

Conclusions: It was found that in patients with hypertension in combination with postmenopausal osteoporosis, according to office, daily monitoring and applanation tonometry, blood pressure levels and arterial stiffness parameters were significantly higher than in patients with hypertension without osteoporosis.

SERUM N-TERMINAL PRO-B-TYPE NATRIURETIC PEPTIDE LEVEL IS NEGATIVELY ASSOCIATED WITH VASCULAR REACTIVITY INDEX BY DIGITAL THERMAL MONITORING IN PATIENTS WITH HYPERTENSION

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Objective: B-type natriuretic peptide (BNP) participates in the coordination of endothelial regeneration/hypertrophy and the accompanying angiogenesis. Endothelial dysfunction is associated with increased mortality in patients on hypertension. The present study aimed to determine the relationship between serum N-terminal pro-B-type natriuretic peptide (NT-pro-BNP) level and endothelial dysfunction in patients with hypertension

Design and method: The present cross-sectional, single-center study included 90 hypertension patients. An electrochemiluminescence immunoassay was used to measure NT-pro-BNP levels. The endothelial function and vascular reactivity index (VRI) were measured using digital thermal monitoring (DTM) test (VENDYS). In this study, VRI < 1.0 was used as the poor vascular reactivity, 1.0 < VRI < 2.0 was used as the intermediate vascular reactivity, and VRI > 2.0 was used as the good vascular reactivity.

Results: Eight hypertensive patients (8.9%) were categorized as poor vascular reactivity (VRI < 1.0), 39 hypertensive patients (43.3%) were categorized as intermediate vascular reactivity (1.0 < VRI < 2.0), and 43 hypertensive patients had good vascular reactivity. Older age ($p = 0.012$) and higher serum NT-pro-BNP level ($p < 0.001$) was associated with poor vascular reactivity. Advanced age ($r = -0.221$, $p = 0.036$) and logarithmically transformed serum level of NT-pro-BNP (\log -NT-pro-BNP, $r = -0.505$, $p < 0.001$) was negatively associated with VRI values in hypertensive patients. After multivariable forward stepwise linear regression analysis noted that serum \log -NT-pro-BNP level (adjusted R2 change = 0.246, $p < 0.001$) was significantly and independently associated with VRI values in hypertensive patients.

Conclusions: Serum \log -NT-pro-BNP levels were negative associated with VRI and associated with endothelial dysfunction in patients with hypertension.

INCREASED SERUM SCLEROSTIN LEVEL IS A RISK FACTOR FOR PERIPHERAL ARTERY OCCLUSIVE DISEASE IN PATIENTS WITH HYPERTENSION

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Objective: Sclerostin is associated with endothelial inflammation and vascular calcification and therefore contributes to atherosclerosis disease. Hypertension is one of risk factors of peripheral arterial occlusive disease (PAOD), is associated with increased mortality in patients with hypertension. The aim of this study was to determine the relationship between serum sclerostin level and PAOD in patients with hypertension.

Design and method: Fasting blood samples and baseline characteristics were obtained from 92 hypertensive patients. ABI values were measured using an automated oscillometric device. Patients with ABIs of <0.9 were categorized into the low ABI group. The serum sclerostin and dickkopf-1 (DKK1) concentrations were determined using commercially available enzyme-linked immunosorbent assays.

Results: In total, 14 patients with hypertension (15.2%) were in the low ABI group. When compared to those in the normal ABI group, the low ABI group had high rates of diabetes mellitus ($P = 0.044$) as well as the high serum C-reactive protein levels ($P = 0.001$) and sclerostin levels ($P < 0.001$), but the serum DKK1 level did not find this association ($P = 0.639$). The multivariable logistic regression analysis revealed that serum levels of sclerostin (odds ratio [OR]: 1.052, 95% confidence interval [CI]: 1.018–1.088, $P = 0.002$) was independently associated with PAD in patients with hypertension.

Conclusions: Serum levels of sclerostin, but not DKK1, were associated with PAOD in patients with hypertension.

ARTERYAL HIPERTENSION AND VERY ELDERLY PATIENTS. THE EXPERIENCE OF AN INTERNAL MEDICINE DEPARTMENT

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Objective: The purpose of this study is to highlight the clinical and paraclinical characteristics of fragile hypertensive patients, over 85 years old, admitted to a mixed internal medicine department (Covid and non-Covid) between January 2022 and October 2022.

Design and method: Between January 2022 and October 2022, 80 patients with a primary or secondary diagnosis of arterial hypertension were admitted, of which only 23 (28.75%) were over 85 years old. Of the 23 patients, 13 (56.52%) were hospitalized with a diagnosis of Sars Cov 2 infection. Regarding the gender distribution, 12 are women (52.17%) and 11 are men (47.82%). Patients comorbidities: 14 patients (60.86%) with different degrees of heart failure, atrial fibrillation (39.13%) - 8 patients and one patient was diagnosed with atrial fibrillation during hospitalization, cognitive disorders and dementia in a proportion of 47.82% (11 patients) and a significant number of patients were admitted with moderate-severe anemia (13 patients, 56.52%). Of the 9 patients with atrial fibrillation, 5 are male (55%) and 4 (45%) female, cardiac enzymes (troponin and CK MB) are within normal limits in 8 patients. During the medical tests, 3 patients (13.04%) were diagnosed with different of neoplasia. Only 2 patients (8.69%) presented slight dyselectrolytemia (hyponatremia and hypokalemia).

Results: Pathologies are treated with: angiotensin converting enzyme inhibitors (17.39% - 4 patients), calcium channel blockers (39.13% - 9), anticoagulants (39.13% - 9 patients), diuretics (26.08% - 6 patients) and beta blockers (11 pac-47.82%).

13 patients (56.52%) died and 43.47% were discharged with an improved condition. 9 patients died as a result of Covid multiple organ system failure, 1 death was of cardiovascular cause and 3 non-Covid pulmonary failure deaths.

Conclusions: Frail patients, older than 85 years, with multiple comorbidities, require detailed investigations and adjustments of medication doses according to their status in order to maintain the discreet balance in which they are.

THE COURSE OF CHRONIC HEART FAILURE IN PERSONS WITH POST-INFARCTION CARDIOSCLEROSIS WITH ARTERIAL HYPERTENSION AND TYPE 2 DIABETES MELLITUS AND OBESITY ACCORDING TO A NUMBER OF MET

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Objective: To investigate the effect of lipid metabolism, biomarkers of fractalkin and clusterin inflammation on the development and progression of chronic heart failure (CHF) in patients with post-infarction cardiosclerosis, type 2 diabetes and obesity.

Design and method: A retrospective analysis of a comprehensive examination of 67 patients with postinfarction cardiosclerosis with concomitant type 2 diabetes and obesity. All patients were divided into 3 groups depending on the functional class (FC) of CHF: 1 group ($n = 22$) - patients with CHF II FC; Group 2 ($n = 23$) - patients with CHF III FC; Group 3 ($n = 22$) - patients with CHF IV FC. All patients were examined clinically, they underwent instrumental, biochemical and hormonal examinations.

Results: With the progression of CHF from FC II to FC III there is a deterioration of lipid metabolism: a significant increase in cholesterol levels by 5.5%, TG – by 15.7%, LDL cholesterol – by 74.4%, VLDL cholesterol – by 15.9%, reduction of HDL cholesterol by 27.6% ($p < 0.05$). An analysis of the fractal equation showing that ailing on CHF is advised by FC; and the level of clusterin - on the contrary decreases. Classical changes in patients with postinfarction cardiosclerosis with CHF and concomitant type 2 diabetes mellitus and obesity, which are the formation of atherogenic lipid metabolism disorders associated with body weight, as well as changes in the latest indicators such as fractalkin and clusterin, indicating the role of these molecules in the progression of CHF.

Conclusions: Due to the progression of chronic heart failure in patients with postinfarction cardiosclerosis and AH concomitant type 2 diabetes and obesity, an increase in all fractions of lipoproteins at stage III functional class was diagnosed, and then their decrease, which may indicate a deterioration in this category of patients, due to the progression of metabolic shifts, stagnation, dysfunction of the main parenchymal organs. Increased circulatory levels of fractalkin and decreased

clusterin content in patients with postinfarction cardiosclerosis with concomitant type 2 diabetes mellitus and obesity is accompanied by an increase in the functional class of chronic heart failure.

PARAMETERS OF LEFT VENTRICULAR DIASTOLIC DYSFUNCTION IN PATIENTS WITH HYPERTENSION DISEASE WITH CONCOMITANT TYPE 2 DIABETES MELLITUS

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Objective: To conduct analyzes of the peculiarities of left ventricular (LV) diastolic function in patients with hypertension disease with concomitant T2DM and without it before and after complex treatment with the inclusion of Eplerenone 50 mg per day and Trimetazidine 80 mg per day.

Table 1 Indicators of LV diastolic function in patients with HT and type 2 DM before treatment (M±m)

Indicators	HT and T2DM n = 25	2 grade HT n = 25	Control, n = 20
E, cm/s	59.91±5.42	64.81±6.25	77.44±5.04
A, cm/s	83.05±4.38	67.40±5.48	55.11±4.63
E/A	0.73±0.15	0.99±0.32	1.44±0.16
LAV, ml	54.83±8.86	28.31±15.31	44.00±3.83
LAVI, ml/m ²	29.33±10.26	26.31±5.73	23.63±3.91
E/A ratio, cm/s	7.76±1.33	8.91±1.44	14.26±1.90
E/A ratio	7.88±2.16	7.43±1.44	6.07±1.16

Table 2 Indicators of LV diastolic function in patients with HT and type 2 DM after treatment (M±m)

Indicators	HT n = 25	2 grade HT n = 25	Control, n = 20
E, cm/s	59.91±5.42	64.81±6.25	77.44±5.04
A, cm/s	83.05±4.38	67.40±5.48	55.11±4.63
E/A	0.73±0.15	0.99±0.32	1.44±0.16
LAV, ml	52.01±8.86	48.31±7.31	44.00±3.83
LAVI, ml/m ²	29.12±10.26	26.31±5.73	23.63±3.91
E/A ratio, cm/s	8.64±1.33	9.91±1.32	12.23±1.90
E/A ratio	7.23±2.16	6.71±1.44	6.07±1.16

Note: *Significant difference in indicators compared to the control, p < 0.05

Mean value of the early diastolic velocity of the fibrous ring of the mitral valve (e' mean, cm/s) before and after treatment.

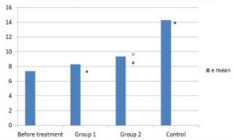


Figure 3. Indicators of the mean value of the early diastolic velocity of the fibrous ring of the mitral valve (e' mean, cm/s). * - significant difference in indicators compared to the indicators before treatment, p < 0.05; ** - significant difference in indicators in some groups before and after treatment, p < 0.05.

Design and method: The study examined 25 patients with HT and DM in a subcompensated state, with an HbA1c level of 7.6±0.34% (main group) and 25 patients with HT stage II (HbA1c level of 5.01±0.13%), without T2DM aged 35 to 65 years, who were being treated at the clinic of the GI “L.T. Malaya Therapy National Institute of the NAMS of Ukraine”. The control group consisted of 20 healthy individuals (HbA1c level of 4.68±0.49%).

Results: The data in Table 1 suggest that in patients with HT and HT with comorbid T2DM, the mean kinetics of diastolic flow of the fibrous ring was significantly lower in comparison with the control group. While the e' mean level in patients with T2DM and HT was significantly lower in comparison with patients with HT. Thus, the findings indicate that aggregate hemodynamic and metabolic alterations adversely affect the kinetic capabilities of the myocardium. Moreover, the lowest rates of the myocardial diastolic relaxation rate were probably found in patients with HT with T2DM. The latter proves that the comorbidity of these negative factors significantly reduces the functional capacity of the myocardium.

Conclusions: 1. The study of parameters of left ventricular diastolic function at the stage of myocardial functional disorders is necessary to prevent or reverse the development of heart failure in patients with comorbid pathology (HT with T2DM), which is the key to improving cardiovascular prognosis.

2. A three-month treatment with Eplerenone and Trimetazidine in patients with HT with and without comorbid T2DM led to a decrease in the progression of heart failure and a reduction in cardiovascular risks.
3. The study confirms the need for early prevention, timely diagnosis, and clarification of the development mechanisms of heart failure in patients with comorbid pathology.

MANAGING ANXIETY AND STRESS IN HYPERTENSION: DEVELOPMENT OF HEART RATE VARIABILITY BIOFEEDBACK WITH PSYCHOLOGICAL SUPPORT

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Objective: How can digital wearable Heart Rate Variability (HRV) biofeedback and psychological support be used to improve the management of anxiety and stress in hypertension?

Design and method: A mixed methods study was used to develop and evaluate initial outcomes from a HRV biofeedback intervention for the management of anxiety and stress in hypertension.

We used systematic review evidence to guide a series of patient and stakeholder consultations to co-design a HRV biofeedback intervention to assess and treat anxiety and cardiovascular stress reactivity in a hypertension specialist outpatient's service. We evaluated initial outcomes from case studies of 15 patients who attended 2-5 x 1 hour face to face sessions with a Health Psychologist. Sessions involved: 1) assessment of anxiety and stress responses; 2) resonance frequency breathing training with HRV biofeedback with a respiration rate (between 6.5 and 4.5 breaths/minute) to produce optimal baroreflex stimulation and blood pressure regulation; 3) psychological skills development for dealing with anxiety and stress.

Results: At 8 weeks follow up, 45% patients reported a 5-10 mmHg systolic reduction in blood pressure and 55% reported a reduction of 10-20 mmHg. 85% of patients reported increased morning HRV readiness scores and improvements in patient reported psychological outcomes (e.g. improvements in BP, anxiety reduction and increase in valued activities). 11 patients reported improved health behaviour change (increased physical activity, improved diet, reduction in alcohol intake). Whitecoat hypertension was improved in 70% of patients.

Conclusions: Biofeedback with psychological support can help improve anxiety and stress symptoms, as well as improvements in systolic blood pressure within an integrated specialist hypertension team.

PROGNOSTIC IMPACT OF FRAILITY ON FUNCTIONAL AUTONOMY IN OLDER ADULTS WITH HYPERTENSION

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Objective: To date, few studies have evaluated frailty in older adults with hypertension and the most appropriate tool to quantify frailty in this population has yet to be identified. The present study aimed to investigate the prognostic impact of frailty on decline of functional autonomy in a sample of hypertensive older adults.

Design and method: We performed a longitudinal observational study including patients aged 75 or older evaluated at the Hypertension Clinic and Memory Clinic of the Division of Geriatric and Intensive Care Medicine, Careggi Hospital, Florence. Participants underwent a multidimensional geriatric assessment including frailty evaluation using three frailty scales (Fried Frailty Phenotype, Clinical Frailty Scale [CFS], Frailty Index) and two physical performance measures (gait speed and Short Physical Performance Battery [SPPB]). The primary outcome was reduction of autonomy in daily activities according to the Barthel Index (functional decline). The predictive performance of different frailty measures was evaluated based on ROC curve analysis, sensitivity, specificity and accuracy.

Results: Among 99 hypertensive older adults (mean age 81, 59% women, median follow-up 13 months), functional decline occurred in 39% of patients. Participants with functional decline had a higher prevalence of cognitive impairment and frailty according to all the frailty scales used and a worse physical performance. Frailty Index and CFS showed the best predictive performance (AUC 0.715 and 0.708, respectively), followed by physical performance measures (AUC 0.691). All frailty measures showed good specificity (66-79%) and moderate sensitivity (54-70%). Gait speed showed the highest accuracy (71%) and achieved 57% sensitivity and 79% specificity, resulting in better predictive performance than the SPPB.

Conclusions: The CFS and gait speed - easily applicable even in non-geriatric settings - may represent useful instrument to detect frailty and predict functional decline in hypertensive older adults.

FEATURES OF COMORBIDITY IN COMBATANTS WITH ARTERIAL HYPERTENSION

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Objective: Comprehensive assessment of comorbidity in patients with arterial hypertension of participants in modern armed conflicts in order to implement timely preventive measures with the aim of prolonging their health status for military service.

Design and method: By design, the research was a passive retrospective one-time (cross-sectional) type. The medical charts of inpatient patients of 213 male combatants, aged 27-59 years, average age 45.0 ± 6.8 years, who underwent treatment during 2018-2021, were analyzed by the method of random sampling. The examined were stratified according to the stage of hypertension: 126 patients with stage I hypertension and 87 patients with stage II hypertension.

Results: The value of the indicator of the complex assessment of comorbidity depending on the stage of hypertension (the overall assessment of comorbidity