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P051 -Arterial Stiffness is a Predictor for Acute Kidney Injury following Coronary Artery Bypass Graft Surgery

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Rationale and objective: Cardiac surgery-associated acute kidney injury (CSA-AKI) is a serious postoperative complication of cardiac surgery, an episode of which impacts on patient morbidity and mortality. Pulse wave velocity (PWV; a non-invasive measurement tool to assess arterial stiffness (AS)) has been shown to predict kidney disease progression, and cardiovascular and all-cause mortality in patients with chronic kidney disease. We hypothesised that PWV would also predict CSA-AKI in subjects who have undergone non-valve repair, elective, coronary artery bypass graft (CABG) surgery.

Study design: A prospective, observational, exploratory study.
Outcomes: PWV was determined with a Vicorder device, together with standard clinical and biochemical parameters. AKI staging was defined according to the Kidney Disease Improving Global Outcomes (KDIGO) Clinical Practice Guidelines.

Results: 137 patients were included in the study. 85% were male, and mean age was 66.3 years (SD=9.7 years). There were 40 episodes (29%) of CSA-AKI. Each 1 unit increase in PWV score was associated with a 1.5 fold greater odds of a CSA-AKI event (p=0.006(odds ratio=1.5; confidence interval:1.13-2.10). A 1 unit increase in eGFR resulted in an estimated 85% decrease in the odds of developing AKI, each year, men have an odds reduction of 15% of developing AKI compared with females and each 1 year increase in age lowered the odds of developing AKI by 87%.

Conclusions: This exploratory study revealed that PWV, assessed prior to non-valve repair elective CABG surgery, independently predicts CSA-AKI events. PWV is a simple, non-invasive technique that could potentially be used to risk stratify for CSA- AKI following elective cardiac surgery. Importantly, unlike other risk factors, there is potential to modify AS pre-cardiac surgery and reduce the risk of CSA-AKI. Further research to evaluate potential therapeutic strategies to reduce AS is warranted.