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Predictors for aki in a cardiac surgery population undergoing cardio-pulmonary bypass

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Introduction

In cardiac surgery involving cardio-pulmonary bypass, AKI is a relatively common diagnosis. In recent years a number of new biomarkers have been undergoing validation in this clinical setting. It is thought that earlier detection of AKI will offer opportunities for new therapeutic interventions

Objectives

Analysis of a database was performed to define baseline patient and biomarker characteristics in patients developing AKI in a population of cardiac surgery patients undergoing cardiopulmonary bypass as part of the procedure.

Methods

In total, 259 patients were enrolled, after the exclusion of patients with severe pre-existing renal insufficiency (defined as a eGFR< 15 ml/min). As part of a broader study, urine and blood samples were obtained immediately before initiation of cardio-pulmonary bypass. Patients were subsequently retrospectively divided into 2 groups, AKI (n=84) and non-AKI (n=175). This subdivision was based on based on the AKIN criteria i.e. increase in s-Creat ≥ 0.3 mg/dl or ≥ 50% compared to baseline within 48 h or reduction in urine output < 0.5 ml/kg/h for more than 6 h. Statistical analysis of all characteristics before arrival on the ICU was performed.

Results

AKI patients (32% of total) were older (70 yrs (SD = 9) vs 67 (11), p =0.043) with higher BMI´s (27.7 (4.8) vs.26.7 (4.3), p = 0.036). As to be expected baseline eGFR (CKD-EPI, in ml/min) was lower in the AKI-group (69.49 (20.30) vs. 76.45 (15.01), p = 0.024). Both baseline urinary-NGAL (μg/l)(1211 (2172) vs.749 (946), p = 0.020) and serum-cystatin C (in mg/L)(0.98 (0.39) vs 0.86 (0.36), p = 0.0175) were statistically higher in the AKI group and CPB time (in minutes) was significantly longer: 163 (63) vs 121 (51), p < 0.0001.

Conclusions

Urinary-NGAL and serum-Cystatin most likely reflect pre-existing kidney dysfunction (like eGFR). Length of cardiopulmonary bypass time is a significant factor for development of AKI, which is amenable to improvement.

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Reference

1. Thiele RH, Isbell JM, Rosner MH: **AKI Associated with Cardiac Surgery.** *Clin J Am Soc Nephrol* 2015, **10(3)**:500-514, Mar 6.

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