

Epidemiology of Acute Kidney Injury Among Pediatric Patients with Anomalous Origin of the Left Coronary Artery from the Pulmonary Artery after Repair over 7 Years

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Introduction: Acute kidney injury (AKI) presents as a prevalent complication after surgical repair of pediatric cardiac deficiency and is associated with poor outcomes. The state of insufficient renal perfusion secondary to severe myocardial dysfunction after birth is probably an independent risk factor in patients undergoing anomalous origin of the left coronary artery from the pulmonary artery (ALCAPA) repair. We retrospectively figure out the epidemiology of pediatric acute renal outcome in ALCAPA population after repair

Methods: There were a total of 89 children included who underwent left coronary reimplantation. Pediatric-modified risk, injury, failure, loss and end-stage kidney stage (pRIFLE) criteria was chosen to make the diagnosis of AKI.

□ **Results:** The incidence of AKI was 67.4% (60/89) in our study. Among AKI cohort, 23 (38.3%) patients were diagnosed as AKI-I/F (20 in I criteria and 3 in F criteria). The poor cardiac dysfunction (Left ventricular ejection fraction (LVEF) less than 35%) prior to surgery was a significant contributing factor associated with onset of AKI (OR, 5.553, 95% CI, 1.393-22.132; $p = 0.015$), while longer duration of anomaly discovery until surgical repair (OR, 0.973, 95% CI, 0.946-1.000; $p = 0.049$) and preoperative higher albumin level (OR, 0.831, 95% CI, 0.696-0.992; $p = 0.041$) were found to alleviate AKI condition. Neither preoperative severity of mitral regurgitation nor mitral annuloplasty was associated with AKI onset. After reimplantation process, there was 1 death in no-AKI group and 2 deaths in AKI-I/F ($p = 0.356$), and other children all have survived until hospital discharge. Median follow-up time was 46.5 months (IQR, 34.0-63.25 months). And during their follow-up time, patients in AKI cohort were seen more by specialists and rechecked more by echocardiography.

Conclusions: Pediatric AKI after ALCAPA repair occurs in a relatively higher incidence than previous cardiac reports and was linked to clinical outcomes. Preoperative poor cardiac dysfunction (LVEF < 35%) is strongly associated with AKI development. Moderately prolonging the duration from coronary anomaly discovery till surgical repair is needed to take medical measures to optimize the decreased cardiac function and the poor nutrition in terms of decreasing acute kidney problem.