Continuous Renal Replacement Therapy is Associated with Acute Myocardial Injury in Critically Ill Patients: Preliminary Data.

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\textbf{Background:} Intermittent renal replacement therapy is associated with dialysis-induced acute myocardial injury, in both chronic and acute treatment. Continuous Renal Replacement Therapy (CRRT) is often favoured in critically ill patients with acute kidney injury (AKI), hypotension or shock. Lower ultrafiltration rates, characteristic of CRRT, reduce systemic hemodynamic stress and may be cardio-protective. We assessed the impact of CRRT on the development of acute segmental myocardial injury, in critically ill patients requiring dialysis for AKI.

\textbf{Objectives:} To determine if starting CRRT for AKI in critically ill patients is associated with development of new regional myocardial injury.

\textbf{Methods:} We used 2D-echo and speckle tracking analysis software (EchoPAC, GE Healthcare) to measure global and segmental left-ventricular myocardial longitudinal strain in 12 critically ill patients presenting with AKI. Measurements were made at baseline immediately prior to and 4, 8 and 24 hours after initiation of CRRT.

\textbf{Results:} Measurements were completed in 11 patients. 10/11 patients developed new regional wall motion abnormalities, with 8 developing these as early as 4 hours after CRRT start. The number of affected segments varied from 1 to 11 (out of 12). Of 11 patients, 7 (58\%) died in the ICU, with 5 of those dying within 2 days of CRRT initiation.

\textbf{Conclusions:} Our preliminary results show that CRRT is associated with new regional myocardial injury. This injury was associated with high mortality. These results are concerning with respect to the presumed safety of CRRT (compared to other dialysis modalities) in critically ill patients. Further direct comparison of CRRT with other dialysis modalities is warranted to assess the potential for relative cardio-protection.