Shubhada Bopegamage et al., J Antivir Antiretrovir 2017, 9:3 (Suppl)
DOI: 10.4172/1948-5964-C1-036

Necessity of modifying the angle of viewing viral infections during pregnancy

Shubhada Bopegamage[1], Alexandra Souli[1], Katarina Slaba[2], Sona Sarmirova[1], Igor Rusnak[3], Brigita Benkoova[1], Robert Hudecek[2], Marian Kacerovsky[4] and **Pavel Bostik[5]**

[1]Slovak Medical University, Slovak Republic
[2]Brno University Hospital and Masaryk University Medical School, Czech Republic
[3]Slovak Medical University and Medical Clinic of University Hospital, Slovak Republic
[4]Charles University in Prague, Czech Republic
[5]University of Defense, Czech Republic

Infections, which occur during gravidity, may result in intrauterine transmission of the pathogen causing fetal damage, early pregnancy loss/early miscarriage, and spontaneous or preterm births. The uterine microbiome during pregnancy influences the course of the immune development of the child and the gut microbiome of the neonate. The outcome depends on fetal gestational age at the time of infection, maternal immunological and nutritional status, and other factors: smoking, drugs, stress and alcohol abuse during pregnancy and the infecting agent and its pathogenic potential. Viral infections during pregnancy are often asymptomatic without risk of fetal damage. However, some viruses may interfere with the embryonic development or cause a severe fetal damage and congenital malformations of different types affecting various fetal systems (urological, cardiac) resulting in neonatal diseases with severity ranging from mild to transient symptoms or fatal outcome. Accepted intrauterine vertically transmitted infections are *Toxoplasma gondii*, Rubella virus, Cytomegalovirus, Herpes simplex virus-2 infections, known by acronym TORCH, where 'O' was at first "TO" for toxoplasma. Recently 'O' represents 'other infections': *Enteroviruses*, Varicella zoster virus, Chlamydia, HIV, Human T-lymphotropic virus, *Treponema pallidum*, Zika virus, Hepatitis B, D, and E viruses, and Parvovirus B19. Another suggestion was acronym CHEAPTORCHES which included Chickenpox (Varicella Zoster), Hepatitis B, D viruses, *Enteroviruses*, AIDS (HIV), Parvovirus B19, where 'O' stands for Streptococcus, Listeria, Candida and Lyme disease *Neisseria gonorrhoe*, Chlamydia, *Ureaplasma*, Human papillomavirus and *Treponema pallidum*. We suggest that the original acronym TORCH should be modified in the present days. Additional viruses (where infections may be incidental) and placental role during viral infections and protection of the fetus against pathogens should be considered. The perpetual aspects of poverty, modern dietary/nutritional changes, and emerging and re-emerging viruses call for a reconsideration/modification of the antenatal management of viral infections, and research on the potential mechanisms of infection during pregnancy.

This work was supported by the Norwegian financial support mechanism, Mechanism EEA and Slovak Government - Project SK0082

Biography

Shubhada Bopegamage work is focused on the pathogenesis and diagnosis of *enteroviruses*. She received her BSc Microbiology degree from Pune, India and MSc Microbiology degree from Mumbai, India. She got her PhD in Biological Sciences from the Academy of Medical Sciences, Moscow, Russia. She is known in the Entero-virus research, since 2005 for her work on the *in vivo* experimental coxsackievirus oral infection of mice, and experimental coxsackievirus infection during gravidity. She is involved in research and teaching and has guided several MSc and PhD students. She has coordinated and has lead several national and international projects as a principal or co-investigator.

shubhada.bopegamage@szu.sk

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