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# АКТУАЛЬНІ ПИТАННЯ ТЕОРЕТИЧНОЇ ТА ПРАКТИЧНОЇ МЕДИЦИНИ

Topical Issues of Clinical and Theoretical  
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## FREQUENCIES OF VKORC1 G3730A GENETIC VARIANTS IN ISCHEMIC ATHEROTHROMBOTIC STROKE PATIENTS

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**Background.** Vitamin K epoxide reductase (VKOR) is an integral membrane protein that catalyzes the reduction of vitamin K 2,3-epoxide and vitamin K to vitamin K hydroquinone, a cofactor required for the G-glutamyl carboxylation reaction. VKOR is highly sensitive to inhibition by warfarin, the most commonly prescribed oral anticoagulant. A lifelong decreased activity of the VKOR enzyme, however, might impair MGP activity and by this increase the risk of vascular calcification. The VKORC1 gene is located on the short arm of chromosome 16 (chromosomal location: 16p11.2). Polymorphisms in the VKORC1 could affect blood coagulation and other vitamin K-dependent proteins, such as osteocalcin, bone Gla protein, matrix Gla protein.

**Purpose.** Study of frequencies of VKORC1 G3730A genetic variants in ischemic atherothrombotic stroke (IAS) patients.

**Materials and Methods.** The study was conducted using venous blood of 170 patients with IAS (57,6% men and 42,4% women), the average age of  $64,7 \pm 0,73$  years. The control group consisted of 124 healthy donors, and the absence of cardiovascular diseases was confirmed through history, electrocardiogram data and arterial pressure measurements. DNA was isolated from it using a set of "Isogene" (Russia). The polymorphism G3730A (rs7294) was analyzed by amplification of a 500-bp sequence with the use of the following primers: sense – 5'-GTCCCTAGAAGGCCCTAGATGT-3', antisense – 5'-GTGTGGCACATTTGGTCCATT-3'. The resultant polymerase chain reaction products were digested with *BseNI* (Thermo Scientific, USA), which yielded 2 DNA fragments of 260 and 240 bp for the G allele on 2,5% agarose gel and only 1 band (500 bp) for the A allele. The results were worked out statistically using the official average of SPSS Statistics 17.0. For this purpose, reliability of differences was determined using  $\chi^2$  - test. The value of  $P < 0.05$  was considered reliable.

**Results.** Genotyping of the patients with IAS and comparing the results obtained with those of restriction analysis in the control group allowed to set that frequency of definite variants of this gene is statistically insignificant in G3730A polymorphism. It has been found that the ratio of homozygotes by the major allele, heterozygotes and homozygotes by the minor alleles in G3730A polymorphism constituted in patients with IAS: 31,8%, 50,0%, 18,2%; and in the control group it was 36,3%, 50,8%, 12,9% ( $P = 0,423$ ,  $\chi^2 = 1,721$ ).

**Conclusions.** No association has been found between the G3730A polymorphism of VKORC1 gene and ischemic atherothrombotic stroke in the patients from the northeastern region of Ukraine.

## ASSOCIATION *TaqI* POLYMORPHISM OF VDR GENE IN SMOKERS AND NON-SMOKERS, AMONG PATIENTS WITH ISCHEMIC STROKE

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Study by WHO is shown that traditional approaches in the treatment of ischemic stroke are ineffective and lead to significant economic costs. The problem of low efficiency of health care activities is related to the absence of their etiological orientation due to insufficient understanding of the major mechanisms of formation of cerebrovascular disorders. It is projected that until 2030 morbidity stroke will increase by 25%, due to the aging of the world population and increasing prevalence in the population of brain stroke risk factors like hypertension, heart disease, diabetes, physical inactivity, obesity, smoking, and others.

The aim of our study was to analyze the association of *TaqI* polymorphism of *VDR* gene in smokers and non-smokers patients with atherothrombotic ischemic stroke.

Venous blood of 170 patients with atherothrombotic ischemic stroke (AIS) and 124 healthy individuals (control group) was used for genotyping. Pathogenetic variants of stroke was determined