Incidence and predictors of acute kidney injury in patients undergoing transcatheter aortic valve implantation.

Abstract:
Acute kidney injury (AKI) can occur in up to one third of patients after surgical aortic valve replacement and can be associated with increased mortality. Little data exist, however, about the incidence, predictors, and prognostic implications of AKI after transcatheter aortic valve implantation (TAVI). The aim of this study was to examine the incidence, predictors, and prognostic implications of AKI after TAVI. Between January 2007 and January 2010, we prospectively enrolled 234 consecutive patients who underwent TAVI with the Medtronic CoreValve System (Medtronic CoreValve, Minneapolis, Minnesota) or Edwards SAPIEN (Edwards Lifesciences, Inc, Irvine, CA) heart valve. Acute kidney injury was defined according to the risk, injury, failure, loss, end-stage criteria. Patients with preoperative end-stage renal failure requiring dialysis were excluded. Baseline characteristics and procedural-related factors were examined as predictors for AKI in a multivariable regression model. Acute kidney injury was identified in 46 (19.6%) of 234 patients, and 24 (10.3%) of 234 patients required renal replacement therapy. The unadjusted in-hospital mortality rate was 15.2% in those patients without AKI and 7.7% in those with AKI (P = .015). Univariable logistic regression analysis identified preoperative serum creatinine, preoperative blood urea nitrogen, peripheral vascular disease, and blood
transfusion to be associated with AKI. Preoperative serum creatinine level remained as the only independent predictor of AKI (OR 3.7 95%, CI 1.24-11.3, P = .019). The amount of contrast used (in milliliters) was not associated with AKI (OR 1.8 95%, CI 0.94-3.5, P = .07). In this study, we observed that one fifth of patients developed AKI after TAVI and that AKI was associated with increased in-hospital mortality. Preoperative serum creatinine level was identified as the only predictor of AKI.