

cesses of metabolism depending on the properties of the complexes [16]. The final influence of the individual metals on the disease depends on their actual interaction with each other [17, 18].

In physiological conditions the main role is played mainly by the central atoms (CA) in complexes (chelates). CA determine a geometrical structure of the complex and its Entatic State, i.e. an electron structure adapted to its function. In the case of a change in the valence of the CA, e.g. in the case of its oxidation, the ion radius decreases along with the change of Entatic State and function of the complex.

Because of the unique variety of functions of Ca (structural, neuromuscular, enzymatic, and signaling) the role of the system of concentration maintenance of  $Ca^{2+}$  at a low level took on a key significance for all processes of a life activity [19-22]. Violation of MLH is the beginning of pathological processes [22]. Now it is possible to predict new understanding of an etiology and pathogenesis of diseases and aging.

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#### LEVEL OF MONOCYTIC CHEMOATTRACTANT PROTEIN, TRANSFORMING GROWTH FACTOR $\beta_1$ , AND FIBROBLAST GROWTH FACTOR IN BLOOD SERUM OF PATIENTS WITH DIABETIC NEPHROPATHY

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**The objective of this work** is to study a character of monocytic chemoattractant protein (MCP-1), transforming growth factor  $\beta_1$  (TGF- $\beta_1$ ), and fibroblast growth factor (FGF) among patients with diabetic nephropathy (DN).

**Methods and materials.** Two groups of patients with sugar diabetes of type 2 with different stages of DN, according to classification I.I. Dedov and M.V. Shestakova, 2000, were included into the investigation. Group 1 ( $n = 50$ ) – with albuminuria, average level of microalbuminuria among patients of this group equaled  $149,8 \pm 5,2$  mg/day. Group 2 ( $n = 35$ ) – with proteinuria, daily proteinuria did not exceed  $1,1 \pm 0,3$  g/day. Duration of SD of type 2 oscillated from 1 to 15 years among the studied. Average age equaled  $41,0 \pm 6,5$  years. Blood samples of 20 healthy donors were used as a control. Serum concentration of MCP-1, TGF- $\beta_1$ , FGF was defined by the method of immunofluorescence analysis. Statistical processing of the received data was made with programme complex Statistica 8,0 for Windows.

**Results and discussions.** Defining contents of MCP-1 under DN has shown its increase  $1,7 \pm 0,2$  times ( $p < 0,05$ ) in proteinuric stage of DN, compared to the control ( $109,2 \pm 4,1$  pg/ml) and  $1,3 \pm 0,3$  times ( $p < 0,05$ ) – compared to the same index of albuminuric stage. Defining contents of FGF among patients with DN with albuminuric stage has established its reliable increase  $1,5 \pm 0,2$  times ( $p < 0,05$ ), compared to the control group ( $2,9 \pm 1,1$  pg/ml). The highest level of FGF,  $6,6 \pm 2,4$  pg/ml, was registered in blood serum of patients with proteinuric stage of DN. We have registered an increase in serum concentration of TGF- $\beta_1$  among patients with SD of type 2 with a progressing nephropathy. Thus, under proteinuric stage of DN level of TGF- $\beta_1$  equaled  $122,4 \pm 3,5$  pg/ml and was reliably higher than un-

der albuminuric stage of DN ( $112,4 \pm 3,6$  pg/ml) and in the control group ( $40,9 \pm 6,9$  pg/ml).

**Resume.** An increase in serum level of MCP-1, TGF- $\beta_1$ , FGF, in a larger scale under proteinuric stage of disease, has been established under diabetic nephropathy.

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#### LEVEL OF LEPTIN AND ADIPONECTIN AMONG PATIENTS WITH PODAGRA WITH METABOLIC SYNDROME

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**The objective of this work** is to study an impact of adiponectin in blood serum of patients with podagra with metabolic syndrome.

**Methods and materials.** 58 men with chronic podagric arthritis in an inter stroke period, aged from 40 to 60 years (average of  $48,9 \pm 8,2$  years) have been studied; metabolic syndrome has been established among 28 of them (48,3%). Diagnosis of podagra corresponded to classification criterions of EULAR 2010. Diagnostics of metabolic syndrome (MS) has been established according to characteristics, developed by experts of National health institute of USA (Adnet Treatment Pane IIII). Control group was formed of 24 healthy donors. Contents of leptin and adiponectin were estimated by method of immune-ferment analysis. Statistical processing of the received data was carried out with using of programme complex Statistica 8,0 for Windows.

**Results and discussions.** The research has shown that an increase in levels of leptin in blood serum up to  $14,2 \pm 1,2$  ng/ml ( $p < 0,05$ ), compared to the control group ( $4,9 \pm 0,54$  ng/ml) has been registered among all patients with podagra. We should outline, that contents of leptin among patients with podagra with MS exceeded that of patients without MS of  $32,8 \pm 2,2\%$  ( $p < 0,05$ ).

A decrease in serum concentration of adiponectin ( $16,2 \pm 4,8$  mcg/ml) by  $1,6 \pm 0,2$ , compared to the control, was established among patients with podagra with MS, and by  $1,2 \pm 0,2$  ( $p < 0,05$ ) – compared to this index among patients with podagra without signs of MS.

**Resume.** Presence of MS among patients with podagra is attended by a reliably higher level of leptin in blood serum. Higher contents of adiponectin is registered among patients with podagra, compared to this index of patients who combine podagra and MS.

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#### THE GROWTH FACTORS AND INTERLEUKINE-1 (IL-1) URINARY EXCRETION AT THE ARTHRITIC NEPHROPATHY

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The main paper's **aim** has been the growth factors urinary excretion study: transforming growth factor  $\beta_1$  (TGF $\beta_1$ ), the vasculo-endothelium-derived growth factor – A (VEGF-A), and the interleukine – 1 $\beta$  (IL-1 $\beta$ ) at the patients with the gouty nephropathy.

**The Materials and Methods.** The 59 men with the gout, gouty with the tubulo-interstitial nephritis, at the age from 40 to 50 years (e.g. the average age has been made up  $42,2 \pm 5,8$  years or 508,2  $\pm$  60,8 months) have been involved under the medical observation. So, all the medically observed sick men have already been divided into 2 main groups, according to the glomerular filtration rate (GFR) values: I group ( $n = 30$ ) – GFR  $> 90$  ml/min/1,73 m<sup>2</sup> (e.g. the chronic kidney disease – CKD – the Stage 2 on K/DOQI, 2002); the II group ( $n = 29$ ) – GFR – 60–89 ml/min/1,73 m<sup>2</sup> (e.g. CKD – the 2 Stage). The podagra diagnosis has been met the EULAR, 2010 classification criteria. The gouty with the tubulo-interstitial nephritis diagnosis has been established, on the basis of the history, the clinical and laboratory studies. The control group has been consisted of the 20 healthy donors and the volunteers (e.g. men) at the age from 40 to 50 years (e.g. the average age has been made up  $41,8 \pm 4,6$  years or 492,8  $\pm$  48,6 months). Thus, the TGF- $\beta_1$ , VEGF-A, IL- $\beta_1$  urinary excretion determination at the patients with the gouty tubulo-interstitial nephritis has been carried out and determined by the immune – enzyme analysis method.

**The Results and Their Discussion.** The growth factors urinary excretion determination: TGF $\beta_1$  and VEGF-A at the patients with the gouty interstitial nephritis has been shown the following results. Significantly higher TGF $\beta_1$  urinary excretion has been determined at the patients with the CKD 2 Stage (e.g.  $30,4 \pm 0,3$  pg/ml,  $p < 0,05$ ), having exceeded the patients with the CKD 1 Stage and the control group in  $1,4 \pm 0,2$  (e.g.  $p < 0,05$ ) time and  $2,2 \pm 0,3$  (e.g.  $p < 0,05$ ), respectively. The VEGF-A urinary excretion increase with the CKD progression has been determined. The VEGF-A higher level has been established at the patients with the gouty tubulo-interstitial nephritis with the CKD 2 Stage (e.g.  $120,4 \pm 4,4$  pg/ml,  $p < 0,05$ ).

The IL-1 $\beta$  urinary excretion higher level has been shown at the patients with the arthritic nephropathy with the CKD II Stage. The IL-1 $\beta$  content in the urine in  $2,8 \pm 0,2$  (e.g.  $p < 0,05$ ) has been exceeded the reference value, and in  $1,4 \pm 0,2$  time –