P146 The Predictive Role of Arterial Stiffness in the Development of Acute Kidney Injury in Patients Undergoing Surgical Aortic Valve Replacement

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ABSTRACT

Purpose/Background/Objectives: Acute kidney injury (AKI) is a serious postoperative complication. Increased arterial stiffness has been shown to be an independent risk factor for cardiovascular events. Our aim was to investigate whether arterial stiffness is a predictor of AKI in patients following surgical aortic valve replacement (SAVR).

Methods: Eighty-four patients (mean age 72 ± 8 years, 34 females) with moderate to severe aortic stenosis undergoing SAVR were included. As indicators of arterial stiffness aortic hemodynamics, carotid-femoral pulse wave velocity (cfPWV) and brachial-ankle pulse wave velocity (baPWV) were assessed prior to surgery. Renal dysfunction was defined when eGFR was below 60 ml/min ($n = 28$, 33%). AKI was defined using KDIQO criteria.

Results: Twelve patients (14%) developed AKI. There was no significant difference in aortic hemodynamics and cfPWV between the two groups. baPWV significantly correlated with AKI ($r = 0.313$, $p = 0.004$). In logistic regression analysis, increase of baPWV per 1 Standard Deviation (Odds Ratio [OR] = 2.76, 95% Confidence intervals [CI]: 1.25–6.11, $p = 0.012$) and presence of renal dysfunction (OR = 14.93, 95% CI: 2.55–87.32, $p = 0.003$) were associated with higher risk for AKI even after adjustment for age, gender, systolic blood pressure and diabetes. baPWV was a stronger predictor of AKI than baseline creatinine (Area under the curve [AUC] 0.68, 95% CI: 0.52–0.84, $p = 0.05$ vs AUC 0.61, 95% CI: 0.46–0.77, $p = 0.21$; $p < 0.05$).

Conclusion: baPWV could be considered as a useful predictive biomarker for AKI after SAVR, especially in patients with renal dysfunction prior to surgery.
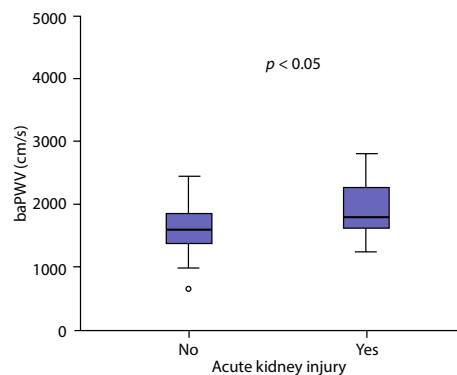
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