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**Acute Renal Failure Early After Cardiac Surgery With Extracorporeal Circulation: Long Term Outcome?**

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**BACKGROUND:** Acute renal failure (ARF) in the immediate postoperative period after cardiac surgery requiring extracorporeal circulation (ECC) is common. Long term outcome in pediatric patients is not well known.

**METHODS:** We retrospectively reviewed 1407 pediatric cases (age < 16 years) who underwent cardiac surgery requiring ECC, from 1998-2008. ARF was defined as a creatinine value of more than twice the normal value for age occurring within the first 96 hours after surgery. Current renal outcome was evaluated by means of glomerular filtration rate (GFR) according to Schwartz formula, proteinuria, renal ultrasound with duplex Doppler, blood pressure and cardiologic evaluation.

**RESULTS:**

From 1407 patients reviewed, 117 patients (8%) fulfilled inclusion criteria. Pre-existing renal disease was found in 5 patients (4%). Renal replacement therapy (RRT) was required in 5 patients (range 2 - 45 days). Eighteen patients (15% of study group) deceased due to multiple organ failure or sepsis as the main causes.

The mean follow-up after surgery was 5.6 years (SD 1.6) (FU ongoing). Of subjects requiring dialysis during the immediate postoperative period, none is currently on RRT. Nine patients (31 %) have proteinuria. Chronic kidney disease (CKD) was noted in 3 patients, 1 patient stage 1 (GFR 90-100 ml/min/1.73m<sup>2</sup>), 1 patient stage 2 (GFR 60-89ml/min/1.73m<sup>2</sup>) and in 1 patient stage 3 (GFR 30-59 ml/min/1.73m<sup>2</sup>) CKD with tubular dysfunction. In all three patients small kidneys were noted (SD > -2) with increased corticomedullary reflectivity. Three patients are hypertensive requiring anti-hypertensive treatment, 2 of which have CKD. Renal stenosis was excluded in all patients.

**CONCLUSION:**

1. Acute renal failure in the immediate post-operative period after pediatric cardiac surgery is not infrequent.
2. Overt Chronic Kidney Disease in early follow-up is limited.
3. Small kidney size and increased corticomedullary reflectivity are specific diagnostic tools for CKD.
4. Very long-term outcome needs to be determined.