CHICKEN POX IN PREGNANCY

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PURPOSE & SCOPE

Primary infection with herpes varicella zoster virus (VZV), in pregnancy associated with:

- Increased mortality or serious morbidity.
- Fetal varicella syndrome (FVS), previously known as congenital varicella syndrome
- Varicella infection of the newborn, previously known as neonatal varicella.

BACKGROUND

1. VZV is a DNA virus and transmitted by respiratory droplets and by direct contact with vesicle fluid or indirectly via fomites.
2. The incubation period is 1–3weeks and the disease is infectious 48 hours before the rash appears until the vesicles crust over(within 5 days).
3. >90% of the antenatal population in the UK and Ireland are seropositive for VZV (IgG) antibody.
4. For this reason, primary VZV infection is uncommon; it complicate 0.3% of pregnancies.
5. Women from tropical and subtropical areas are more likely to be sero-negative for VZV

BACKGROUND

6. After primary infection, the virus remains dormant in sensory nerve root ganglia and when reactivated cause herpes zoster (HZ).

7. Herpes zoster in non-exposed sites is considered to be noninfectious.

8. Disseminated zoster or exposed zoster or localized zoster in immunosuppressed patient is considered to be infectious.

Varicella prevention

- **In the non-immune woman pre-conceptional :**

  - Determination of the immune status of women planning a pregnancy or receiving treatment for infertility by a past history of chickenpox (sensitivity 97–99%) and serological testing for VZIG antibody.
  - Vaccination pre-pregnancy or postpartum in seronegative women.

  > live attenuated virus vaccine derived from the Oka strain of VZV.
  > Vaccination reduce primary infection by 90% and the mortality by 66%.
  > Immunity from the vaccine may persist for up to 20 years.

  - Vaccinated woman should *avoid pregnancy for 3 months* and avoid contact with susceptible pregnant women if post-vaccination rash occur.
  - Women who are vaccinated postpartum can be reassured that it is safe to breastfeed.

Varicella prevention

- **In the pregnant woman at her initial antenatal visit**
- Sero-negative Women are advised to avoid contact with chickenpox and shingles during pregnancy and to immediately inform healthcare workers if exposed.
- **In the pregnant woman who gives a history of contact with chickenpox or shingles :**

1) A careful history must be taken to confirm:

**** the significance of the contact.***

– defined as contact in the same room for >15 minutes, face-to-face contact and contact in the setting of a large open ward.

* ***and the susceptibility of the patient***

determined by eliciting a past history of chickenpox or shingles and serological testing.

Varicella prevention

2) At least 80–90% of women tested are immune and can be reassured.

3) If the pregnant woman is not immune and has had a significant exposure, she should have VZIG as soon as possible.

- VZIG is effective when given up to 10 days after contact.
- After VZIG, the pregnant woman considered as infectious from 8–28 days (8–21 days if no VZIG).
  - If another exposure occurred after 3 weeks from the last dose, a second dose of VZIG is required.
  - Rare anaphylactoid reactions have occurred
  - No blood borne infection has been reported with its use.
  - Maternal death has been reported due to varicella pneumonia despite the administration of VZIG.

4) Women who developed rash regardless of whether or not received VZIG should notify their doctor early.

The pregnant woman who develops chicken pox

There is excess morbidity associated with varicella infection in adults, including:

1- Pneumonia(10% increase in later gestation, fatality rate less than 1% but five times higher in pregnancy)

2- hepatitis

3- encepahalitis

4- mortality(75% of deaths occur in adults).

How should the pregnant woman who develops chickenpox be managed?

10 recommendations;

1. Contact their GP immediately.
2. avoid contact with susceptible individuals;until the lesions have crusted over.
3. Symptomatic treatment and hygiene advised to prevent secondary bacterial infection.
4. oral aciclovir if they present within 24 hours of the onset of the rash and >20 weeks gestation.

- 800 mg five times a day for 7 days.
- Women should be informed of about risk and benefits of treatment with aciclovir.

- there is no increase in the risk of fetal malformation with aciclovir in pregnancy.

How should the pregnant woman who develops chickenpox be managed?

5. Indication for immediate referral to a hospital:

i- Chest symptoms,
ii- neurological symptoms,
iii - hemorrhagic rash or bleeding,
iv - dense rash
v - immunosuppression or taking corticosteroids in the preceding 3 months.
vi - If the woman smokes cigarettes,
vii- has chronic lung disease,
viii - > 20 weeks gestation

How should the pregnant woman who develops chickenpox be managed?

6. Assessment and treatment in hospital with a multidisciplinary team: obstetrician or fetal medicine specialist, virologist and neonatologist.

7. Timing and mode of delivery must be individualized;
- Delivery during the viraemic period should be deferred unless indicated:

(a)maternal risks are bleeding, thrombocytopenia, DIC and hepatitis.

(b) There is a high risk of varicella infection of the newborn with significant morbidity and mortality.

How should the pregnant woman who develops chickenpox be managed?

8. There is no evidence about the optimum method of anesthesia for caesarean section.

- General anesthesia may exacerbate varicella pneumonia.
- Risk of transmitting the varicella virus from skins lesions to the CNS via spinal anesthesia.
- epidural anesthesia is safer than spinal anesthesia

9. Women hospitalized with varicella should be nursed in isolation.

10. Referral to a fetal medicine at 16–20 weeks or 5 weeks after infection for discussion and detailed scan.

Risks during pregnancy

Fetal risks of varicella infection in pregnancy

- No added risk for miscarriage if chickenpox occurs in the first trimester.
- A small risk 0.91% for fetal varicella syndrome (FVS) If varicella occur < 28 weeks.
  - *FVS is characterised by one or more of the following:*
  - ❖ *dermatomal distribution of skin scarring*
  - ❖ *eye defects (microphthalmia, chorioretinitis, cataracts)*
  - ❖ *hypoplasia of the limbs*
  - ❖ *neurological abnormalities (microcephaly, cortical atrophy, dysfunction of bowel and bladder sphincters).*
  - FVS does not occur at the time of initial fetal infection but results from a subsequent reactivations.

Risks during pregnancy

Can varicella infection of the fetus be diagnosed prenatally?

1) ultrasound examination.

Microcephaly , hydrocephalus, limb deformity soft-tissue calcification and FGR.

2) Amniocentesis: is not routinely advised because the risk of FVS is so low, even when amniotic fluid is positive for VZV DNA.

- **The risk of FVS is low, If amniotic fluid is positive for VZV and ultrasound is normal at 17–21 weeks.**
- **The risk of FVS is remote, If repeat ultrasound is normal at 23–24 weeks.**
- **It is not known whether VZIG reduces the risk of FVS.**

Risks during pregnancy

Neonatal risks of varicella infection in pregnancy

1. There is a significant risk of varicella of the newborn If infection occurs at term (1–4 weeks before delivery).

   - Route of infection: trans-placental, ascending vaginal or direct contact with lesions.

   - Severe chickenpox occur if the infant is born within 7 days before or 7 days after the onset of the mother's rash because of low trans-placentally acquired maternal antibodies.

2. Neonatal ophthalmic examination should be done after birth.

3. Neonatal blood should be sent for VZV IgM antibody after delivery and for VZV IgG after 7 months of age.

Treatment following onset of maternal rash at term

1. Neonate should receive VZIG, If birth occurs within 7 days before or 7 days after the onset of the maternal rash.
2. The infant should be monitored for signs of infection until 28 days after the onset of maternal rash .
3. Neonatal infection should be treated with aciclovir following discussion with a neonatologist and virologist.
4. VZIG is of no benefit once neonatal chickenpox developed.
5. 50% of the neonates exposed to maternal varicella will develop chickenpox despite the administration of VZIG but mortality rates is lower than 30%.
6. Maternal shingles around the time of delivery is not a risk to the neonate because it is protected by transplacentally acquired maternal antibodies.

The risk to the neonate if a sibling has chickenpox

- if the mother is immune and the contact occur within the first 7 days of life, no intervention is required.
- if the mother is not immune or if the neonate delivered before 28 weeks or weighs less than 1 kg, the neonate should be given VZIG.

Precautions for healthcare workers

1. The immune status of healthcare workers in maternity and neonatal units should be determined.
2. Non-immune healthcare workers should be offered varicella vaccination.
3. If non-immune healthcare workers have significant exposure they should minimize patient contact from 8–21 days.

Thank you