

## Toxoplasmosis, a common Neglected Disease of Disparity

Helieh saatara oz

Email: [hoz22email.uky.edu](mailto:hoz22email.uky.edu)

Toxoplasma causes a complex immune-inflammatory reaction in vital organs with the surge of chemokines and cytokines. Subsequent acute phase, the organisms lodge in cyst forms predominantly in muscles and adipose tissues and central nervous system for the life awaiting reactivation due to immunosuppression

An estimated 1.5 billion people are predicted to be infected with Toxoplasma, an Apicomplexan organism. Toxoplasmosis is one of the most important foodborne illnesses, and inflammatory syndromes, as well as congenital disorders and hospitalization. Promiscuous Toxoplasma is transmitted by contaminated food and animal products, meat, milk and dairy (cysts form), water, fruits, vegetables (mainly oocysts), or sexually acquired through semen (tachyzoites). Toxoplasmosis is a neglected disease of poverty and prominent in rural areas according Center for Diseases Control.

toxoplasma infects nucleated cells with a unique tropism for central nervous system (e.g. neurons, glia) with a mind bugging, psycho-behavior altering and malicious effects. Toxoplasma can impair the limbic brain neurons responsible for instinct defensive behavior and judgment activity adjacent to limbic regions of sexual desire. In addition, organisms harvest essential nutrients including folate from neurons and prone victims to neuro-developmental, neuro-degenerative and cognitive disorders. Pregnant mom with newly acquired acute or reactivated toxoplasmosis transmits organism via placenta to her fetus.

Toxoplasma gondii is a protozoan parasite that infects up to a third of the world's population. Infection is mainly acquired by ingestion of food or water that is contaminated with oocysts shed by cats or by eating undercooked or raw meat containing tissue cysts. Primary infection is usually subclinical but in some patients cervical lymphadenopathy or ocular disease can be present.

The severity of congenital toxoplasmosis depends on the gestation period, as infection in early pregnancy causes more severe consequences. Congenital toxoplasmosis complications include miscarriage, encephalitis, neurological retardation, mental illnesses, auditory and visual inflammatory disorders, cardiovascular abnormalities, and pains. Current available therapies are inefficient or have severe side effects in congenital and chronic toxoplasmosis

There is an urgent need for safe and effective therapeutic modalities against toxoplasmosis as well as possible effective vaccines to eliminate the infectious agents in definitive host, cats. This presentation will discuss transmission, immunomodulation, and pathogenesis in maternal-fetal and pediatric toxoplasmosis, and the current available therapies in practice, and explore therapeutic modalities in experimental stages for promising future trials.

Congenital toxoplasmosis results from the transplacental transmission of the parasite Toxoplasma gondii after a maternal infection acquired in pregnancy. Prevalence of congenital infection ranges from 0.1 to 0.3 per 1000 live births. The maternal-fetal transmission rate increases with gestational age at maternal seroconversion, from less than 15% at 13 weeks of gestation to over 70% at 36 weeks. Conversely, the later the maternal infection, the lower the risk of symptomatic congenital infection at birth)

The most commonly used therapeutic regimen, and probably the most effective, is the combination of pyrimethamine with sulfadiazine and folinic acid. This Seminar provides an overview and update on management of patients with acute infection, pregnant women who acquire infection during gestation, fetuses or infants who are congenitally infected, those with ocular disease, and immunocompromised individuals