

«CLASSIC» OR «NEW» BIOMARKERS OF KIDNEY FUNCTION – WHICH IS BETTER FOR RENAL DAMAGE DIAGNOSIS?

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The aim of idea: To evaluate the clinical significance of determination of cystatin C and neutrophil gelatinase-associated lipokalin (NGAL) for the diagnosis of renal impairment in cardiac surgery patients.

Methods. In the blood and urine of 60 patients before, after and at 1 day after surgery we investigated NGAL, cystatin C (CC), urea and creatinine (Crea) with the calculation of fractional excretion of urea (FEM) and glomerular filtration rate (GFR, ml/min) for CC and Crea. Renal dysfunction (RD) is the decline in GFR-Crea $\geq 30\%$, and GFR-CC $\geq 10\%$ of the preoperative values.

Results. In patients with heart failure there were significantly higher plasma levels of CC – $1,329 \pm 0,002$ mg/l versus $0,997 \pm 0,001$ mg/l with normal heart function. In RD GFR-Crea was $67,0 \pm 9,4$, GFR-CC – $100,3 \pm 3,9$ ml/min, in the absence of: $88,7 \pm 15,9$ and $113,3 \pm 10,4$ ml/min, respectively. In correlation analysis, the following relationship between the GFR-Crea and GFR-CC: $r=0,22$, with an initial hypofiltration $r=0,53$, normofiltration – $r=0,31$, hyperfiltration – $r=0,22$. When preoperative hypofiltration GFR-Crea/GFR-CC was $0,69 \pm 0,20$, normofiltration – $1,03 \pm 0,03$, hyperfiltration – $1,54 \pm 0,25$. Changes as NGAL and FEM were unidirectional: a significant increase at the end of the operation (at 139.9 and 120.8% in relation to baseline values for NGAL and FEM, respectively) and a decrease of 1 day, and the reduction was greater in the FEM (-3.7% relative to the original data) than NGAL (23.9% compared to preoperative values).

Conclusion. Plasma cystatin C levels increasingly reflects the degree of circulatory disorders. Index GFR-Crea/GFR-CC postoperative setting is more accurate assessment of renal function. In the diagnosis of tubular damage NGAL had no advantages over FEM. However, the simultaneous determination NGAL in blood and urine helps to differentiate between distal and proximal tubulopathy.