By Dr Sharon Halasz
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Chickenpox: No Adults Allowed

Varicella zoster virus (VZV), part of the herpes family, occurs mainly as a primary infection in childhood (chickenpox) and may reactivate in late adulthood as zoster (shingles). Just to make life interesting, varicella and zoster can appear at any age.

Varicella (chickenpox)

VZV is highly contagious and will spread through all non-immune contacts within a household. Infection is acquired by direct contact with skin lesions or by airborne spread from respiratory secretions (varicella or disseminated zoster). Patients are infectious from two days before onset of the rash until all lesions have crusted over. A significant exposure includes household contacts, or face-to-face contact for at least five minutes, or staying within the same room for one hour.

The incubation period is 10 to 21 days. To protect others, within a healthcare or childcare setting, the exposed individual should be isolated from 8 to 21 days after exposure. If they received Zoster immunoglobulin (ZIG) as a preventative measure, then isolation should extend to 28 days.

The generalised, itchy, vesicular rash is usually mild in childhood. In contrast, adolescents and adults can develop more severe varicella. Complications include secondary bacterial infection, pneumonia, meningitis and encephalitis. Immunocompromised individuals of any age are prone to more severe and prolonged infection.

Varicella in pregnancy and the neonate

Maternal varicella can be particularly nasty. Prevention is best. Watch out for pneumonia, especially in women with underlying lung conditions and smokers. Intensive care admission for ventilation may be needed.

The timing of infection during pregnancy has different outcomes for the child. Congenital varicella syndrome results from maternal infection in the first twenty weeks. Manifestations include skin scarring, limb atrophy, eye and CNS abnormalities.

Maternal varicella in the second twenty weeks of pregnancy may result in the child developing zoster at an early age. Their primary infection occurred in utero.

The greatest risk to the neonate is from perinatal maternal varicella (within seven days before to two days after delivery). 17 – 30% of neonates develop severe varicella with a mortality rate up to 30%. Zoster immunoglobulin (ZIG) should be given to the neonate, preferably within 24 hours of birth (or exposure).

Zoster (shingles)

Zoster is the reactivation of VZV due to waning cellular immunity. It's more common in those over 50. Typically, skin lesions are unilateral and in a dermatomal distribution. Complications include dissemination (in the immunocompromised) and post-herpetic neuralgia.

Laboratory testing

The best test for varicella or zoster is VZV PCR. Collect a dry swab from skin lesions or vesicles. VZV serology confirms the diagnosis of varicella by the detection of VZV IgM or by seroconversion of VZV IgG (from Not detected to Detected). Patients with zoster already have VZV IgG. VZV IgM helps if detected, but it doesn't always reappear.

What about the immune status of a contact? A history of varicella (or zoster) or completion of a course of varicella immunisation predicts immunity. If not, and there's time, request VZV IgG. Serology to confirm immunity post-vaccine is not necessary as antibody levels are negative in up to 30% of vaccinated individuals.

Prevention – vaccines and ZIG

Live-attenuated varicella vaccine is in the childhood immunisation schedule and is also recommended for non-immune adults.

About the Author

Clinipath Pathology welcomes Dr Sharon Halasz to our Microbiology team. She graduated from the University of WA, and trained in Clinical Microbiology at Royal Perth Hospital, Princess Margaret Hospital, King Edward, and Sir Charles Gairdner Hospitals. Sharon then worked at Sonic's laboratory in Queensland and at Westmead Children's Hospital in Sydney, before returning to private pathology WA.

Varicella vaccine is contraindicated during pregnancy so discuss immunisation before then. The zoster vaccine is for adults only. Everything you ever wanted to know about the varicella and zoster vaccines is in the Australian Immunisation Handbook.

Zoster immunoglobulin (ZIG) can prevent or ameliorate varicella in non-immune contacts. In short supply, use of ZIG is restricted to high-risk groups such as pregnant women, neonates and the immunocompromised.

Treatment

Antiviral therapy is not required for varicella in immunocompetent children with healthy skin. Antivirals (aciclovir, famciclovir, valaciclovir) are recommended for children with pre-existing skin disease, the immunocompromised, pregnant women, neonates, and individuals with severe disease. Start treatment within 24 hours of onset of rash, if possible, or up to 72 hours. For immunocompromised patients or anyone with complications, treat with antivirals regardless of the duration of rash. Full treatment recommendations for varicella and zoster are available in the Therapeutic Guidelines: Antibiotic.

Further reading:

Australian Immunisation Handbook.

Management of Perinatal Infections (Australasian Society for Infectious Diseases).

Therapeutic Guidelines: Antibiotic.

Key Points

- Preferred diagnosis is by VZV PCR on a dry swab
- VZV serology is not perfect, especially after immunisation
- Include varicella in pregnancy planning
- Adults – beware of chickenpox
- If antivirals are needed, treat early