ABSTRACT

The aim of this thesis was to establish methods for selected *PAPP-A* (*Pregnancy-Associated Plasma Protein A*) gene polymorphisms analysis and to study genetic background of PAPP-A and biochemical background of PAPP-A and P*l*GF (*Placental Growth Factor*) in relation to risk pregnancy. Secondly, the aim was to establish method for two-dimensional (2D) electrophoresis of amniotic fluid.

Methods for analysis of ten *PAPP-A* gene polymorphisms were established. These polymorphisms, PAPP-A and P*l*GF levels were studied in together 165 women in third trimester pregnancies complicated with threatening preterm labor (n=98), preeclampsia (n=35), IUGR (*Intrauterine Growth Restriction*) (n=34) and ICP (*Intrahepatic Cholestasis of Pregnancy*) (n=15). 114 healthy pregnant women served as controls. The method for 2D electrophoresis of amniotic fluid was established.

Preeclamptic patients had significantly higher frequency of TT genotype of Cys327Cys (C/T) *PAPP-A* gene polymorphism compared to controls. Patients with ICP had increased serum levels of PAPP-A compared to controls, in patients with threatening preterm labor PAPP-A levels were rather decreased. P*l*GF levels did not differ from control group in patients with ICP and threatening preterm labor. Positive correlation was found between PAPP-A and P*l*GF in group of healthy pregnant controls. Negative relationship was found between P*l*GF and erythrocytes and hemoglobin and between P*l*GF and creatinine in patients with threatening preterm labor and IUGR, respectively.

Our results contribute to better understanding of the pathological mechanisms in risk pregnancies and can help to more effectively identify high-risk patients to provide early and appropriate care. However, further study with larger groups of patients with risk pregnancies is needed to confirm our results.

Key words: pregnancy-associated plasma protein A; PAPP-A; placental growth factor; P*l*GF; intrahepatic cholestasis of pregnancy; preeclampsia; single nucleotide polymorphism; gene; intrauterine growth restriction; preterm labor; sequencing; amniotic fluid.