

3rd World Conference on

PARASITOLOGY & PATHOGENESIS

July 12-13, 2017 Chicago, USA



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Toxoplasmosis, a Common Neglected Disease of Disparity: Foodborne to Congenital complications and Novel Therapies

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* 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. *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. 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.

Biography

Dr Helieh S. Oz has DVM, and MS (U. IL); PhD (U. MN) and clinical translational research certificate (U. KY Med Center). Dr Oz is an active member of American Association of Gastroenterology (AGA) and AGA Fellow (AGAF). Dr Oz is a Microbiologist scientist with expertise in Infectious and inflammatory diseases, drug discoveries, pathogenesis, innate and mucosal Immunity, molecular biology, and micronutrient. Dr Oz has over 90 publications in the areas of chronic inflammatory disorders (e.g. pancreatitis, hepatitis, colitis), microbial and infectious diseases (e.g. Toxoplasmosis, Trypanosomiasis, Babesiosis, *Pneumocystis* pneumonia). Dr Oz has served as Lead editor for special issues including Gut Inflammatory, Infectious diseases and Nutrition 2017 (Mediators of Inflammation); Nutrients, Infectious and Inflammatory Diseases (Nutrients); Gastrointestinal Inflammation and Repair: Role of Microbiome, Infection, Nutrition 2016 (Gastroenterology Research Practice), and co-editor for Parasitic infections in pediatric clinical practice (J Pediatric Infectious Disease). Dr Oz is a member of different editorial board and an avid reviewer for several peer-reviewed journals

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