CLINICAL AND LABORATORY FEATURES OF NEPHROPATHY DEVELOPMENT IN INDIVIDUALS WITH OVERWEIGHT AND OBESITY

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Relevance. Overweight and obesity are considered important risk factors for the development of renal damage. Increased body weight contributes to insulin resistance, arterial hypertension, dyslipidemia, chronic inflammation, and glomerular hyperfiltration. As a result, microalbuminuria, decreased filtration capacity, and signs of nephropathy develop in the kidneys. Therefore, early laboratory assessment of renal function in individuals with overweight and obesity has significant scientific and practical importance.

Aim of the study. To study the clinical and laboratory features of nephropathy development in individuals with overweight and obesity and to identify early markers of renal damage.

Materials and methods. A total of 170 individuals were included in the study. Of these, 140 patients had overweight or obesity, while 30 practically healthy individuals constituted the control group. The main group was assessed according to body mass index and included individuals with overweight, grade I obesity, and grade II obesity. In all examined subjects, body mass index, waist circumference, blood pressure, creatinine, urea, cystatin C, microalbuminuria, albumin/creatinine ratio, and estimated glomerular filtration rate (eGFR) were determined.

Study results. According to the examination results, the mean body mass index was 32.7±3.4 kg/m² in the main group and 23.1±1.9 kg/m² in the control group. Waist circumference was 104.6±8.3 cm in the main group and 78.4±5.6 cm in the control group. Analysis of renal function indicators showed that serum creatinine was 98.4±12.7 µmol/L in the main group and 73.2±6.8 µmol/L in the control group. Urea levels were 6.8±1.1 mmol/L and 4.5±0.6 mmol/L, respectively.

The eGFR was 76.9±9.8 mL/min/1.73 m² in the main group and 107.4±8.7 mL/min/1.73 m² in the control group, indicating reduced renal filtration function in patients with overweight and obesity.

Microalbuminuria was 68.7±16.4 mg/L in the main group and 9.4±2.6 mg/L in the control group. The albumin/creatinine ratio was 38.5±8.9 mg/g in the main group and 6.2±1.7 mg/g in the control group. Microalbuminuria was detected in 64.3% of patients in the main group and in 6.7% of individuals in the control group.

The cystatin C level was 1.28±0.21 mg per L in the main group and 0.73±0.08 mg per L in the control group. This indicator was evaluated as an important laboratory marker for the early detection of renal damage in individuals with overweight and obesity.

Main clinical and laboratory indicators

Indicator	Main group, n=140	Control group, n=30	p
BMI, kg/m²	32.7±3.4	23.1±1.9	<0.001
Waist circumference, cm	104.6±8.3	78.4±5.6	<0.001
Creatinine, µmol/L	98.4±12.7	73.2±6.8	<0.001
eGFR, mL/min/1.73 m²	76.9±9.8	107.4±8.7	<0.001
Microalbuminuria, mg/L	68.7±16.4	9.4±2.6	<0.001

Albumin/creatinine ratio, mg/g	38.5±8.9	6.2±1.7	<0.001
Cystatin C, mg/L	1.28±0.21	0.73±0.08	<0.001

Conclusion. The development of nephropathy in individuals with overweight and obesity is associated with body mass index, abdominal obesity, arterial hypertension, and metabolic disorders. In the main group, increased levels of microalbuminuria, albumin/creatinine ratio, and cystatin C, together with decreased eGFR, indicate early laboratory signs of renal damage. Therefore, for early detection of nephropathy in patients with overweight and obesity, it is advisable to assess microalbuminuria, albumin/creatinine ratio, cystatin C, and eGFR in combination with creatinine and urea.

Keywords: overweight, obesity, nephropathy, microalbuminuria, cystatin C, eGFR, albumin/creatinine ratio.