

tissue it was reduced to  $23.4 \pm 0.8$  ng/ml. In patients with AH and CP, this indicator was  $22.5 \pm 0.8$  ng/ml, and among patients with changes in densitometry -  $17.7 \pm 0.7$  ng/ml. The bone resorption index (TRAP) in groups was  $2.34 \pm 0.3$  units and  $3.21 \pm 0.4$  units, respectively, at the control level of  $0.97 \pm 0.12$  units. Patients with densitometric verified changes had level of TRAP  $2.86 \pm 0.2$  units and  $3.54 \pm 0.2$  units respectively. Thus, the combined course of AH and CP is accompanied by a violation of the ratio between the two main processes of bone tissue remodeling, which leads to the development of osteopenic syndrome.

#### **Заключение:**

In patients with AH metabolic disorders of bone tissue are formed, due to a violation of bone synthesis and resorption. With the combined course of arterial hypertension and chronic pancreatitis, favorable conditions for the formation of osteoporotic changes are created, which is manifested by the predominance of bone resorption processes over bone formation.

### **AWARENESS OF PATIENTS WITH HYPERTENSION WITH BRAIN DAMAGE ABOUT BASIC PRINCIPLES FOR HEALTHY LIFESTYLE**

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#### **Введение (цели/ задачи):**

Formation of healthy lifestyle contribute to preserving and strengthening of public health through its impact on adjustable risk factors. Purpose. To study the awareness of patients with essential hypertension (HT) with cerebral disorders about the basic rules of a healthy lifestyle.

#### **Материал и методы:**

125 patients with stage II HT who were at the polyclinic stage of examination and treatment at the age of 30 to 72 years were examined (45 for men, 80 for women). All patients received combined antihypertensive therapy. A general clinical examination and a questionnaire were conducted to identify the RF. Depending on the severity of cerebral disorders, all patients were divided into 2 groups: the first consisted of 22 patients with AH without cerebral disorders (age  $35.5 \pm 3.6$  years) and 2 - 103 patients (age  $56.9 \pm 1, 43$  years old) AH with cerebral infarction. Among the patients of the 2nd group, initial manifestations of cerebral blood supply deficiency (NPNCM) were in 24 people, stage I of discirculatory encephalopathy (DEP) in 46 people, DEP of stage II in 33 people.

#### **Результаты:**

When studying the main principles of a healthy lifestyle in patients of the 1st group, it was found that 17 (77.3%) of the subjects were aware of the elevated level of ABP (140/90 mmHg and above), measured ABP only with deterioration of well-being - 17 (77.3%). They indicated the presence of a connection between an increased level of ABP and excess body weight, 15 (68.2%), smoking - 16 (72.7%), with low physical activity - 12 (54.5%), with a hereditary burden of 14 (63.6%), with alcohol (more than 30 grams of pure alcohol for men and more than 15 grams of women per day) - 15 (68.2%). When questioning indicated their cholesterol level - 5 (22.7%), body weight - 21 (95.9%), sugar level - 7 (31.8%); owned information that with arterial hypertension it is necessary to limit the intake of salt to 5 g / day. - 15 (68.2%), with excessive body weight - reduce the total calorie content of food to 1500-1200 kcal - 12 (54.5%), with hypodynamia - walk at a moderate pace (with acceleration) for at least 30 minutes. per day - 15 (68.2%) of the

examined. The survey showed that to maintain their health, they are ready to observe the regime of day - 12 (54.5%), rational eating - 13 (59.1%), exercise - 15 (68.2%), be able to overcome psycho-emotional stress - 8 (66.2%) of those surveyed. In the second group of AH patients with cerebral disturbances, 61 (59.2%) of the subjects were aware of the increased level of blood pressure (140/90 mm Hg and above), they were aware of the relationship between elevated blood pressure and excess body weight - 57 (55.9%), with smoking - 60 (58.3%), with low physical activity - 34 (33.0%), with hereditary burden - 62 (60.2%), with alcohol abuse (more than 30 g pure alcohol for men and more than 15 grams of women per day) - 55 (53.3%). A smaller percentage of people 53 (51.5%) measure ABP only if their well-being worsens. At the questioning indicated their body weight - 71 (68.9%), cholesterol level - 72 (69.9%), sugar level - 54 (52.5%). They knew that in arterial hypertension it is necessary to limit salt intake to 5 g / day - 64 (62.1%), with excessive body weight, it is necessary to reduce the total calorie content of food to 1500-1200 kcal - 58 (56.3%), to improve health should be walked at a moderate pace (with acceleration) at least 30 minutes. per day - 73 (70.9%), be able to overcome psychoemotional overstrain - 84 (62.1%). When interviewing, a larger percentage of people were ready to observe the regime of the day - 70 (67.9%), to eat rationally - 72 (69.9%), exercise - 70 (67.9%).

#### **Заключение:**

Patients with HT with brain damage, unlike patients without brain disorders, have more information about basic principles for healthy lifestyle. This should be considered creation of individual rehabilitation programs.

### **GENETIC MARKERS OF ARTERIAL HYPERTENSION PROGNOSIS IN PATIENTS WITH DIABETES MELLITUS TYPE 2**

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#### **Введение (цели/ задачи):**

The European Society of Cardiology in its recommendations noted that the development of arterial hypertension (AH) is due to the presence of a large number of mutations in genes that monitor the main blood pressure monitoring systems. That is, AH is considered as a highly heterogeneous disease with a multifactorial etiology and polygenic changes. The prevalence of the disease is so high (up to 30% of the world's population), the complications that arise are so serious and arterial pressure in most cases remains uncontrollable, that the disease is considered to be socially significant, which affects not only the quality of life, but also the mortality of patients. The high prevalence among all causes of morbidity allows to assume its combination with other diseases of internal organs, among which a special place is occupied by diabetes mellitus (DM). The defeat of the vascular system against the background of changes in all types of metabolism leads to serious complications when combined. Purpose: diagnostic optimization of the combined course of AH and type 2 diabetes mellitus by establishing the role of the ACE and NO-synthase genes polymorphism.

#### **Материал и методы:**

Forty-nine patients with combined course of AH and type 2 diabetes at the age of  $39.2 \pm 5.6$  years and 42 patients with AH aged  $37.8 \pm 4.7$  years took part in the work. 50 practically healthy people entered the control group. The groups were comparable in gender and duration of anamnesis for hypertension. All patients with diabetes were taking metformin 1000 mg/day to correct the glycemia 17 among them were additionally prescribed with insulin. ACE inhibitors,  $\beta$ -blockers, diuretics were used for the treatment of hypertension. The insertion-

deletion polymorphism (I/D) of the ACE gene and the polymorphism of CT genotypes of T-786C of the promoter of the eNOS gene, which are considered to be the most significant markers of endothelial damage, were studied as genetic markers. The diagnostic test systems of Liteh (Russia) were used. The statistical processing of the material was carried out using basic statistical methods using the Microsoft Excel and Statistica 6.0 programs.

#### **Результаты:**

Study of polymorphism of the ACE gene in patients with isolated AH revealed the following polymorphism of the ACE gene: genotype II was found in 6 patients (14.3%), ID - in 16 (38.1%) and DD - in 20 (47.6%). In patients with AH and diabetes these indicators corresponded to 8.2%, 34.7% and 57.1%. Thus, there was an increase in D-allele carriers in the group with a combined pathology 1.1 times with an equal ratio to the norm and isolated AH. The polymorphism of the eNOS gene in healthy individuals corresponded to the following: the TT genotype was recorded in 48% of cases, CT - in 46% and pathological CC - in 6%. In group with AH this ratio corresponded to 28.6%, 52.3% and 19%, and with comorbidity AH and diabetes 18.4%, 34.7% and 46.9% respectively. So, the presence of the C-allele was recorded in 52% of healthy individuals, in 71.3% with isolated AH and in 81.6% in the combination of AH and type 2 diabetes mellitus. Both investigated genes are components of the endothelial lesion, however, the eNOS gene has changed the polymorphism to a greater degree, which, apparently, is associated with a more pronounced change in the mechanisms of vascular system relaxation in hypertension with diabetes.

#### **Заключение:**

The AH and its combination with type 2 DM occurs when the ACE and eNOS genes polymorphism is changed. The most pronounced changes in the polymorphism of these genes are observed in the comorbidity of hypertension and type 2 diabetes mellitus. The predominance of unfavorable C-allelic polymorphism of the gene eNOS can be interpreted as a more pronounced defeat of the relaxation mechanisms, which is typical for hypertension. Consequently, the presence of a pathological C-allele in the eNOS gene polymorphism in patients with AH and its combination with type 2 diabetes can be considered as a predictor of severe poorly controlled arterial hypertension and, as a result, the possible development of early complications.

### **IMPACT OF DIABETES MELLITUS TYPE-2 TO THE DIURNAL BLOOD PRESSURE PROFILE AMONG ELDERLY PATIENTS WITH THE PRIMARY HYPERTENSION**

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#### **Введение (цели/ задачи):**

Assess age-sensitive performances of the diurnal blood pressure profile among patients with the primary hypertension (PH) associated with the diabetes mellitus type-2 (T2MD).

#### **Материал и методы:**

Daily monitoring of blood pressure (DMBP) was performed in 86 patients with PH in association with T2MD, who were randomized by age: the group of elderly patients comprised 39 people (mean age  $72.2 \pm 1.4$  years), the comparison group included 47 mature patients (mean age  $56.6 \pm 2.7$  years). The study groups were comparable in duration of PH and T2MD. The diagnosis of PH was established on the basis of the Russian recommendations «Diagnosis and treatment of hypertension» (RSC, 2016). Patients with secondary forms of AH were excluded from the study. The study did not include patients with decompensation of T2MD. DMBP was carried out

on a portable device MDP-NS-01 (DMS-Advanced Technologies, Moscow) under conditions of free movement and lasted an average of 24 1.5 hours. The interval between blood pressure measurements (BP) was 30 minutes in the waking period and 60 minutes during sleep. Mean values of systolic (SBP), diastolic (DBP), pulse (PBD) blood pressure for day, day and night, daily SBP and DBP index, variability of SBP and DBP in day and night hours were evaluated.

#### **Результаты:**

When analyzing the average parameters of DMBP, it was found that the average daily DBP ( $78.5 \pm 7.5$  mmHg) and the mean daily ( $80.5 \pm 2.6$  mmHg) was significantly lower in elderly patients compared with middle-aged patients with PH and T2MD ( $85.1 \pm 3.7$  and  $88.5 \pm 6.1$  mmHg, respectively). In elderly patients, significantly high PBP figures were recorded in daytime ( $64.4 \pm 8.3$  mmHg) and night hours ( $65.9 \pm 11.6$  mmHg) in comparison with patients of mature age. When analyzing the daily profile of blood pressure, the prevalence of disturbed circadian BP was revealed in elderly patients. The structure of these disorders in elderly patients with associated pathology was significantly dominated by the «nightpeaker» type (nighttime SBP increase) compared with middle-aged patients (53.6% and 16.9% for SBP and 46.6% and 13.2% for DBP, respectively). When assessing the variability of blood pressure, significantly lower indices of night variability of SBP and diurnal variability of DBP were revealed in elderly patients with associated pathology in comparison with middle-aged patients.

#### **Заключение:**

High rate of PBP in daylight and night hours on the background of the T2MD are strong independent predictor of HeartScore complications; predominance of circadian disruption (night-peaker type for SBP and DBP), as well as poor performance of night variability SBP and day variability DBP reflect the existence rigidity of hemodynamics among elderly patients.

### **NESFATINEMIA AND INSULIN RESISTANCE IN PATIENTS WITH ARTERIAL HYPERTENSION AND OBESITY**

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#### **Введение (цели/ задачи):**

Considering recent trends of prevalence of the arterial hypertension (AH) in persons with obesity, there is a need for definition of the general links of pathogenesis. Adipokinins play the leading role in pathogenesis of AH and obesity. One of such is nesfatin-1 whose level increase leads to glucose dependent increase of insulin secretion by pancreas  $\beta$ -cells at glucose level increase. The work purpose – to estimate a nesfatinemia and to establish presence of interactions with insulin resistance in patients with arterial hypertension and obesity.

#### **Материал и методы:**

105 patients among whom there were 56 women (53,33%) and 49 men (46,67%) have participated in a research. All patients have been divided into 2 groups: 1 group was made by patients with arterial hypertension and obesity ( $n=70$ ), the 2nd group – patients with arterial hypertension with the normal body weight ( $n=35$ ). The level of nesfatin-1 has been determined to participants of a research with the use of test system of Human NES ELISA KIT (China) on the immunofermental parser «Labline-90» (Austria) and level of blood insulin has been determined on an empty stomach by method of the immunofermental analysis with the use of commercial test system of DRG Instruments GmbH (Germany) production on the immunofermental parser «Labline-90» (Austria), glucose level has been determined by a glyucoseoxydative method.