Category :**Renal: failure**

A179 - ***Association of hemodynamic variables in the first 4 hours after intensive care unit admission and the development of cardiac surgery-associated acute kidney injury within 72 hours after cardiac surgery. a single center cohort study.***

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Introduction:

Cardiac surgery-associated acute kidney injury (CSA-AKI) is influenced by both modifiable and non-modifiable factors. In this study we evaluated the association between the modifiable factors mean arterial pressure (MAP), central venous pressure (CVP) and mean perfusion pressure calculated as MAP-CVP (MPP) measured in the first 4 hours (h) after intensive care unit (ICU) admission with the development of CSA-AKI within 72h after cardiac surgery.

Methods:

In this single center cohort study we collected data in adult patients who underwent cardiac surgery during a 5-year period (2012-2017). Exclusion criteria were cardiac transplantation, and use of ECMO or LVAD. We recorded baseline characteristics and MAP, CVP and MPP values during the first 4h after ICU admission. The primary endpoint was CSA-AKI within 72h according the Kidney Disease Improving Global Outcomes (KDIGO) definition based on both serum creatinine (SCr) and urine output (UO) criteria. We used Mann-Whitney and Chi2 test to compare groups, Area Under the Receiver Operating Characteristics (AUROC) and a logistic regression analysis to evaluate the association of the hemodynamic variables with CSA-AKI.

Results:

A total of 3415 patients were included. CSA-AKI occurred in 2200 patients (64.4%). CSA-AKI patients were older, had more severe Chronic Kidney Disease (CKD) and had a higher Euroscore II. More CSA-AKI patients had emergency surgery, and combined CABG and valve surgery (all $p<0.001$).
Patients with CSA-AKI had lower MAP (71 vs 72 mmHg, $p<0.001$), higher CVP (10 vs 9 mmHg, $p<0.001$) and lower MPP (60 vs 62 mmHg, $p<0.001$) compared with patients without AKI. This association remained after adjustment for other risk factors (table 1). ROC analysis showed that there was a weak association of lower MAP, higher CVP and lower MPP with CSA-AKI (table 1).

Conclusion:

Small changes in MAP, CVP and MPP during the first 4h in the ICU were associated with CSA-AKI, even after adjustment for covariates. This association was weak for all 3 variables.

Table:

A: AUROC analysis	Area under the curve (95%CI)	P value
MAP	0.443 (0.424 - 0.463)	<0.001
CVP	0.600 (0.580 - 0.619)	<0.001
MPP	0.405 (0.386 – 0.425)	<0.001
B: Logistic regression analysis *	OR (95% CI)	P value
MAP (model 1)	0.990 (0.981 – 0.998)	0.016
CVP (model 1)	1.109 (1.083 – 1.136)	<0.001
MPP (model 2)	0.988 (0.980 – 0.996)	0.003

*Association of hemodynamic variables during the first 4 hours of ICU admission and CSA-AKI within 72 hours of ICU admission. * adjusted*

for age, Chronic kidney disease (CKD) stage, admission reason (elective/urgent), type of surgery, Cardiopulmonary Bypass (CPB), Euroscore II (%). Goodness of fit for model 1 p=0.979 and for model 2 p=0.643. Abbreviations: MAP: Mean Arterial Pressure, CVP: Central Venous Pressure, MPP: Mean Perfusion Pressure, CI: Confidence Interval