

Chickenpox and Zoster

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Overview

Chickenpox is a highly infectious disease. The incubation period is 10-20 days.^{1,2} The main symptom is a vesicular rash, where the virus is found in great numbers. The severity of the disease is largely related to the extent of the rash. In general there is no way of predicting disease severity in individuals, however, there are a number of important considerations. The disease tends to be more severe in adults than in children, with adults more likely to develop varicella pneumonia (16% of previously healthy adults with chickenpox had radiological evidence of varicella pneumonia in a study of US military recruits – only a quarter of these were symptomatic.³ Severe pneumonia occurs in 0.25% of all adult cases of chickenpox³). People with impaired immune systems are also more at risk of severe or complicated or even fatal infection. The overall case fatality rate in Australia is approximately three per 100 000.⁴ It is much higher than this in immunosuppressed individuals. The case fatality rate in children with leukaemia has been shown to be 7-14%.⁵

Most people are infected and become immune as children. The person or their carer may not notice this, as many cases will be clinically very mild, or subclinical. In Australia 75% will have developed immunity by age 12.¹ A study conducted in antenatal clinics in the Top End of the NT in 1999 found that 92% of women were seropositive but only 51% gave a definite history of chickenpox⁶, i.e. the sensitivity of a clear history of past chickenpox is low for immunity. However, the specificity is very high, with only 1.6% of adults with a clear history of prior chickenpox being serosusceptible.⁷

After chickenpox the virus lies dormant in nerve cells. It may reactivate in later life leading to Herpes zoster (shingles), which can be a serious disease. Severe neonatal infection can result from perinatal maternal varicella infection.

There are vaccines that offer protection against chickenpox and zoster.¹

Details of the vaccines and their use and some detail on the epidemiology can be found in the latest edition of the Australian Immunisation Handbook.

Antiviral treatment

In an RCT in healthy adults with varicella early acyclovir treatment (initiated within 24 hours of rash onset) reduced total time to full crusting of lesions from 7.4 days to 5.6 days and reduced the maximum number of lesions by 46%. There was no effect if given after 24 hours.⁸ Another trial showed similar results in children, shortening the duration of the illness.⁹

There are some that argue for acyclovir to be given to all contacts, for adults to reduce the risk of severe disease and for children to reduce discomfort, severe disease cases and to reduce the need for parents to stay home with a sick child, leading to lost income. An Australian review of the benefits of acyclovir treatment of varicella in 1996 conclude that acyclovir should be used for those with altered cell mediated immunity, newborns in the first two weeks of life, preterm infants in hospital, severe varicella or shingles and in pregnancy. They do not recommend acyclovir for healthy individuals without severe disease, or as a prophylactic agent, or for treatment of post-varicella syndromes. Treatment is not recommended for asthmatic patients receiving inhaled or low dose oral steroids.¹⁰

The protocol does not describe how to use antiviral treatments in varicella or exactly who should be offered treatment. This will need to be discussed with a specialist. It is, however, important to identify those who need to be discussed with a specialist, as some individuals may derive important benefit from treatment.

The above-mentioned RCTs used acyclovir 800 mg five times a day PO for five days in adults, or 20 mg/kg QID PO in children. Famcyclovir 500 mg TDS PO, or Valacyclovir 1 g TDS PO are much more convenient and better absorbed but they are not approved for this indication, however, they are the treatment of choice in many centres (Valacyclovir and Famcyclovir are more expensive than acyclovir, however when the dosing is taken into account, the difference is not so big.)

Bacterial complications of the rash

The recommendations made about cutting fingernails short, giving treatment to reduce itch (and hence scratching) and being alert to the possibility of secondary bacterial infection of the skin lesions is based on consensus of clinical opinion and common sense. We did not search for, nor find, any systematic evidence about how best to reduce the likelihood for bacterial infection. In the CARPA region, bacterial skin infections are extremely common (see section on skin infections), so treatment with penicillin is frequently likely to be needed.

Chickenpox in pregnancy

A detailed discussion of this problem can be found in the paper by Heuchan and Isaacs.¹¹ The approximate risk of VZV embryopathy (congenital abnormalities) is 0.4% if the mother is infected in the first trimester and 2% if infected in the second trimester. The risk to the foetus is highest in the third trimester. If the mother is infected within five days of giving birth there is a high incidence of neonatal varicella, which has a 25% mortality.¹² In the third trimester, the mother herself is at higher risk of more severe disease.

If an exposed pregnant woman is not immune VZIG should be given, ideally within 48 hours, but is effective up to 96 hours post-exposure. If a pregnant woman develops clinical varicella, expert advice should be obtained urgently, and consideration given to acyclovir in the mother and VZIG or acyclovir in the neonate, depending on timing.

Varicella zoster vaccine

The recommendations for use of the varicella zoster vaccines are likely to change with the next edition of the Australian Immunisation Handbook. In the NT, CDC recommendations are likely to be in line with national

practices, which will depend on the Commonwealth's willingness to fund widespread use of the vaccines. (pers. comm. Vicki Krause 2002).

Varicella zoster immunoglobulin

Varicella zoster immunoglobulin (VZIG) can prevent or reduce the severity of chickenpox if given within 96 hours of exposure. It is recommended for use when non-immune individuals at risk of severe disease have had significant exposure to chickenpox or zoster (e.g. neonates of non-immune mothers, all premature infants born at less than 28 weeks, pregnant women, immunocompromised individuals) (see Australian Immunisation Handbook, seventh edition, p 236). Specialist advice should be sought.

Zoster

After initial infection with the varicella virus it remains dormant in the dorsal root ganglia. Re-activation may occur later in life leading to varicella zoster (shingles). Eighty per cent of cases in Australia are over the age of 40 years. The virus tracks down the sensory nerve to the skin where it causes a characteristic pattern of skin rash that matches the dermatome of the nerve(s) involved. Severe pain and paraesthesia are common and up to 30% of older people with zoster may suffer postherpetic neuralgia. There is excellent evidence (meta-analysis of four RCTs) that in adults over 50 years of age oral acyclovir (800 mg five times/day for 14 days) started within 48-72 hours of the onset of the rash decreases the incidence of post-herpetic neuralgia at six months by 50%, and decreases the duration of severe pain in the acute infection.¹³ Valacyclovir (1 g TDS PO) and Famcyclovir (500 mg TDS PO) are more convenient and have been demonstrated to be at least as good as acyclovir for this indication.^{14,15} Adults below 50 years old are less likely to get post-herpetic neuralgia and the benefit in this group is less clear. If presenting within 72 hours of the onset of rash, oral acyclovir (or Fam/Val) should be given to adults over 50, anyone with involvement of the ophthalmic branch of trigeminal nerve, and those under 50 with severe pain/parasthesia.

Contact with zoster can lead to chickenpox (if not immune) but does not lead directly to zoster. Repeated bouts of zoster are rare. Zoster in young adults is a cause for investigation as it may indicate an underlying immune deficiency. If the zoster involves the ophthalmic branch of the facial nerve, it may involve the eye. Management should be discussed with an ophthalmologist.

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