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Genetic markers of early onset of arterial hypertension

*Samarina O. (1), Kovtun O. (2), Chuykov A. (2), Averyanov O. (1)
City Pediatric Clinical Hospital No.11 (1), Ural State Medical University (2), Yekaterinburg, Russia*

Introduction. Familial history of hypertension is known to increase the risk of hypertension in the offsprings. Numerous studies confirming genetic predisposition to arterial hypertension have been performed during the last years, however data on heritability of particular genes from parents to Objective. To investigate the heritability of gene polymorphisms associated with essential hypertension in children. We examined whether gene polymorphisms associated with hypertension identified in parents are associated with a high blood pressure in offsprings.

Methods. The study subjects consisted of 13 essential hypertensive children (aged 6 to 18 years old) and their hypertensive parents with onset of disease before 35 years old (n=13) and 18 normotensive children. 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 subjects. Gene DNA was extracted from blood samples and amplified by polymerase chain reaction (PCR).

Results. The study showed an association of TT genotype of the aldosterone synthase (CYP11B2) C-344T polymorphism with hypertension in children and early onset of disease in adults (p<0,05). T allele/TT genotype were identified in 11 adults and it were 100% inherited by their offsprings. AGT T704C gene polymorphism and AGTR 2 G1675A gene polymorphism were inherited by 80 % offsprings.

Conclusion. Family history of arterial hypertension is the main risk marker of high blood pressure in children. An early and a regular screening of the children of hypertensive parents is necessary to prevent any future cardiovascular diseases.