The Impact of Timing of Angiography on Acute Kidney Injury after Cardiac Surgery in Patients with Preoperative Renal Dysfunction

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Introduction

Acute Kidney Injury (AKI) related to cardiac surgery is one of the common complications of cardiac surgery. Preoperative angiography helps to evaluate heart disease, but it may increase the risk of AKI. Although with the progress of surgical technology, more and more patients with preoperative renal dysfunction can undergo cardiac surgery, there is little research on the impact of angiography on postoperative AKI in these patients. This study explores whether angiography will increase the risk of AKI after cardiac surgery in patients with preoperative renal dysfunction (15≤eGFR<60 ml/min/1.73m^2).

Methods and Materials

Retrospectively enrolled patients with preoperative renal dysfunction (15≤eGFR<60 ml/min/1.73m^2) who underwent angiography and cardiac surgery from January 2015 to December 2020. The main outcome was postoperative AKI (KDIGO criteria). Univariate analysis and multivariate regression were used to determine the relationship between the timing of angiography and AKI.

Results

A total of 888 patients with preoperative renal dysfunction (15≤eGFR<60 ml/min/1.73m^2) were continuously enrolled. The incidence of AKI was 48.31%. Male (OR=1.903), interval between angiography and surgery (0-2d OR=2.161; 3-6d OR=3.291), and aortic cross-clamping time (OR=1.009) were considered as predictors of AKI. In patients with 15≤eGFR<30ml/min/1.73m^2, the interval between angiography and surgery was also associated with AKI (0-2d OR=4.826; 3-6d OR=5.252), 30≤eGFR<45ml/min/1.73m^2 (0-2d OR=2.952; 3-6d OR=3.677), but not associated with AKI in patients with 45≤eGFR<60 ml/min/1.73m^2.

Conclusions

In patients with preoperative renal dysfunction, the interval between angiography and cardiac surgery (0-2d and 3-6d) is associated with AKI. For patients with poorer preoperative renal function, the interval between angiography and cardiac surgery is very worthy of attention.

THE 29TH INTERNATIONAL CONFERENCE ON
ADVANCES IN CRITICAL CARE NEPHROLOGY
AKI & CRRT 2024
MARCH 12-15, 2024 SAN DIEGO, CALIFORNIA