Varicella Infection in the Neonate
GL366

Approval and Authorisation

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<tr>
<th>Approved by</th>
<th>Job Title</th>
<th>Date</th>
</tr>
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<tbody>
<tr>
<td>N Pritchard</td>
<td>Chair Neonatal Procedure and policy Committee</td>
<td>Oct 2009</td>
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VARICELLA IN THE NEWBORN

3.0 INTRODUCTION
Varicella zoster is a member of the herpes virus family. It is an enveloped DNA virus and has the ability to cause latent infection, as the virus remains dormant in the sensory nerve ganglia. The diseases caused by the varicella zoster are known as chicken pox and shingles.

Most people in the UK develop chickenpox during childhood. However some adults (5 – 8% of the population) have never been infected with varicella zoster virus (VZV). Any adult who does not have a definite history of previous VZV (or shingles) and have not been vaccinated are regarded as non-immune. They are, therefore vulnerable to VZV.

People from Asia, Africa and China are also less likely to have acquired VZV in childhood, therefore a high proportion of them are susceptible to infection with the virus.

Chickenpox and shingles can both result in shedding of the virus, and although chickenpox is a relatively mild illness it can cause severe complications such as pneumonia, encephalitis, visceral dissemination or haemorrhagic varicella. Protection against VZV infection is dependent largely on IgG antibody. At-risk patients can be protected against infection, or least against severe infection, by the administration of passive IgG antibodies in the form of zoster immune globulin (ZIG). Pregnant women are relatively immunocompromised by pregnancy. Neonates are at increased risk if they are infected peripartum due to high levels of the virus in the absence of antibodies.

Risks to the fetus/neonate from maternal chickenpox are related to the time of infection in the mother.
4.0 Maternal Varicella Infection

VZIG (human varicella-zoster immunoglobulin) is recommended for infants born to a mother who develops chicken pox in the period 7 days before to 7 days after delivery. (The highest risk appears to be 5 days before to 2 days after delivery). Exposed infants born before 28 weeks gestation or weighing less than 1000 grams should be given VZIG as transfer of maternal IgG antibodies may be inadequate. Infants > 28 weeks gestation may be VZV antibody negative, but should be serological tested, despite a maternal history of varicella or zoster. (HPA).

(The following do not require VZIG since maternal antibody will be present)

1) Infants born > 7 days after the onset of maternal chicken pox.

2) Infants whose mothers have a positive history of chickenpox and/or a positive VZ antibody result.

4.1 Recommended Management of the Infant born to a mother with Varicella Infection

1) VZIG (250 mg. 1 vial) to be given by paediatrician intra-muscularly as soon as possible and not later than 10 days after exposure. This must not be given intra-venously.

2) Mother and infant isolated together in their own side room (as both highly contagious). Nursed by VZ immune staff. Breast feeding to be encouraged, unless lesions around nipple and too painful to feed. Maternal varicella is not a contra-indication to breast feeding.

3) Daily review and examination of infant by Paediatric Team. Any suggestion of illness in the neonate should be acted upon immediately, and treatment started with antiviral therapy of high dose aciclovir intravenously. (Recommended dose 10 mg/kg/dose 8 hourly for a total of 7-10 days, but may be longer dependent on infants condition and discussion with consultant).

4) Antibiotics may also be required if secondary bacterial skin infection occurs, especially when vesicles encrusted. It may also be necessary to prescribe paracetamol if the rash is severe.

5) Once infant discharged home community midwife should follow them up as chickenpox in first few weeks of life can be life threatening in 30-50% of unprotected babies, and should see G.P. if any signs of a rash or infant is unwell.
4.2 Treatment and Dosage

VZIG – 250 mgs (1vial) Obtainable from Microbiology

ACICLOVIR – 10 mg/kg 8 hourly intravenously for 7-10 days.

Note: oral route is not recommended as absorption unpredictable in neonate.

Discuss with Microbiologist any other concerns or if further advice is sought.

5.0 Neonatal exposure to non-maternal Varicella Zoster

1. If the neonate has a significant exposure to chickenpox or shingles from a source other than the mother – e.g. Father, sibling, member of staff or another mother on the unit, the mother should be asked about a past history of chickenpox or shingles. Babies of mother with a positive history will not require treatment. Mothers with no history or who are unsure should be tested for VZV antibodies. If the mother is seronegative, the infant will need a dose of VZIG, but does not need to be separated from its mother or siblings. If positive no further action is required.(note: beware of mothers from high-risk areas)

2. Inform Infection Control Team and Microbiology department.

3. If infant between 28 weeks to 36 weeks the infant should be tested for VZV antibody. Even if the mother is seropositive, or has a past history of infection. The VZV antibody may not have crossed the placenta, be low or undetectable, despite the mother having had VZV exposure. If the infant is seronegative, it will require a dose of VZIG.

4. However, if <28 weeks and <1000kg. They should be given VZIG, as soon as exposure known. As transfer of maternal IgG antibodies may be inadequate, or non-existent. (Even if the mother gives a positive history of having had the infection). Testing is also recommended in these infant, but not absolutely necessary.(Health Protection Agency).

5. Infants of mothers with shingles are not at risk as they will be protected by maternal antibodies.

Note – VZIG may not prevent the neonate acquiring the infection but should attenuate the illness. All infants should be observed for signs of infection, for at least three weeks after the exposure as they have an increased risk of
developing zoster infection. (If the infant becomes unwell, then treatment should be given with intravenous acyclovir). The infant must be nursed in isolation, by VZV immune staff members. Those infants that develop varicella zoster after this period may have immunity and may not need acyclovir, but need to be serologically tested to determine if treatment is needed.

6.0 Shingles

Shingles occurs when the dormant virus reactivates and spreads down the sensory nerve roots. This produces a localised rash affecting one or more dermatomes. Shingles can only occur in people who have the dormant virus in the sensory root ganglia therefore all people who develop shingles have previously had chickenpox.

7.0 Infected Staff Members

1. Ideally all staff members that look after infants and mother should have antibodies to chickenpox or shingles. If they are unsure of their status they should be tested for VZV antibodies. Those who are seronegative should be vaccinated against the infection, and avoid contact with pregnant women and neonates for approximately 2 weeks or until antibody status known. This should be under the guidance of the Occupational Health Team.

2. Any health care worker, who suspects they may have chickenpox or shingles, must have the diagnosis confirmed by either their GP, or a dermatologist. They must inform Occupational Health and their on-line manager immediately. The infection Control Team should also be informed. They must remain off work until all the lesions are crusted, and therefore, no longer infectious

3. Again this should be under the guidance of the Occupational Health team, who will also advise when safe to return to work.
References:


VW/NP
October 2009
Management of VZV exposure in neonates

Is mother primary source?
Has she got chicken pox?
(If shingles no action required.)

No

Was the contact in the first seven days of life.

No

Full term infant – no action required.

Yes

Is it a significant exposure?

Yes

Prem/LBW
See page 2

No

Was onset of rash between 7 days before and seven days after delivery?

No

No further action

Yes

Give VZIG to neonate

Consider aciclovir if rash occurred between 5 days before and 2 days after delivery.

Yes

Full term and mother is immune. No further action.

Full term infant but no history of past VSV in mother. Antibody status unknown.

Check maternal or infant blood for VZ IgG as soon as possible.

If positive no further action.

If negative give VZIG within 10 days of initial exposure.
Premature or low Birthweight

< 28 weeks gestation and < 1000 g

Give VZIG

Testing recommended but not essential

> 28 weeks gestation

Check infant/mothers blood for antibodies as soon as possible.

If positive no further action.

If negative give VZIG within 10 days of initial exposure.