Analysis of polymorphisms in genes (ADD1 1378 G>T, AGT 704 T>C (Met235Thr), AGT 521 C>T (Thr174Met), AGTR1 1166 A>C, AGTR2 1675 G>A, CYP11B2 344 C>T, GNB3 825 C>T, NOS3 786 T>C, NOS3 894 G>T (Glu298Asp)) associated with hypertension in children of Ural

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Introduction. During the last few years the studies on the genetic basis of essential hypertension in adults have been numerous but there is little data of association of gene polymorphisms with hypertension in children to date.

Objective. To investigate the role of gene polymorphisms in predicting of essential hypertension in male and female children.

Methods. The study subjects consisted of 31 essential hypertensive children (21 boys, 10 girls), aged from 6-18 years old. We identified the following genetic variants of ADD1 1378 G>T, AGT 704 T>C (Met235Thr), AGT 521 C>T (Thr174Met), AGTR1 1166 A>C, AGTR2 1675 G>A, CYP11B2 344 C>T, GNB3 825 C>T, NOS3 786 T>C, NOS3 894 G>T (Glu298Asp) in children. Gene DNA was extracted from blood samples and amplified by polymerase chain reaction (PCR).

Results. The study showed association of ADD1 1378 G>T, AGT 704 T>C (Met235Thr), AGT 521 C>T (Thr174Met), AGTR1 1166 A>C, AGTR2 1675 G>A, CYP11B2 344 C>T, GNB3 825 C>T, NOS3 786 T>C, NOS3 894 G>T (Glu298Asp) genes with hypertension in all children. The combinations of three to seven gene polymorphisms were found more frequently. Our study has revealed that female children have the following gene polymorphisms: AGT 704 T>C and AGTR2 1675 G>A more frequently than male children (p<0.05). From the other side, the polymorphism CYP11B2 344 C>T was found in 76% of boys. The identification of nitric oxide gene polymorphisms (NOS3 786 T>C, NOS3 894 G>T) hasn’t depended on the sex of children.

Conclusion. The gene polymorphisms AGT 704 T>C and AGTR2 1675 G>A are associated with hypertension and may be a genetic markers of early onset of disease in female children, the gene polymorphism CYP11B2 344 C>T may be a predisposing factor of essential hypertension in boys. Further investigations are required.