P0481
Poster Session I
Other viral infections

CYTOKINE GENE POLYMORPHISMS AND RELATIONSHIP WITH CONGENITAL CYTOMEGALOVIRUS (CMV) INFECTION IN NEWBORNS AND MOTHER-TO-FOETUS CMV TRANSMISSION

B. Kasztelewicz[1], J. Czech-Kowalska[2], M. Kornacka[3], K. Dzierzanowska-Fangrat[1]

[1]Clinical Microbiology and Immunology, The Children's Memorial Health Institute, Warsaw, Poland ; [2]Department of Neonatology and Neonatal Intensive Care, The Children's Memorial Health Institute, Warsaw, Poland ; [3]Neonatology and Neonatal Intensive Care, Warsaw Medical University, Warsaw, Poland

Objectives: Cytomegalovirus (CMV) is the leading cause of congenital infection with symptoms at birth and development sequelae. Primary infected women have high risk for viral transmission to their foetus. Single Nucleotyde Polymorphisms (SNPs) within cytokine genes may influence the susceptibility and the clinical course of congenital CMV infection. The aim of this study was to assess the cytokine genes polymorphism that may be involved in pathogenesis of CMV infection in newborns and the risk of mother-to-foetus CMV transmission.

Methods: Five hundred forty eight children (mean age 22 days) with suspicion of congenital CMV infection and 295 mothers were included in this study. Congenital CMV infection was diagnosed in 104 children (in 86 newborns prospectively by CMV DNA detection within first 2-3 weeks of live, in 18 infants – retrospectively based on clinical ground). Forty and one out of 295 mothers were CMV – seronegative during and after pregnancy. Polymorphisms of: TNF-alfa -1031 T/C (rs1799964), TNF-alfa -308 G/A (rs1800629), TNFRI -201 C/A (rs4149570) IL-1beta -511 C/T (rs16944), IL-1beta +3954 C/T (rs1143634), IL-10 -1082 A/G (rs1800896), IL-10RA +5964 C/T (rs4252270), IL-12B (rs3212227), CCL2 -2518 A/G (rs1024611) CCL2 +1543 C/T (rs13900), CCR5del32 (rs333) and IL-1RN VNTR (rs2234663) were determined (by real-time PCR allelic discrimination assay, RFLP-PCR or PCR) in all children and mothers, and related to congenital CMV infection, CMV serological status in mothers and the risk of mother-to-child CMV transmission.

Results: The T/T genotype at SNP rs16944 in the IL-1beta gene and T/C genotype at SNP rs1799964 in the TNF-alfa gene were significantly associated with congenital CMV in newborns (OR = 2.70; 95% CI:1.51-4.84; p = 0.0013 and OR = 1.69; 95% CI:1.07-2.67; p = 0.028, respectively). Furthermore, significantly increased frequency of C/C and A/C genotype at SNP rs3212227 in the IL12B gene was observed in CMV-naive mothers compared to CMV seropositive pregnant women (63.4% vs 31.6%, OR = 3.76; 95% CI:1.88-7.49; p = 0.0001). No significant association with congenital CMV infection, seronegativity in mothers as well as no association between mother-child's cytokine genotype and risk for congenital CMV infection were found with other analysed SNPs.

Conclusion: SNPs in IL1B and TNFA gene in newborns may influence risk for congenital CMV infection. Genetic polymorphism in IL12p40 gene may contribute to CMV seronegativity in mothers and thus indirectly influence the risk for CMV primary infection during pregnancy and virus transmission to the foetus.