

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ
ДЕПАРТАМЕНТ ОХОРОНИ ЗДОРОВ'Я ЧЕРНІВЕЦЬКОЇ ОБЛАСНОЇ ДЕРЖАВНОЇ
АДМІНІСТРАЦІЇ
ГРОМАДСЬКА ОРГАНІЗАЦІЯ «АСОЦІАЦІЯ ТЕРАПЕВТІВ БУКОВИНИ»**



Науково-практична конференція з міжнародною участю

**«АКТУАЛЬНІ ПРОБЛЕМИ КОМОРБІДНОСТІ У
КЛІНІЦІ ВНУТРІШНЬОЇ МЕДИЦИНИ»**

**присвячена 100-річчю від Дня народження
професора Самсон Олени Іларіонівни**

15-16 квітня 2021 року

м. Чернівці

УДК : 616.12-008.331.1-02:575.113.2:577.161.2

**PHENOTYPIC MANIFESTATIONS OF ESSENTIAL ARTERIAL
HYPERTENSION DEPENDING ON THE VITAMIN D RECEPTOR GENE
POLYMORPHISM VDR (rs2228570)**

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Actuality. Essential (primary) arterial hypertension (EAH) remains the most common non-infectious disease worldwide. The overall prevalence of hypertension in adults is about 30-45% with a standardized prevalence in the world of 24% and 20% in men and women, respectively. The EAH prevalence exceeds 60% after the age of sixty. The number of hypertensive patients continue to grow, predicting as much as 1.5 billion individuals in 2025.

Hypertension is a multifactorial disease with the interaction of many risk factors, environmental and strong genetic background. The most studied genetic factors are those involved into the Renin-angiotensin-aldosterone system activity

(RAAS), like angiotensinogen gene (AGT), angiotensin-converting enzyme (ACE), angiotensin II receptor gene (AGTRII), as well as modified factors such as obesity, increased body mass index (BMI), excessive salt intake, alcohol consumption, stress and low levels of high density lipids and total cholesterol increase. Genes determine approximately 20-60% of blood pressure (BP) variability and some peculiarities of hypertensive-mediated organs damage in different populations. Some pathogenic genes have already been studied, but there are a number of others whose effects need further study.

The aim of the study. To analyze the phenotypic manifestations of EAH depending on the vitamin D receptor gene polymorphism (VDR, rs2228570).

Materials and methods. 100 subjects with EAH and target-organ damaging (2nd stage), 1st-3rd degrees of BP elevation, moderate, high or very high cardiovascular risk were involved in the case-control study. Among them, 79% (79) females and 21% (21) males, mean age 59,86±6,22 8yo. Control group consisted of sixty practically healthy individuals with relevant age (49.13±6.28 yo) and sex distribution (62% females, 38% males). VDR (rs2228570) gene polymorphism was examined by Real-time polymerase chain reaction (RT-PCR).

Results. 44.4% of patients with elevated normal BP and 34% of patients with EAH 2-3 st. had diabetes mellitus (DM) type 2, while only 19% of patients with EAH 1 st. had DM. Obesity of 1-3 degrees was observed in 53% of patients with EAH: among EAH 1st. - 21%, among the EAH 2-3 st. - 25%. In the control group 16% of patients suffered from obesity. VDR genotypes distribution taking into account the presence of DM showed that DM was present in 35% of patients with AA-genotype, which is 1.6 times more often than among patients with GG-genotype (22%). Most smokers were among patients with GG-genotype (26%), which is twice as common as among patients with AA- and AG-genotype (13% and 14%, respectively). 74% of GG-genotype carriers with EAH had obesity 1-3 degrees while only 14% of GG- genotype carriers had obesity in control group. 80% of female patients with AA- genotype had increased waist-hip ratio (WHR) while all women in the control group

had normal values. 76% of AG-genotype carriers and 81% of GG-genotype carriers had 2.3 and 2.8 times increased WHR, respectively, compared with the control group.

Deviations of systolic and diastolic BP depending on the VDR gene polymorphic variants were not found.

Conclusions. AA-genotype is associated with a higher frequency of DM type2, with increased WHR in women; GG-genotype is associated with elevated BMI, especially in men.