

The Role of Adiponectin During Placental Development in Streptozotocin-Induced Rats

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Objectives: The placenta is a regulator organ for many metabolic activities between mother and fetus. Many physiological, immunological, and metabolic adaptations are necessary for healthy placental/fetal development and maternal health. Pregnancy is closely associated with normal placental development. Impaired placental development may cause clinical complications such as intrauterine growth retardation, preeclampsia, and diabetes. There are limited data about placental expression of adiponectin, which has anti-diabetic effects. In this study, the relationship between adiponectin and placental development was studied in normal and streptozotocin-induced diabetic rats.

Methods: For this purpose, protein and mRNA levels of adiponectin and its receptors (AdipoR1 and AdipoR2) were determined in control and diabetic (mediated by 50 mg/kg streptozotocin) rats' placentas at 14th, 16th, 18th, 20th days of pregnancy by western blot and reverse transcription polymerase chain reaction (RT-PCR) techniques. Serum levels of adiponectin were also assessed by ELISA method.

Results: Placenta and embryo weights were compared in the control and the diabetic groups. Placental weights of the diabetic group were significantly higher than the control group from gestational day 18. The weights of embryo were significantly decreased in the control group at gestational days 14, 18, and 20. According to the western blot and RT-PCR results, in general protein and mRNA levels of adiponectin, AdipoR1 and AdipoR2 were significantly decreased in the diabetic group compared to the control group. Maternal serum adiponectin levels were also evaluated, and a significant decrease was observed in the diabetic group compared to the control group.

Conclusion: According to our results, we are of the opinion that pregnancy and diabetes are associated with adiponectin and that adiponectin has an important role in placental development abnormalities in diabetic conditions.

Key words: Diabetes, adiponectin, AdipoR1, AdipoR2, placenta

Investigation of CYP21A2 Gene Variants in Patients Pre-diagnosed with Congenital Adrenal Hyperplasia

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Objectives: Investigation of CYP21A2 gene variants in patients pre-diagnosed with congenital adrenal hyperplasia (CAH) (premature pubarche, virilization).

Methods: Two milliliters of peripheral blood samples were collected from the patients. Genomic DNA isolation from nucleated cells of the peripheral blood was performed according to the manufacturer's protocol (EZ1 Advanced Instruments, Qiagen, Hilden, Germany). Exons and exon-intron boundaries of CYP21A2 gene were amplified according to the protocol of the kit (GML AG, Wollerau/Switzerland). Band patterns of amplicons were checked by agarose gel electrophoresis. Nucleotide sequences of the amplicons were defined by Sanger sequencing method (ABI 3130 Avant system, Applied Biosystems, Grand Island, NY 14072, USA). Analysis of the results was performed using SeqScape v2.7 programme (Transcript: CYP21A2-002 ENST00000418967).

Results: Four female patients were included in the study. Mean age of the patients was ± 9.75 . c.-4C>T [5'UTR, rs6470], c.308G>A [p.Arg103Lys, rs6474], c.806G>C [p.Ser269Thr, rs6472, HGMD: CM994664], c.1360C>T [p.Pro454Ser, rs6445], c.1473G>A [p.Pro491=, rs6446], c.1481G>A [p.Ser494Asn, rs6473], c.293-13C>A [IVS2AS, rs6467, HGMD: CS880069], c.*52C>T [3'UTR, rs1058152] variations were defined during the analysis of CYP21A2 sequences.

Conclusion: The results were assessed considering the International genetic databases "dbSNP" and "The Human Gene Mutation Database (HGMD)". rs6470, rs6474, rs6446, and rs1058152 variations of the patients were reported as "polymorphism" in the dbSNP and HGMD. rs6467 (HGMD: CS880069), rs6472 (HGMD: CM994664), and rs6473 variations have been associated with CAH (21-hydroxylase deficiency) and rs6445 variation has been associated with CAH (21-hydroxylase deficiency) non-classical type. We found the following variations of the CYP21A2 gene: rs6473 - in our first patient followed up for premature pubarche, rs6445 and 6473 - in our second patient followed up for virilization, rs6467 and rs6472 - in the third patient, and rs6473 and rs6472 - in the fourth patient. The CYP21A2 gene variations determined in the patients supported the clinical pre-diagnosis.

Key words: Congenital adrenal hyperplasia, CYP21A2 gene, premature pubarche, virilization, 21-hydroxylase deficiency