microalbuminuria (MAU), biochemical blood tests (creatinine, urea), calculated GFR by MDRD formula, ultrasound of the kidneys were applied. The control group consisted of 20 healthy people.

Results. Pyelonephritis was observed in 32 (32.32 %) patients, glomerulonephritis — in 29 (29.30 %) patients, diabetic nephropathy — in 14 (14.14 %) patients, hypertensive nephropathy — in 18 (18.18 %) patients and abnormalities in kidney — in 6 (6.06 %) cases. Stage I CKD was not diagnosed in any patient, while stage II was diagnosed in 26 (26.27 %) patients, stage III — in 32 (32.32 %), stage IV — in 18 (18.18 %) and stage V — in 23 (23.23 %) cases. Three main syndromes: hypertension (AH), edema, and urinary were present in all patients. The most CKD cases were determined by the presence of MAU/proteinuria and AH, particularly by diabetes mellitus (DM) in the background and in the patients with family history. 55 (69.6 %) patients exhibited mild (56.4 %), moderate (32.7 %) and severe (10.9 %) anemia. Patients without anemia had plasma urea and creatinine levels 2-3 times higher ($p < 0.05$) and patients with anemia had these levels 3–4 times higher compared to normal rates ($p < 0.05$). Structural changes in kidney parenchyma or cup-pelvic complex in all patients were visualized using ultrasound. The dependence of the clinical manifestations from etiology: **yes,** because the start of CKD was different. Anamnesis of pyelonephritis was associated with hyperthermia, clinical fever with night chills and often dysuria in the middle aged patients — 16 (39.02 %) cases; glomerulonephritis signs such as AH, edema, and hematuria were frequent in the middle aged patients — 9 (34.62 %) cases; diabetic nephropathy was characterized by a long history of DM, special treatment of AH, and retinopathy in the elderly — 14 (43.75 %) cases; for hypertensive nephropathy the AH duration was over 10–15 years without changes in urine analysis, but later under high blood pressure the nephrons in kidneys were damaged and kidney failure progressed rapidly in the middle aged patients and elderly — 9 (21.95 %) and 6 (18.75 %) cases in accordance; the kidney abnormalities may be detected by X-ray or ultrasound and which lead to rapid or progressive decline of kidney function. The dependence of the clinical manifestations from etiology: **no,** because CKD is usually diagnosed at late stages (III–IV–V); stages I–II have latent flow; CKD appears randomly in the presence of AH, edema or changes in urine: MAU/proteinuria, hematuria, pyuria, hyposthenuria often; all patients with CKD VD stage need replacement treatment by hemodialyses or transplantation of kidney regardless of CKD etiology.

Conclusion. While the CKD concept reminds us that CKD is influenced by multiple factors at its origin, the importance of the main syndromes criteria to determine the CKD risk within a population is limited. For early CKD detection markers of kidney damage such as presence of high blood pressure (over 140/90 mmHg) and GFR < 60 mL/min and changes in urinalysis (MAU) lasting more than 3 months should be identified or markers of kidney damage should be identified by ultrasound and/or X-ray as soon as possible.

SARCOPENIA IN UKRAINIAN OLDER WOMEN

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Introduction. Sarcopenia has been defined as an age-related reduction in muscle mass, strength and performance. Muscle mass peaks by fourth decade and thereafter decreases at the rate of 1 % after the age of 50 years. Prevalence of sarcopenia varies widely (5–70 %) according to age, sex, ethnicity and the criteria used for its definition [Cruz-Jentoft A. J. et al., 2010; Marwaha R. et al., 2014].

Aim. Evaluation of sarcopenia frecuency in the healthy Ukrainian women.

Subjects and Methods. 390 women aged 20–87 years (mean age — 57.50 ± 15.99 years) were examined. All subjects were free of systemic disorders and obesity, and were not taking medications known to affect the skeletal and muscle metabolism. The lean and fat masses were measured by the DXA method (Prodigy, GEHC Lunar, Madison, WI, USA). Appendicular skeletal mass (ASM) was measured at all the four limbs with DXA. We have also calculated the appendicular skeletal mass index (ASMI) according to the formula: ASM/height (kg/m^2). Low muscle mass values conform to the following definitions: European guidelines (ASMI < 5.5 kg/m^2) (EWGSOP, 2010), less than 20 % of sex-specific normal population and two SD below the mean of the young adult Ukrainian females (20–39 yrs). We also assessed handgrip strength and measured gait speed. The sarcopenia was determined using EWGSOP-suggested algorithm. "Statistika 6.0" © StatSoft, Inc. was used for data processing purposes. Significance was set at $p < 0.05$.

Results. The ASMI values corresponding to a cutoff of low muscle mass by the definitions used were as follows: < 5.5 kg/m^2 (European guidelines), < 5.7 kg/m^2 (< 20th percentile of sex specific population), < 4.8 kg/m^2 (two SD below the mean of young Ukrainian females aged 20–39 yrs). The frequency of low muscle mass in women aged 65 yrs and older based on the above three criteria was 12 %, 16 % and 1.7 %, respectively. The frequency of sarcopenia increased with age: in women 50–59 yrs — 5.1 %, 60–69 yrs — 3.7 %, 70–79 yrs — 18.4 %, 80–80 yrs — 30.8 %. The mean frequency of sarcopenia in women aged 65 yrs and older was 21.3 %.

Conclusion. The cutoff value of ASMI (< 4.8 kg/m^2) defined as two SD below the mean of reference young population was lower in this study compared with the Rosetta Study (< 5.5 kg/m^2). As for the sex specific cutoff (ASMI < 5.7 kg/m^2), this index was similar to the data of the Health ABC study (< 5.67 kg/m^2) (EWGSOP, 2010). The mean frequency of sarcopenia in Ukrainian older women was 21.3 %.

ROLE OF OXYGEN-DEPENDENT TRANSCRIPTION FACTORS IN ADAPTATION OF ELDERLY PREDIABETIC PATIENTS TO INTERMITTENT HYPOXIA

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Metabolic disorders represent one of the major health and economic burdens for modern society. Recent evidence suggests that hypoxic exposures might provide a cost effective strategy for improving metabolic functioning. Intermittent hypoxia training/treatment (IHT) modulates lipid and carbohydrate metabolism through the changes in expression of HIF-1α and its target genes that play a key role in the regulation of glucose homeostasis.

Aim. To explore effects of a two-week IHT on mRNA expression of HIF-1α and its target genes: pyruvate dehydrogenase kinase (PDK1), insulin receptor (INSR), facilitated glucose transporter — solute carrier family-2 (SLC2A1), and transient potassium channel (KCNJ8) in healthy humans and patients with prediabetes.

Methods. Seven healthy volunteers of 44–68 years old (Gr I) and 15 prediabetic patients of 48–70 years old (Gr II) participated in the study. Gr II included subjects who had impaired fasting glycemia, glucose intolerance, or their combination. They were divided into two sub-groups: Gr IIa — experimental IHT group (11 subjects), and Gr IIb — sham IHT group (4 subjects). All participants were studied before IHT, after 3rd and 14th days of IHT program and in a month after IHT termination. Every IHT session consisted of four 5 min bouts/d of breathing 12 % O$_2$ with 5 min breaks. In dynamics of IHT, mRNA expression was determined in blood leukocytes using real-time PCR.

Results. Two-week IHT course reduced significantly fasting and 120 min post-OGTT glycemia in Gr IIa, this reduction was maintained through a month after IHT termination. Acute hypoxic test (AHT) revealed a significant increase in tolerance to hypoxia. Shortened recovery time, more effective functioning of respiratory and cardiovascular systems during AHT was also registered in patients of Gr IIa. Initial levels of mRNA expression of HIF-1α, SLC2 and KCNJ8 were the same in Gr I and Gr II, however, PDK1 and INSR were 2-fold higher in Gr II. IHT resulted in 4-fold (Gr I) and 6-forld (Gr IIa) increase in HIF-1α during 3rd (Gr I) or 14th (Gr IIa) days of IHT, the latest remained twice higher in a month. A similar pattern was observed with respect to PDK1. The greatest increase in INSR, SLC2 and KCNJ8 expression in both groups was observed in a month after IHT termination. Correlation analysis showed that higher expression of HIF-1α, INSR and SLC2 determines a higher resistance to hypoxia.

Conclusion. This pilot study has shown that IHT has positive effect on carbohydrate metabolism in patients with prediabetes. Oxygen-dependent transcription factors are actively involved in this process.