Introduction. Deficiency of thyroid hormones is accompanied by metabolic disorders followed by the development of changes characterized by different degrees of manifestation in all organs and systems including considerable changes of renal function. Nowadays the issue of relation between thyroid and renal functions is understudied being the subject matter of numerous publications presenting various pathophysiological conceptions. The objective of the investigation is the improvement of known methods to diagnose kidney damage in patients suffering from hypothyroidism with elements of metabolic syndrome and study of the effect of complex treatment of hypothyroidism on renal function.

Materials and methods. 240 patients with primary hypothyroidism (among which 130 people suffering from hypothyroidism with metabolic syndrome elements) were involved in the investigation. Patients’ age from 36 to 60 as well as primary or decompensated types of hypothyroidism served the main criteria of inclusion. Presence of any chronic or acute renal condition or ischemic heart disease were the criteria of exclusion. Diagnosis was made on the basis of complaints, anamnesis data, characteristic clinical presentation of hypothyroidism and confirmed by hormonal findings. Anthropometric characteristics estimation including body weight index (BWI) measuring was carried out. In order to determine the type of obesity, a correlation between waist and thigh circumferences was calculated. For further investigation, 87 patients were randomized. All patients were divided into 2 groups: Group I involved 42 non-obese patients with hypothyroidism [aged 44,8±5,7 and BWI 21,3±2,6 kg/m2] and Group II included 45 patients with hypothyroidism and abdominal obesity [aged 43,8±6,1 and BWI 33,4±4,8 kg/m2]. Control Group encompassed 20 apparently healthy people [aged 43,5±5,9 and BWI 22,0±2,4 kg/m2].

Kidney damage was suggested in case of the disorder of glomerular filter permeability, i.e. presence of albuminuria and GFR indices, calculated by the formula CKD-EPI. Concentration of MCP-1 (monocyte chemoattractant protein-1), leptin and insulin was measured according to enzyme immunoassay analysis.
Results. Correlation analysis has showed that probability of MAU rises with the increase of both systolic and diastolic arterial tension; furthermore, a significant dependency between pulse AT and occurrences of MAU (p=0.045) have been discovered. Performing correlation analysis of GFR we have revealed inverse correlation of medium strength between the levels of GFR and TSH (r=0.571), GFR and VEGF (r=-0.616), GFR and IL-6 (r=-0.418), total cholesterol (r=-0.311), GFR and IRI (r=-0.606) and weak inverse correlation between GFR and MCP-1 (r=-0.2917) in patients from Group I. Patients from Group II showed direct strong correlation between GFR and IRI (r=0.819) and Caro index (r=0.793), inverse strong correlation between GFR and TSH (r=-0.782), GFR and HOMA index (r=-0.875) and inverse correlation of medium strength between GFR and cholesterol (r=-0.577), leptin (r=-0.476), GFR and IL-6 (r=-0.418), GFR and glucose (r=-0.436) and VEGF (r=-0.337).

Thus, renal malfunction characterized by decrease of GFR and albuminuria have been revealed in patients with noncompensated hypothyroidism.

Conclusions.

1. Patients with noncompensated hypothyroidism have been diagnosed with renal malfunction characterized by decreased GFR and albuminuria.
2. Both immune and nonimmune factors, such as increased total cholesterol levels, IL-6, MCP-1 and VEGF, play an equal role in pathogenesis of renal damage in non-obese patients with hypothyroidism.
3. Hyperinsulinemia, insulin resistance and leptin resistance are mediators of renal origin in patients suffering from hypothyroidism with abdominal obesity.
4. Complex treatment including ACE inhibitor (enalapril) and atorvastatin has pathogenetically grounded effect on the markers causing damage to functional renal apparatus.

Key words: hypothyroidism, renal function, abdominal obesity, atorvastatin, enalapril.