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URINARY TIMP2*IGFBP7 IS AN EARLY BIOMARKER OF ACUTE KIDNEY INJURY AND EARLY PREDICTS CRRT START IN CRITICALLY ILL PATIENTS

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Objectives: Standard criteria for acute kidney injury (AKI), like serum creatinine (sCr) and urine output (UO), are poor, late and non-specific diagnostic tools, measuring renal function, but not renal injury. The Objective of the study was to analyze tissue inhibitor metalloproteinase-2 (TIMP2) * IGF-binding protein 7 (IGFBP-7) for early prediction of AKI, evaluating its role to start precociously the continuous renal replacement therapy (CRRT)

Methods: Observational study enrolling 42 patients after cardiac surgery. TIMP-2*IGFBP7 was examined in serial urine collections pre-surgery (T0), at ICU admission (T1), after 24 (T2), 48 (T3), and 72 h (T4).

Results: TIMP-2*IGFBP7 was defined as "positive for AKI" at a concentration $>1.6 \text{ (ng/ml)}^2 / 1000$. We performed a ROC curve to evaluate the predictive ability of [TIMP-2]·[IGFBP7] for AKI: [TIMP-2]*[IGFBP7] showed the best performance for severe AKI (stages 3) at 24 hours (T1): AUC 0.78 (95%CI 0.66–0.82). Moreover, the CRRT treatment duration was significantly longer in patients who had a TIMP-2*IGFBP7 concentration $> 1.7 \text{ (ng/ml)}^2 / 1000$ at T1 (6.7 ± 1.3 days versus 4.2 ± 1.1 days. $p=0.02$).

Conclusions: Early assessment of TIMP2*IGFBP7 after admission in ICU (T1) may predict severe AKI, allowing for the precocious start of RRT in patients with normal serum creatinine and urinary output (Figure 1). This biomarker could be inserted in a clinical score (SOFA, APACHE) not evaluating a single value, but its trend during the first 3 days of ICU stay.

Figure 1

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