

Maternal infections

TORCH is an acronym which stands for Toxoplasmosis, Rubella virus, Cytomegalovirus infection and Herpes Simplex virus infection. Other (Parvovirus B19, Varicella-Zoster virus infection, Syphilis, Hepatitis B)

These groups of infections are the main threats of serious congenital infection during pregnancy, which may ultimately cause fetal damage or other anomalies.

Although, the fetus gets immunity from mother, they are seriously infected by these viruses due to lack of immunity after the first trimester of pregnancy.

All the infections have their own causative agent and generally they spread through poor hygienic conditions, contaminated blood, water and soil and airborne respiratory droplet.

Primary infection can damage more than the secondary or reactivated infection. Basically, each causative agent has distinct manifestation but some are common.

Toxoplasmosis:

Infection with *T gondii* before pregnancy confers little or no risk to the fetus except in women who become infected up to 3 months before conception.

In the neonate, manifestations of congenital toxoplasmosis might include hydrocephalus, microcephaly, intracranial calcifications, retinochoroiditis, strabismus, blindness, epilepsy, psychomotor and mental retardation, petechiae due to thrombocytopenia, and anemia.

Diagnosis:

Anti-toxoplasma Antibodies as Indicator of Infection History

<u>Anti-toxoplasma IgM</u>	<u>Anti-toxoplasma IgG</u>	<u>Toxoplasma Infection Status</u>
• Absent	Absent	no current or previous infection
• Present	Absent	very early infection
• Present	Present	current infection or infection in the previous 6-12m
• Absent	Present	previous infection, probably more than 6-12 m ago

Treatment: After early detection, the mother can be treated with spiramycin (1500 mg every 12 hours) to prevent fetal infection.

If the fetus is found to be infected, the treatment is changed to combination of pyrimethamine, sulfadiazine and folic acid.

Rubella:

Rubella virus enters into mother's body, spreads through blood, placenta, and infects the fetus.

If the fetus gets rubella during the first 12 weeks of pregnancy, the baby will likely be born with many problems. The most common are eye problems, hearing problems and heart damage.

If the fetus gets rubella between 12 and 20 weeks of pregnancy, problems are usually milder.

If the fetus gets rubella after 20 weeks of pregnancy, there are usually no problems.

Manifestation (symptoms) in infants born with rubella infection:

microcephaly, micrognathy, cleft lip/palate, encephalocele, anencephaly, hepatic calcifications; heart problems: branch pulmonary artery stenosis, patent ductus arteriosus, ventricular septal defects, coarctation of the aorta; eye problems: ocular cataracts, microphthalmia, glaucoma, pigmentary retinopathy, microphthalmos;

hearing defects; purpuric skin lesions (blueberry muffin skin), and anaemia.

Diagnosis:

In general, IgM production is the acute reaction, followed by IgG in 1-3 weeks.

Diagnosis of acute maternal infection is made by seroconversion (IgG -ve mother becoming IgG +ve), a four fold increase in IgG serial titer over 2-3 weeks, or the demonstration of pathogen specific IgM.

Prevention:

Vaccination is the best way of the prevention of infection in the women 28 days before conception.

Cytomegalovirus infection

Congenital infections are the result of transplacental transmission of CMV during pregnancy. Transmission to the fetus may occur because of primary or secondary maternal infection. The probability of intrauterine transmission following primary infection during pregnancy is 30% to 40%, compared with only 1% following secondary infection.

10-15% of congenitally infected infants will have symptoms at birth including intrauterine growth restriction, microcephaly, hepatosplenomegaly, petechiae, jaundice, chorioretinitis, thrombocytopenia, and anemia.

Most of the congenitally infected infants (85–90%) have no signs or symptoms at birth, but 5% to 15% of them will develop sequelae such as sensorineural hearing loss, delay of psychomotor development, and visual impairment

Congenital CMV infection is the leading infectious cause of mental retardation and sensorineural deafness.

Diagnosis: When the immune status before pregnancy is unknown, determination of primary CMV infection should be based on detection of specific IgM antibody.

Women who have detectable specific IgG antibodies without IgM antibodies before pregnancy and a significant rise of IgG antibody titre with or without the presence of specific IgM antibodies can **be classified as having recurrent infection.**

Herpes Simplex virus infection:

The virus is found in two forms HSV 1 and 2. HSV1 causes gingivostomatitis, pharyngitis, and not very often in genital infection but HSV2 mainly involve in the genital herpes

Neonates acquire infection through an infected vaginal canal during birth.

Infants show complications like-

(a) Skin lesions: vesicles, vesiculobullous, ulcer, pustular, erythematous, and scarring.

(b) CNS lesions: calcification, encephalomalacia, ventriculomegaly, microcephaly, hemorrhage, seizures, meningoencephalitis, and hypertonia/spasticity

(c) Eye lesions: keratoconjunctivitis, chorioretinitis, cataracts, retinal detachment.