Evaluation of serum cysteine-rich protein 61 and cystatin C levels for assessment of acute kidney injury after cardiac surgery

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ABSTRACT

Objective: The occurrence of acute kidney injury (AKI) after cardiopulmonary bypass (CPB) can lead to morbidity and mortality. We hypothesized that cysteine-rich protein 61 (CYR61) and cystatin C (CysC) may be potential novel biomarkers of AKI after cardiopulmonary bypass. ***Methods:*** Patients were classified into AKI and non-AKI group depending on serum creatinine. Levels of creatinine, CysC, and CYR61 were measured at five time-points before and within 48 h after the surgery. ***Results:*** Fifty patients were included in the study. Serum creatinine pre-operative values were 74.0±43.3 μmol/L in AKI group vs. 64.8±17.9 μmol/L in non-AKI group. During 48 h, the values increased to 124.6±67.2 μmol/L in AKI group ($p<0.001$) but in non-AKI group they did not change significantly. Serum CysC values were significantly increased already 2 h after CBP in AKI group (949±557 μg/L, $p<0.05$) compared to non-AKI group (700±170 μg/L). Pre-operative serum CYR61 tended to be lower in AKI group (12.4 μg/L) than in non-AKI group (20.3 μg/L), but 24 h after the surgery, the levels in AKI group tended to be higher than non-AKI group. ***Conclusion:*** Serum CYR61 does not seem to be an early predictor of AKI in patients after cardiac surgery with CPB, but it might possibly identify patients at risk of developing more severe kidney injury. Serum CysC could be a promising biomarker of AKI, differentiating patients at risk of developing AKI after cardiac surgery as early as 2 h after surgery.

KEYWORDS

Acute kidney injury; Creatinine; cysteine-rich protein 61; cystatin C; cardiopulmonary bypass.