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Genetic modifications within *TLR4* and *TLR9* genes contribute into congenital toxoplasmosis and cytomegaly development

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Toxoplasma gondii and Human cytomegalovirus (HCMV) are common cause of intrauterine infections. TLR/Myd88 signaling pathways are involved in non-specific immunity against both pathogens.

The study was aimed to determine a distribution of genotypes at TLR4 and TLR9 polymorphic sites in fetuses and newborns congenitally infected with *T. gondii*. Additionally, the genotypic profiles at TLR SNPs were compared between the offsprings with congenital toxoplasmosis and cytomegaly.

The study was performed for 18 fetuses and newborns with congenital toxoplasmosis and 41 control cases. Molecular data of the offsprings with the cytomegaly were previously obtained. Serological status of *T. gondii*-infected patients was assessed by ELFA assays. *T. gondii* DNAemia in amniotic fluids was estimated by real-time Q PCR assay for B1 gene of the parasite. SNPs within TLR genes were determined by self-designed multiplex nested PCR-RFLP assay and confirmed by sequencing.

Compared to control group, *T. gondii*-infected fetuses and newborns had slightly higher frequencies of A/G genotype at TLR4 896 A>G SNP and of G/A and AA genotypes at TLR9 1635 G>A SNP. The marginal association with *T. gondii* infection was observed for G allele at TLR9 SNP (OR 2.40; P=0.090). GC haplotype at TLR4 SNPs was significantly less frequent in congenital toxoplasmosis than in cytomegaly (P≤0.0001). Considering congenital toxoplasmosis and cytomegaly together, the GC haplotype at TLR4 SNPs and multiple GCG genotypes at TLR4 and TLR9 SNPs were significantly more frequent in the infected than control cases (P≤0.0001).

Genetic modifications within TLR4 and TLR9 genes might contribute to congenital toxoplasmosis and cytomegaly.

Biography

Wioletta Wujcicka has completed her PhD in medical sciences at the age of 28 years from Medical University of Lodz, in Poland. She was an assistant at the Polish Academy of Sciences in Lodz. She is an assistant professor at the Department of Fetal-Maternal Medicine and Gynecology at the Polish Mother's Memorial Hospital Research Institute in Lodz. She is a member of several scientific societies including the European Society of Clinical Microbiology and Infectious Diseases as well as the Polish Society of Human Genetics. Her scientific papers are related to genetic background of congenital infections with Toxoplasma gondii and HCMV.

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