МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ

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106-ї підсумкової науково-практичної конференції
з міжнародною участю
професорсько-викладацького колективу
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Матеріали підсумкової 106-ї науково-практичної конференції з міжнародною участю професорсько-викладацького колективу Буковинського державного медичного університету (м. Чернівці, 03, 05, 10 лютого 2025 р.) – Чернівці: Медуніверситет, 2025. – 450 с. іл.

У збірнику представлені матеріали 106-ї науково-практичної конференції з міжнародною участю професорсько-викладацького колективу Буковинського державного медичного університету (м. Чернівці, 03, 05, 10 лютого 2025 р.) зі стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

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ASSOCIATION OF CHOLECALCIFEROL AND PARATHORMONE WITH METABOLIC DISORDERS IN HYPERTENSIVE PATIENTS

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Introduction. Essential hypertension (EH) is a complex condition with multiple contributing factors. While lifestyle changes and medications can help manage it, some risk factors are beyond control.

The aim of the study was to evaluate changes in clinical parameters and to analyze the relationship of cholecalciferol, parathyroid hormone with anthropometric, metabolic parameters in patients with EAH.

Materials and methods. A case-control study included 100 participants with EH and stage 2 target organ damage, categorized into moderate, high, and very high cardiovascular risk groups. The control group comprised 60 healthy individuals matched by sex and age. Pearson's test was applied to examine relationships between categorical variables, ANOVA was used for analyzing variance when one variable was categorical and the other numerical, and the non-parametric Kruskal-Wallis test was employed for data with abnormal distribution.

Results. The progression and development of EH are marked by clinical, hemodynamic, and metabolic abnormalities that worsen nonlinearly with the severity of hypertension. Correlation analysis revealed a strong direct relationship between body weight and the waist/hip ratio (WC/HC) ($r=0.76$-0.88; $p<0.001$); systolic blood pressure (SBP) showed a moderate direct correlation with WC ($r=0.38$; $p<0.05$); Total cholesterol (TC) was strongly linked to low-density lipoprotein cholesterol (LDL-C) ($r=0.93$; $p<0.001$), high-density lipoprotein cholesterol (HDL-C), is inversely related with WC ($r=-0.40$; $p<0.05$) and triacylglycerol (TG) levels ($r=-0.41$; $p<0.001$), and cholecalciferol levels were marginally negatively associated with body mass index (BMI), WC/HC ($r=-0.41$-$/-0.38$; $p<0.05$). ANOVA analysis confirmed the plasma cholecalciferol was associated with body weight ($F=6.48$; $p=0.013$), height ($F=4.33$; $p=0.04$), WC ($\chi^2=15.93$; $p<0.001$), blood glucose ($\chi^2=10.66$; $p=0.001$) and HDL-C ($F=6.53$; $p=0.012$). A significant relationship between parathyroid hormone and the WC/HC ratio was also found ($\chi^2=6.86$; $p=0.032$).

Conclusions. In patients with hypertension, plasma cholecalciferol shows significant correlations with body weight, height, waist circumference, glucose levels, and HDL-C. Additionally, parathyroid hormone is significantly and directly related to the waist/hip ratio.

Sydorchuk L.P.

NOS3 (RS2070744) AND *GNB3* (RS5443) GENES' POLYMORPHISM INFLUENCE ON METABOLIC PATTERN IN HYPERTENSIVE PATIENTS

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Introduction. Currently, over 700 million people worldwide are living with untreated essential arterial hypertension (EAH). Therefore, early detection and correction of cardiovascular risk factors including metabolic parameters are important for effective prevention of EAH complications.

The aim of the study was to evaluate the risks of metabolic disorders depending on endothelial nitric oxide synthase (*NOS3*, rs2070744) and guanine nucleotide-binding protein beta-3 (*GNB3*, rs5443) genes' allelic state.

Materials and methods. One hundred patients with EAH and target-organ damaging (2^{nd} stage), moderate, high or very high cardiovascular risk were involved in the case-control study. Among them there were 79.0% (79) women and 21.0% (21) men. Their average age was 59.87±8.02; disease duration from 6 to 25 years. Control group included 48 practically healthy individuals of relevant age. All participant underwent clinical and laboratory examinations. Blood pressure (BP), Creatinine, glucose, lipids panel were studied. Metabolic changes were examined by blood glucose, total cholesterol (TC), triglycerides (TG), high and low density lipoprotein

cholesterol (HDL-C, LDL-C) blood content, Atherogenicity index (AI). *GNB3* (rs5443) and *NOS3* (rs2070744) genotyping performed by TaqMan probes (CFX96™Real-Time PCR). All enrolled /examined patients signed the Informed Consent to participate in the study.

Results. The changes' frequency in the lipid and glucose panels in EAH patients depending on polymorphic variants of the NOS3 gene (rs2070744) does not differ reliably. The risk of metabolic disorders (dyslipidemia and hyperglycemia) in EAH patients does not depend on NOS3 gene polymorphism (rs2070744). EAH patients with T-allele of the GNB3 gene (rs5443) were relatively more likely to increase LDL cholesterol (>3.0 mmol/l) than those with CC-genotype - by 13.89% (p=0.05). Other lipid metabolism parameters and hyperglycemia value did not differ significantly between GNB3 (rs5443) genes genotypes. However, the mutational T-allele of the GNB3 gene (825C> T) presence in the patients' genotype increases the risk of hyperlipidemia due to atherogenic LDL-C 8.5 times [OR=8.45; OR 95%CI:0.99-72.70; p=0.05], with the CC-genotype protective role [OR=0.12; OR 95%CI:0.01-1.0; p=0.048].

Moreover, the fasting hyperglycemia increases the overall risk of EAH in the examined population almost 9 times [OR=8.80; OR 95%CI:2.86-27.08; p<0.001], hypertriglyceridemia (>1.70 mmol/l) – 3 times [OR=2.62; OR 95%CI:1.23-5.56; p=0.009] and HDL-C decrease (<1.2 mmol/l) – more than 3.5 times [OR=3.57; OR 95%CI:1.46-8.71; p=0.003], respectively.

Conclusion. Thus, the polymorphic site of GNB3 (rs5443) gene, but not NOS3 (rs2070744) gene associate with metabolic disorders in hypertensive patients. Fasting hyperglycemia, hypertriglyceridemia with HDL-C decrease enhances the risk of arterial hypertension development 3-9 times (p<0.01).

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IMPACT OF DIABETES THERAPY ON CLINICAL OUTCOMES AND MORTALITY AMONG PATIENTS WITH CARDIOVASCULAR DISEASES

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Introduction. Diabetes mellitus (DM) is one of the major risk factors for the development of cardiovascular diseases (CVD), such as coronary artery disease, strokes, and heart failure. Patients with concomitant DM and CVD have a significantly higher risk of mortality and clinical deterioration, which necessitates optimal therapy to control both conditions.

Hyperglycemia in DM induces metabolic changes that lead to endothelial dysfunction, oxidative stress, inflammation, and atherosclerotic processes, further worsening the course of CVD. The presence of comorbidities such as arterial hypertension and dyslipidemia requires therapy adjustment using antihypertensive and lipid-lowering agents to reduce the overall burden on the cardiovascular system.

The aim of the study. To provide an analysis of up-to-date science literature to find an answer to the optimal combination of treatment strategies in patients with CVD and diabetes, with additional data analysis about clinical outcomes in patients with analogous comorbidities.

Material and methods. This study was based on a comprehensive review of scientific literature from PubMed and Google Scholar databases, focusing on the impact of diabetes therapy on clinical outcomes and mortality in patients with cardiovascular diseases (CVD).

Additionally, clinical indicators of 10 patients with concomitant diabetes mellitus (DM) and CVD were analyzed. The analysis included evaluating glycemic control, cardiovascular risk factors, and the overall therapeutic approach used for these patients. Data were collected and processed to assess the effects of different therapeutic strategies on clinical outcomes.

Results. Long-term glycemic control reduces the risk of developing microvascular complications and has a positive impact on the cardiovascular system. However, excessive intensification of glycemic control may lead to hypoglycemic episodes, which increase the risk of cardiovascular events. The treatment of patients with concomitant DM and CVD should be comprehensive, including not only glycemic control but also the correction of risk factors such as blood pressure and lipid levels.