella exposure
- Varicella zoster immunoglobulin, **VZIG**
  - Used if exposed in last 96h and at high risk:
    - Non-immune pregnant woman
    - Neonates whose mothers develop varicella from 7d pre- to 2d post-delivery
    - Neonates ( $< 1month$ ) if mother has not had VZV and is seroneg
    - Premature neonates  $b < 28/40$  and still in hospital regardless of maternal Hx
    - Immunosuppressed patients (without recent evidence of VZV antibodies)
  - IM Dose: 200IU  $\leq 10kg$ , 400IU 11-30kg, 600IU  $\geq 30kg$ . Lasts 3wks.
  - Can use Normal Human IG if VZIG unavail
- PO **aciclovir** (if not given VZIG) if no previous varicella exposure, 5-7d post-exposure and high risk (pregnant or immunocompromised) or likely transmission to a high risk contact
- **VZV vaccination**: 70-100% effective  $< 3-5d$  post-exposure and not **CI** (see above)