

Pregnancy with Torch Complex

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Abstract: A TORCH Complex or TORCH infection, also known as TORCH syndrome, is a group of infectious diseases that can affect the developing fetus or newborn. It spreads rapidly through maternal blood to the fetus. At this level, the immune system of fetus is not strong enough to fight the infection so he/she develops the infection as well. Moreover, if the infection or disease remains in the fetus blood might cause not develop vital organs properly. There are the risks of numerous health problems as well. For instance, jaundice or hearing problems. TORCH diseases in pregnancy increase the risk of stillbirth and miscarriage.

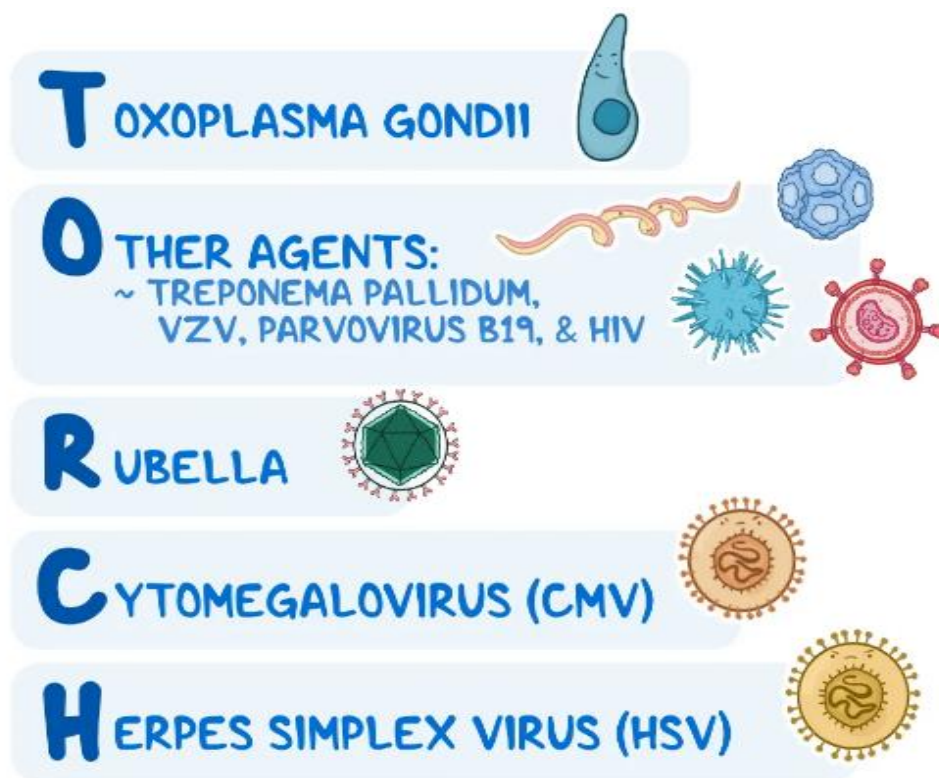
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1. Introduction

The term TORCH complex or TORCHes infection refers to the congenital infections of toxoplasmosis, others (Syphilis, Hepatitis B), rubella, Cytomegalovirus (CMV), and herpes simplex. These are caused by *Toxoplasma gondii*, *Treponema pallidum*, Hepatitis B virus, Rubella virus, cytomegalovirus, and herpes virus simplex (HSV) viruses respectively. Other pathogens associated with congenital infections include human immunodeficiency virus (HIV), parvovirus, and varicella virus.

It is the intrauterine transmission of these infections to the fetus which produces multiple symptoms when the child is born. Maternal risk factors include lapsed immunizations, sexually transmitted infections, and animal exposures during pregnancy. The timing of maternal infection is a key epidemiologic factor because fetal damage usually depends on the gestational age. With the exception of HSV, infections during the first trimester have the worst outcome.

The name "TORCH" is an acronym representing the various infectious agents involved:



Mode of Transmission:

Toxoplasma gondii: This protozoan parasite is primarily transmitted through consuming undercooked meats or exposure to cat feces. In pregnant mothers, it may cause fever and fatigue. If passed to the fetus or infant, it can lead to complications such as inflammation of the choroid and

retina in the eye (chorioretinitis), fluid buildup in the brain (hydrocephalus), rash, and intracranial calcifications.

Other agents (such as *Treponema pallidum*, varicella-zoster virus, parvovirus B19, and human immunodeficiency virus (HIV)): These can also contribute to TORCH infections.

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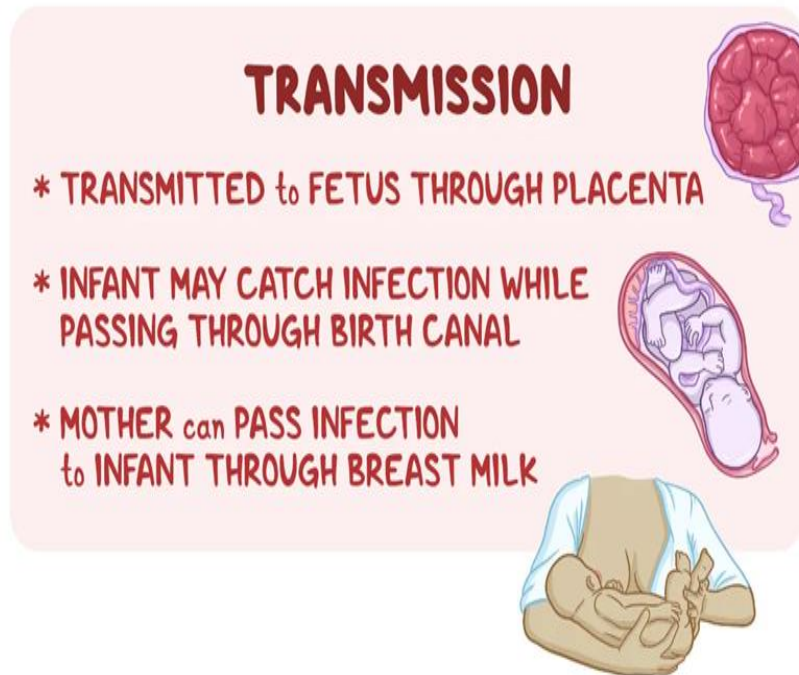
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Rubella: A mother may become infected if exposed to the rubella virus through direct contact with infected saliva, mucus, or air droplets. While maternal rubella may present with mild symptoms (swollen lymph nodes, polyarthrititis, or rashes), congenital rubella syndrome in a developing fetus can cause deafness, clouding of the eyes (cataracts), rash, and heart defects.

Cytomegalovirus (CMV): CMV can be transmitted through direct contact with infected bodily fluids. Although

symptoms are generally mild for adults, congenital CMV infection in a fetus can lead to rashes, deafness, inflammation of the eye (chorioretinitis), seizures, microcephaly (an unusually small head), and intracranial calcifications.

Herpes simplex virus (HSV): HSV can cause serious complications in newborns, including central nervous system involvement, skin lesions, and disseminated disease.



Signs and Symptoms of a Torch Infection:

Signs and symptoms of TORCH infections vary depending on the specific underlying Infection,

- **Early signs** in the fetus or newborn may include fever, development of a small head (i. e., microcephaly), low birth weight, lethargy or sleepiness, cataracts, hearing loss, and congenital heart disease.
- Additionally, some newborns may present with hepatosplenomegaly, or the enlargement of the liver and spleen.

- Infected newborns can also appear to have reddish - brown spots on their skin (i. e., petechiae or purpura), a yellowish pigmentation of the skin and eyes (i. e., jaundice), or the "blueberry muffin" rash, which appears as bluish or purplish marks on the baby's body.
- **Late signs**, usually occurring after the age of two, may include vision impairment or loss, intellectual disability, deafness, and seizures.

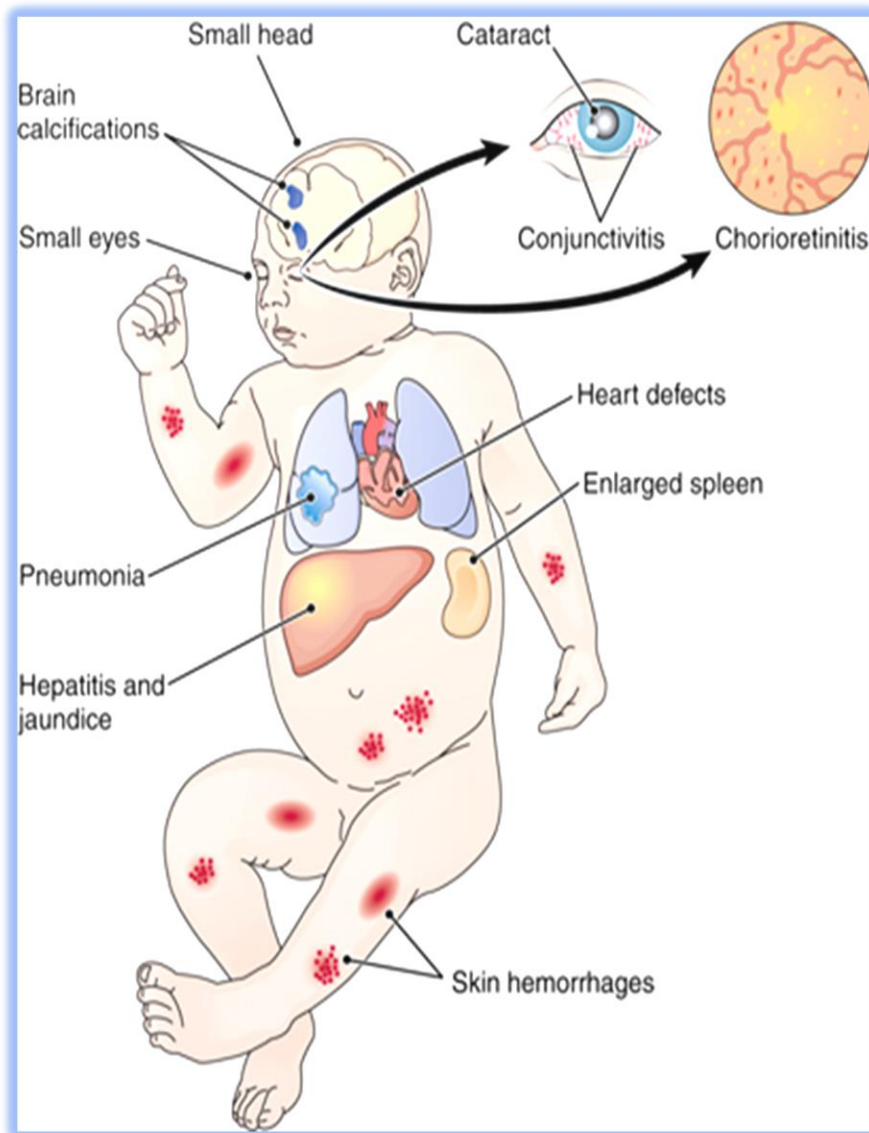


Figure 1: Fetus or newborn with torch infection

Diagnosing Torch Infection in the Pregnant Woman:

Blood tests, PCR (polymerase chain reaction) tests, and viral cultures are used to diagnose TORCH infections. Viral culture involves taking a sample of fluid, cells, or tissue from the body and testing it for infectious diseases.

Diagnosing Torch Infections in the Fetus:

Fetal infection can be suspected if maternal infection has been diagnosed during the pregnancy or fetal ultrasound suggests infection. Definitive diagnosis of fetal infection is only possible by amniotic PCR. The amniotic fluid PCR will become positive only after 4 weeks from the maternal infection. Thus, the amniocentesis needs to be timed accordingly. Evidence of fetal infection does not necessarily mean fetal affection. The fetus may not have structural anomalies in spite of getting infected.

2. Complications

Complications are intrauterine and postnatal. In utero complications include intrauterine growth retardation, hydrops fetalis, and intrauterine death. Postnatal complications include failure to thrive, ophthalmologic

disease, developmental delay, paralysis, seizure disorders, hearing loss, congenital heart diseases, and death. Congenital infections are the number one cause of sensorineural hearing loss in children.

3. Treatment

Treatment is highly dependent on the specific agent responsible for the infection. Infants with toxoplasmosis can be treated with pyrimethamine, an antiparasitic medication, and sulfadiazine, which is an antibiotic. If it is suspected that a mother has toxoplasmosis in the early stages of the pregnancy, spiramycin, an antibiotic and antiparasitic, may be prescribed to prevent transmission to the fetus.

In all suspected cases of HSV, infection may be treated aggressively with acyclovir, an antiviral agent. Acyclovir can also treat VZV. For congenital CMV infection, treatment usually includes antiviral medications, like ganciclovir, which can reduce the risk of hearing loss and facilitate head growth. While there is no specific antiviral therapy for rubella, supportive treatment may involve screening for hearing and vision issues, as well as surgery to correct any

heart defects. Because *Treponema pallidum* is a bacterium, penicillin, an antibiotic, can treat syphilis. Foetuses with parvovirus B19 may need intrauterine blood transfusion.

Treatment for Zika virus focuses on managing symptoms by getting plenty of rest, hydrating adequately, and using medications, like acetaminophen, to reduce pain and fever. Notably, nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen and naproxen, should be avoided for individuals with Zika virus.

Important Facts to know about Torch Infection:

- TORCH infections are a group of congenital infections that are passed from mother to child at some time during pregnancy, during delivery, or after birth.
- TORCH is an acronym representing infections caused by *Toxoplasma gondii*, other agents, rubella, cytomegalovirus (CMV), and herpes simplex virus (HSV).
- “Other agents” includes *Treponema pallidum*, varicella zoster virus (VZV), parvovirus B19, and Zika virus.
- TORCH infections may cause miscarriage, stillbirth, or intrauterine growth restriction
- In addition, they can cause non-specific signs and symptoms in the fetus or infant, such as microcephaly, lethargy, cataracts, hearing loss, and congenital heart diseases.
- Other signs include hepatosplenomegaly, petechiae or purpura, jaundice, vision loss, intellectual disability, deafness, and seizures.
- Each infection agent, however, usually presents with additional, specific signs and symptoms.
- Prenatal diagnosis is primarily based on the history of the mother’s infections during pregnancy and any fetal abnormalities apparent in a prenatal ultrasound, like ventriculomegaly, intracranial calcifications, or fetal growth restriction.
- Diagnosis can be confirmed, either prenatally or postnatally, via PCR testing, viral cultures, or antibody testing.
- Treatment is highly dependent on the specific agent responsible for the infection and may include antibiotics or antiviral agents, as well as supportive measures, such as adequate rest and hydration.

Prevention of Infection in Pregnancy:

It is very important to educate women of childbearing age about the importance of vaccination against measles, rubella, and VZV.

Pregnant women should take care to avoid contact with persons with viral infections and to wash hands frequently when handling food, animals, and children. If exposure to TORCH infections does occur, the patient should seek immediate medical assistance. Pregnant women should also be warned about the risks of travel to regions where these infections are endemic.

Enhancing Healthcare Team Outcomes:

- Interprofessional relation between obstetricians and neonatologists and nurses is critical in maternal and fetal management. Early recognition of the disease and

appropriate management may reduce maternal and fetal morbidity and mortality.

- Prevention guidelines should be given to mothers by their obstetrician. Radiologists can identify defects in the pregnancy and report to the parents so that they can make informed choices. Neonatologists can easily identify the defects in the child and counsel parents.
- Intradisciplinary communication is paramount as a large number of consultations may be necessary and coordinated communication within the healthcare team, and with parents will be necessary.

4. Conclusion

The prevalence of TORCH infections was very high in this geographic region, and these infections probably associated with high neonatal mortality rate. Since pregnant women in tribal/rural regions are more vulnerable to these infections, health authorities should think and implement strategies to provide vigorous pre-pregnancy Information, Education and Communication regarding do or don’t during pregnancy period through local health-care workers in local language, regular health check-up, nutritional supplements, implementation of universal immunisation schemes and monitoring, strengthening diagnostic facilities for antenatal screening of pregnant women to prevent adverse fetal outcomes.