PROGNOSTIC SIGNIFICANCE OF CATESTATIN LEVEL IN PATIENTS WITH CARDIORENAL SYNDROME WITH EXCESS WEIGHT

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Abstract: *It has been established that changes in the level of catestatin can serve as an early marker of cardiovascular and renal dysfunction. It is also important as a prognostic criterion for assessing the severity of the disease. Studies conducted in recent years show that catestatin plays an important role in cardiovascular and kidney diseases. However, the diagnostic significance of catestatin in CRS against the background of excess body weight has not been sufficiently studied.*

Thus, the introduction of catestatin into clinical practice can serve to increase the effectiveness of early detection and treatment of cardiorenal syndrome.

Keywords: *cardiorenal syndrome, catestatin, excess body weight, obesity, diagnostics, biomarkers, cardiovascular system, kidney function, oxidative stress, metabolic disorders.*

Introduction. Cardiorenal syndrome (CRS) is a pathological condition characterised by interrelated disorders of cardiac and renal function, with high risk of disability and mortality. According to the European Society of Cardiology, in 50-63% of patients with chronic heart failure, kidney function is impaired to varying degrees. Excess body weight and obesity play an important role in the development and progression of CRS[2,5]. Studies conducted in recent years show that catestatin plays an important role in

cardiovascular and kidney diseases. However, the diagnostic significance of catestatin in CRS against the background of excess body weight has not been sufficiently studied. In this regard, determining the possibilities of clinical application of this biomarker is an urgent task[1,3,4].

The aim of the Research. Determination of the prognostic value of the biomarker catestatin in patients with cardiorenal syndrome against the background of excess body weight, assessment of the relationship with the course of the disease, re-hospitalization, and the risk of cardiovascular complications**.**

Materials and methods. The study was conducted at the Bukhara State Medical Institute in 2023-2025. The study involved 130 patients diagnosed with CRS with excess body weight (IWT 25-29.9 kg/m2) and obesity of the 1st category (IWT 30-34.9 kg/m2). Of these, 70 (53.8%) were men and 60 (46.2%) were women, with an average age of 58.4±7.3 years. The control group consisted of 40 healthy individuals of the same age and sex. All patients underwent the following examinations: a complete clinical examination, anthropometric measurements (height, weight, BMI calculation, waist circumference), blood pressure monitoring, electrocardiography, echocardiography (ECG) with LVEF, assessment of diastolic function. Laboratory tests: general and biochemical blood analysis, urine analysis, creatinine, urea, electrolytes, lipid profile, glycemic profile, C-reactive protein (CRP). The glomerular filtration rate (GFR) was calculated using the CKD-EPI formula. The concentration of catestatin was determined by ELISA in intravenous blood serum. NT-proBNP levels were measured by the immunochemiluminescent method.

Results. Initial examination results: the average BMI of patients was 31.7±3.4 kg/m2, waist circumference was 104.3±8.7 cm in men and 98.6±9.2 cm in women. Arterial hypertension was diagnosed in 118 (90.8%), type II diabetes mellitus in 54 (41.5%), and ischemic heart disease in 96 (73.8%)

patients. The average LVEF was 46.8±8.2%, GFR 48.3±11.2 ml/min/1.73m2, NT-proBNP 1847±624 pg/ml, and catestatin 18.4±4.6 ng/ml.

In the regression analysis, the following factors were prognostically significant: low levels of catestatin (HR=3.42, 95% CI: 2.18-5.36, p<0.001), BMI (HR=1.12, 95% CI: 1.04-1.21, p<0.01), initial GFR (HR=0.96, 95% CI: 0.93-0.98, p<0.001), NT-proBNP (HR=1,0003, 95% CI: 1.0001-1.0005, p<0.01), LVEF (HR=0.94, 95% CI: 0.90-0.98, p<0.01), the presence of diabetes mellitus (HR=1.86, 95% CI: 1.24-2.79, p<0.01), age (HR=1.04, 95% CI: 1.01-1.07, p<0.05). In the multifactorial regression analysis, after adaptation to age, sex, BMI, diabetes mellitus, arterial hypertension, initial GFR, LVEF, NT-proBNP, and other factors, the level of catestatin became an independent prognostic factor. Each increase in 5 ng/ml of catestatin reduced the risk of a combined point by 28% (HR=0.72, 95% CI: 0.58-0.89, p<0.002). With catestatin <15 ng/ml, the risk ratio was 2.84 (95% CI: 1.67-4.83, p<0.001).

Conclusion. With an increase in the level of excess body weight (BMI 30-34.9 kg/m2), the level of catestatin decreases and the prognosis worsens, which indicates a cumulative negative effect of metabolic disorders. Dynamic monitoring of catestatin provides additional prognostic value in assessing the clinical course and effectiveness of treatment. Catestatin is a promising prognostic biomarker in patients with CRS against the background of excess body weight and can be used in clinical practice to stratify patients, determine treatment tactics, and optimize the observation regimen.

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