Perinatal infections

Infections causing congenital abnormalities

- Rubella
- *Infective organism*
- Rubella virus is a togavirus spread by droplet transmission.
- *Screening*
- All women should be offered rubella susceptibility screening early in their pregnancy to identify women at risk of contacting rubella infection and to enable vaccination in the post-natal period for the protection of future pregnancies.For pregnant women who are screened and rubella antibody is not detected, rubella vaccination after pregnancy should be advised. Vaccination during pregnancy is contraindicated because of a theoretical risk that the vaccine itself could be teratogenic, as it is a live vaccine, women who are vaccinated postpartum should be advised to use contraception for one month.

Infections causing congenital abnormalities

- *Clinical features*
- Rubella infection is characterized by a febrile rash but may be asymptomatic in the mother in 20–50 per cent of cases. Features of congenital rubella syndrome can include **sensorineural deafness, congenital cataracts, blindness, encephalitis and endocrine problems**. The risk of congenital rubella infection reduces with gestation. Congenital infection in the first 12 weeks of pregnancy among mothers with symptoms is over 80 per cent and reduces to 25 per cent at the end of the second trimester.

Infections causing congenital abnormalities

- One hundred per cent of infants infected during the first 11 weeks of pregnancy have rubella defects, whereas primary rubella contracted between 16 and 20 weeks of gestation carries only a minimal risk of deafness. Rubella infection prior to the estimated date of conception or after 20 weeks gestation carries no documented risk to the fetus.

Infections causing congenital abnormalities

- Syphilis
- Syphilis is a sexually acquired infection caused by*Treponema pallidum*.
- *Clinical features*
- Primary syphilis may present as a painless genital ulcer 3–6 weeks after the infection is acquired (condylomata lata) ,however, this may be on the cervix and go unnoticed. Secondary manifestations occur 6 weeks to six months after infection and present as a maculopapular rash or lesions affecting the mucous membranes. Ultimately, 20 per cent of untreated patients will develop symptomatic cardiovascular tertiary syphilis and 5–10 per cent will develop symptomatic neurosyphilis. In pregnant women with early untreated (primary or secondary) syphilis, 70–100 per cent of infants will be infected and approximately 25 per cent will be stillborn. Mother-to-child transmission of syphilis in pregnancy is associated with fetal growth restriction (FGR), fetal hydrops, congenital syphilis (which may cause long-term disability), stillbirth, preterm birth and neonatal death.

- *Screening*
- Because treatment is so effective, routine antenatal screening for all pregnant women is recommended. . These can be detected by serological tests.
- Non-treponemal tests detect non-specific treponemal antibodies and include the Venereal Diseases Research Laboratory (VDRL) and rapid plasma reagin (RPR) tests. Treponemal tests detect specific treponemal antibodies and include enzyme immunoassays (EIA), *T. pallidum* haemagglutination assay (TPHA) and the fluorescent treponemal antibody-absorbed test (FTA-abs) Non-treponemal tests, on the other hand, may result in false negatives, particularly in very early or late syphilis, in patients with reinfection or those who are HIV positive. The VDRL may be falsely positive in women with lupus. Therefore, positive results should be interpreted with caution and the pregnant woman should be referred for expert assessment and diagnosis in a genitourinary medicine clinic.

Infections causing congenital abnormalities

- *Management*
- The initial step is to confirm the diagnosis and to test for any other sexually transmitted diseases. Once a diagnosis of syphilis is confirmed the genitourinary medicine clinic will institute appropriate contact tracing of sexual partners. Older children may also need to be screened for congenital infection. Parenteral penicillin has a 98 per cent success rate for preventing congenital syphilis If a woman is not treated during pregnancy her baby should be treated after delivery. An infected baby may be born without signs or symptoms of disease but if not treated immediately, may develop serious problems within a few weeks. Untreated babies often develop developmental delay, have seizures or die
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Infections causing congenital abnormalities

- Toxoplasmos
- *Toxoplasma gondii* is a protozoan parasite found in cat faeces, soil or uncooked meat
- The initial infection may be relatively asymptomatic, or may be a glandular fever-like illness. Parasitaemia usually occurs within 3 weeks of infection. Therefore, congenital infection is only a significant risk if the mother acquires the infection during or immediately before pregnancy. Infection during the first trimester of pregnancy is most likely to cause severe fetal damage (85 per cent), but only 10 per cent of infections are transmitted to the fetus at this gestation. In the third trimester 85 percent of infections are transmitted, but the risk of fetal damage decreases to around 10 per cent. Severely infected infants may have ventriculomegaly or microcephaly, chorioretinitis and cerebral calcification.

Infections causing congenital abnormalities

- *Management*
- The diagnosis of primary infection with toxoplasmosis during pregnancy is made by the Enzyme-linked immunosorbant assays for IgM antibody. However, **IgM may persist for months or even years, so often serial testing for rising titres is necessary.** If suspicion of congenital toxoplasmosis has arisen because of an abnormal ultrasound scan of the fetus, an amniocentesis can be performed. Polymerase chain reaction (PCR) analysis of amniotic fluid is highly accurate for the identification of *T. gondii*. .Spiramycin treatment can be used in pregnancy (a 3-week course of 2–3 g per day).
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Infections causing congenital abnormalities

- Chickenpox
- *Infective organism*
- Chickenpox is caused by the varicella zoster virus (VZV), a herpes virus which is transmitted by droplet spread.

- *Clinical features*
- Non-immune pregnant women are more vulnerable to chickenpox and may develop a serious pneumonia, hepatitis or encephalitis. . It may also cause the fetal varicella syndrome (FVS) or varicella infection of the newborn.

Infections causing congenital abnormalities

- *Management*
- Women should be asked whether they have had chickenpox at the initial booking visit. If they have not had chickenpox, they should be advised to avoid contact with it during pregnancy, and if they accidentally come into contact with it should advise their doctor or midwife about the exposure as soon as possible. When contact occurs with chickenpox, a careful history must be taken to confirm the **significance of the contact** (length of exposure and closeness of contact) and the **susceptibility of the patient**. Significant contact is defined as being in the same room as someone for 15 minutes or more, or face-to-face contact.

Infections causing congenital abnormalities

- *Testing for immunity*
- If a women reports that she has been in contact with chickenpox, she should have a blood test for confi rmation of VZV immunity, by testing for VZV IgG. This can usually be performed within 24–48 hours and the virology laboratory may be able to use serum stored from booking antenatal bloods
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- *Management of the non-immune woman exposed*
- *to chickenpox*
- If the pregnant woman is not immune to VZV and she has had a significant exposure, she should be given varicella zoster immunoglobulin (VZIG) as soon as possible
- *Management of chickenpox in pregnancy*
- Women with chickenpox should avoid contact with susceptible individuals; that is, other pregnant women and neonates, until the lesions have crusted over. This is usually about 5 days after the onset of the rash. Symptomatic treatment and hygiene is advised to prevent secondary bacterial infection of the lesions. oral aciclovir 800 mg five times per day for 7 days be prescribed for pregnant women with chickenpox if they present within 24 hours of the onset of the rash and if they are more than 20 weeks gestation. Aciclovir should be used cautiously before 20 weeks gestation

- *The fetus*
- Spontaneous miscarriage does not appear to be increased if chickenpox occurs in the first trimester. FVS is characterized by one or more of the following:
- • skin scarring in a dermatomal distribution;
- • eye defects (microphthalmia, chorioretinitis, cataracts);
- • hypoplasia of the limbs;
- • neurological abnormalities
- This only occurs in a minority of infected fetuses (approximately 1 per cent). FVS has been reported to complicate maternal chickenpox that occurs as
- early as 3 weeks and up to 28 weeks of gestation.

- *Maternal infection around the time of delivery*
- If maternal infection occurs at term, there is a significant risk of varicella of the newborn. Elective delivery should normally be avoided until 5–7 days after the onset of maternal rash to allow for the passive transfer of antibodies from mother to child. Neonatal ophthalmic examination should be organized after birth. If birth occurs within the 7-day period following the onset of the maternal rash, or if the mother develops the chickenpox rash within the 7-day period after birth, the neonate should be given VZIG
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Infections acquired around the time of delivery with serious neonatal consequences

Infections acquired around the time of delivery with serious neonatal consequences

- **Herpes**
- Genital herpes presents as ulcerative lesions on the vulva, vagina or cervix. The woman may give a history of this being a recurrent problem, in which case the lesion is often less florid. A primary infection may be associated with systemic symptoms and may cause urinary retention. Neonatal herpes may be caused by HSV-1 or HSV-2, as either viral type can cause genital herpes.

- Almost all cases of neonatal herpes occur as a result of direct contact with infected maternal secretions, Factors influencing transmission include the type of maternal infection (primary or recurrent), the presence of transplacental maternal neutralizing antibodies, the duration of rupture of membranes before delivery, the use of fetal scalp electrodes and the mode of delivery. The risks are greatest when a woman acquires a new infection (primary genital herpes) in the third trimester, particularly within 6 weeks of delivery, as viral shedding may persist and the baby is likely to be born before the development of protective maternal antibodies.

Infections acquired around the time of delivery with serious neonatal consequences

- *Management*
- Any woman with suspected first episode genital herpes should be referred to a genitourinary physician, who will confirm the diagnosis by viral culture or PCR, advise on management and arrange a screen for other sexually transmitted infections. The use of aciclovir is associated with a reduction in the duration and severity of symptoms and a decrease in the duration of viral shedding.

- *Primary infections*
- Caesarean section should be recommended to all women presenting with primary episode genital herpes lesions at the time of delivery, or within 6 weeks of the expected date of delivery. For women who develop primary genital herpes lesions within 6 weeks of delivery and who opt for a vaginal birth, rupture of membranes should be avoided and invasive procedures such as fetal scalp electrodes, or fetal scalp pH measurement should not be used. Intravenous aciclovir given intrapartum to the mother and subsequently to the neonate may be considered. The neonatologist should be informed and may advise acyclovir treatment of the baby.
- *Recurrent episodes*
- A recurrent episode of genital herpes occurring during the antenatal period is not an indication for delivery by Caesarean section.
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Infections acquired around the time of delivery with serious neonatal consequences

- **Group B streptococcus**
- *Infective organism*
- Group B streptococcus (GBS) (*Streptococcus agalactiae*) is a Gram-positive coccus frequently found as a vaginal commensal. It can cause sepsis in the neonate and transmission can occur from the time the membranes are ruptured until delivery.
- *Clinical features*
- The mother will not have symptoms as GBS is a common vaginal commensal.
- An infected neonate may demonstrate signs of neonatal sepsis including sudden collapse, tachypnoea ,nasal flaring, poor tone, jaundice, etc.

- *Intrapartum antibiotic prophylaxis*
- It is during labour that infection of the fetus/neonate occurs. Antibiotics given in labour are estimated to be 60–80 per cent effective in reducing early-onset neonatal GBS infection.
- *Risk factor-based prophylaxis*
- • intrapartum fever
- • prolonged rupture of membranes (PROM) greater than 18 hours
- • prematurity less than 37 weeks
- • previous infant with GBS.
- • Incidental detection of GBS in current pregnancy
- • GBS bacteruria.

- It is recommended that intravenous penicillin 3 g be given as soon as possible after the onset of labour and 1.5 g 4-hourly until delivery. Clindamycin 900 mg should be given intravenously 8-hourly to those allergic to penicillin. Women undergoing planned Caesarean delivery in the absence of labour or membrane rupture do not require antibiotic prophylaxis for GBS.

- **Perinatal infections causing long-term disease**

Perinatal infections causing long-term disease

- **HIV**
- *Infective organism*
- The HIV virus is an RNA retrovirus transmitted through sexual contact, blood and blood products, shared needles for i.v. drug users, vertical (motherto-
- child) transmission which mainly occurs in the late third trimester, during labour or delivery or breastfeeding.

- *Screening*

Perinatal infections causing long-term disease

- *Clinical features*
- Infection with HIV begins with an asymptomatic stage with gradual compromise of immune function eventually leading to acquired immunodefi ciency syndrome (AIDS). The time between HIV infection and development of AIDS ranges from a few months to as long as 17 years in untreated patients.

Perinatal infections causing long-term disease

- *Management*
- The principal risks of mother-to-child (vertical) transmission are related to maternal plasma viral load, obstetric factors and infant feeding
- Interventions to reduce the risk of HIV transmission can reduce the risk of vertical transmission from 25 to 30 per cent to less than 2 per cent:
- • anti-retroviral therapy, given antenatally and intrapartum to the mother and to the neonate for the first 4–6 weeks of life
- • delivery by elective Caesarean section
- • avoidance of breastfeeding.

Perinatal infections causing long-term disease

- An elective vaginal delivery is an option for women taking triple drug antiretroviral therapy who have a viral load below 50 copies/mL at the time of delivery. Women who opt for a planned vaginal delivery should have their membranes left intact for as long as possible. Use of fetal scalp electrodes and fetal blood sampling should be avoided. A Caesarean delivery is recommended if viral load is above 50 copies/ mL at the time of delivery.

Perinatal infections causing long-term disease

- *Management of infants*
- The cord should be clamped as early as possible after delivery and the baby should be bathed immediately after the birth. all women who are HIV positive should be advised not to breastfeed their babies as this increases the risk of mother-to-child transmission. All infants born to women who are HIV positive should be treated with antiretroviral therapy from birth. direct viral amplify- cation by PCR is used for the diagnosis of infant infections. Typically, tests are carried out at birth, then at 3 weeks, 6 weeks and six months.

Thank you