

Provisional restoration restores the integrity of dental arches and masticatory activity in a short time.

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POLYMORPHISM OF THE NFATC1 GENE FAMILY AS A MARKER OF ARTERIAL HYPERTENSION PROGRESSION IN ADOLESCENTS

Tanianskaia S., Yaroshenko N., Zviagolskaia I., Tanianskaia V.
Ukrainian Medical Stomatological Academy, Ukraine

Arterial hypertension (AH) and its complications at the present stage occupy a leading place in the structure of polymorphism of vascular diseases. The increase in the percentage of hypertension in adolescents has been of particular concern in recent years. As it is known, hypertension in polymorphism of vascular diseases can have a long time course and is not very symptomatic, forming further damage to the target organs of hypertension (heart, kidneys, cerebral vessels and the organ of vision). Therefore, there is a need for further study of the etiological factors of hypertension in children and adolescents. In recent years, genetic studies have been a priority in the study of the etiology of hypertension. It is known that candidate genes take part in the implementation of hypertension, control various metabolic and homeostatic processes in the body. Disorders in these processes are, in turn, important in the pathogenesis of increased systolic, diastolic and pulse blood pressure [1,2]. Single nucleotide polymorphisms (SNPs) of the NFATC gene family (Nuclear factor of activated T-cells) do not directly affect blood pressure in humans, but can participate in the development of an adverse course of hypertension [3]. Rs2229309 (G160A) can be noted

among the most significant SNPs of the NFATC4 gene, which affects the metabolism of calcineurin synthesis and is located on the short arm of the 14th chromosome. It can also affect the development of cardiac muscle hypertrophy [4]. The aim of the research is to determine the variability of the NFATC1 and NFATC4 genes for the development and progression of hypertension in adolescents.

Materials and Methods. 42 adolescents aged 13-16 years who are undergoing treatment in the cardiac department of the regional hospital, and have an increase in systolic blood pressure (SBP) in the range of 30-160 mm Hg and diastolic (DBP) in the range of 80-100 mm Hg were examined. In order to verify the diagnosis, all adolescents underwent 24-hour blood pressure monitoring (BPM) with the RITM apparatus. The results of 24-hour blood pressure monitoring were evaluated according to the recommendations of the European Society of Hypertension guidelines [5.]. The mean values of SBP and DBP, the time index of hypertension and the daily index of SBP and DBP were determined. To exclude symptomatic hypertension, all the examined also underwent general clinical and additional instrumental research methods (ECG, ultrasound of the heart, kidneys, adrenal glands, ultrasound of the thyroid gland, ophthalmoscopy of the fundus). The control group consisted of 20 adolescents without signs of hypertension. A molecular genetic study of total DNA samples was carried out from the venous blood of the examined adolescents using the standard method "DNA-EXPRESS-blood" (Litex Russia). The study of polymorphisms of the NFATC1 and NFATC4 genes was carried out by polymerase chain reaction in real time according to the manufacturer's instructions (Applied Biosystems, USA).

Results. The analysis of the data revealed that the expression rate of the NFATC1 gene in patients with hypertension was 3.06 ± 0.52 , and the NFATC4 gene was 18.32 ± 5.62 , that is, the expression of these genes significantly exceeded the reference values that were taken for a unit. The study of rs11665469 genotypes of the NFATC1 gene in patients with hypertension: CC – 58%, TT – 25%, CT – 21%. Any significant differences in the group of adolescents with hypertension and in the control group depending on the listed genotypes ($p \geq 0.05$) were not found out. The rs222909 genotypes of the NFATC4 gene in adolescents with AH were detected in the ratios: CC – 39%, GG – 21%, CG – 46%, and in adolescents in the control group: CC – 24%, GG – 20%, CG – 54%.

Conclusions. Thus, the polymorphism of the NFATC gene family affects the course of hypertension and may indicate the formation of significant health disorders, deterioration of well-being, which in the future can lead to impaired medical and social adaptation of adolescents. The data obtained confirm the influence of the rs11665469 NFATC1 genotypes on the well-being of patients with hypertension. The revealed patterns can be used in assessing the severity and progression of hypertension in adolescents and dictate the need for further study of this problem.

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Key words: arterial hypertension, gene polymorphism, adolescents.