DYSCHLOREMIA A RISK FACTOR FOR THE DEVELOPMENT OF ACUTE KIDNEY INJURY IN CRITICALLY ILL PATIENTS
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Learning Objectives: Dyschloremia is common in critically ill patients. The impact of dyschloremia on ICU patients is not well studied. We investigated the epidemiology of dyschloremia and its impact of the chance of acute kidney injury (AKI) in a large cohort of ICU patients. Methods: This report is a single-center, retrospective cohort study of patients admitted to ICU at Mayo Clinic-Rochester from Jan.1, 2006 to Dec. 30, 2012. Baseline serum chloride was defined as the serum chloride value during the month prior to ICU admission. Patients with known AKI and CKDV before ICU admission were excluded. Demographics, comorbidities, APACHE III scores were abstracted from the medical record along with outcomes such as AKI, ICU and hospital length of stay (LOS) and mortality. Logistic regression analysis was used to compare outcomes of patients with dyschloremia. Effects of age, gender, severity scores were adjusted in the regression model. Results: Total 6025 patients were enrolled in the analysis following implementation of eligibility criteria. From the whole cohort, 1970 patients (32.7%) developed AKI. Baseline serum chloride was relatively lower in AKI than in non-AKI group [100 (96–104) vs. 102 (98–105), p<0.001]. Of the total patients enrolled, 4174 patients had a record of their baseline serum chloride. From this group 1530 (36.7%) had hypochloremia and 257 (6.2%) were hyperchloremic before ICU admission. The incidence of AKI was higher in hypochloremic and hyperchloremic patients as compared to those with normal serum chloride level (43.3% vs.30.4% and 34.2% vs.30.4%, respectively p<0.01). In a multivariable logistic regression model, baseline serum chloride of ≤94mmol/L remained to be independently associated with AKI (OR: 1.684, 95% CI: 1.108–2.567). However, baseline chloride of 94-100mmol/L (OR 1.228; 95% CI 0.847–1.780; p<0.2799) and >108mmol/L (OR 1.066; 95% CI 0.502–2.249; p=0.8673) had no significantly association with AKI. Conclusions: Dyschloremia is common in critically ill patients and severe hypochloremia is independently associated with an increased risk of development of AKI

IMPACT OF DIFFERENT METHODS OF RENAL REPLACEMENT THERAPY IN WEIL SYNDROME
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Learning Objectives: Leptospirosis is a health problem worldwide. Its most severe form, Weil’s disease, is a classic model of sepsis, provoking acute respiratory distress syndrome and acute kidney injury (AKI), with associated mortality that remains unacceptably high. We previously described the effects of hemodialysis dose in Weil’s disease, using sustained low-efficiency dialysis (SLED), and demonstrated that early initiation of SLED followed by daily SLED significantly decreases mortality. However, the mode of clearance can also affect dialysis patient outcomes. Hemofiltration and hemodialysis can provide convective or diffusive clearance, respectively; hemofiltration reportedly provides greater clearance of medium-size and large molecules and thus might benefit critically ill AKI patients by clearing more large-molecule toxic inflammatory cytokines. Therefore, we compared the effects of convective clearance, using hemofiltration (SLEDF), and diffusive clearance, using hemodialysis (SLED), in Weil’s disease patients. Methods: In a prospective, randomized clinical trial, conducted in the ICU from 2009 through 2012, we compared two groups (SLED vs. SLEDF), evaluating demographic, clinical and biochemical parameters, as well as serum levels of interleukins, up to the 3rd day after admission. Both groups received early, daily dialysis. Results: All patients received norepinephrine and were on mechanical ventilation. Although clinical data, demographic profiles and severity (SOFA/APACHE scores) were similar, TNF-α, IL-2 and IL-5 were higher in SLEDF patients than in SLED patients. Over a 3-day period, IL-7, IL-17 and MCP-1 trended lower in SLEDF patients than in SLED patients. Duration of mechanical ventilation, length of ICU stay and mortality did not differ between the groups. In a logistic mortality model, the area under the ROC curve increased by 0.7 with advanced age; higher APACHE and SOFA score; higher serum urea and creatinine; lower pO2/FiO2; and higher peak inspiratory pressure (P>0.05 for all). Conclusions: The mode of dialysis clearance might not affect outcomes in Weil’s syndrome.

PREDICTORS OF IN HOSPITAL MORTALITY IN PATIENTS ON CONTINUOUS VENO-VENOUS HEMOFILTRATION IN THE ICU
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Learning Objectives: In Intensive Care Units, acute renal failure is mostly a part of multiple organ dysfunction syndrome, with mortality ranging from 28% - 90%. Continuous Veno-Venous Hemofiltration (CVVH) is a predominant mode of renal replacement therapy used in the ICU. Methods: The objective of this study is to describe the demographic characteristics of patients undergoing CVVH. It aims to establish an association between these characteristics and the variables that define the severity of illness and in-hospital mortality outcomes of patients undergoing CVVH. Medical records of patients who underwent CVVH in the ICU at our institution from January 2007 to December 2013 were analyzed. Chi-square test was done for categorical variables. Descriptive analysis was used to identify demographic data and clinical parameters. Results: 233 patients underwent CVVH at our institution from January 2007 to December 2013. The overall mortality was 75.22%. Acute respiratory failure requiring mechanical ventilation was associated with significantly increased mortality 76.74% vs. 40.0 % (p=0.04). Septic shock was the most common reason for ICU admission (71.2%). The most common indication for CVVH was ATN 63.9% followed by hyperkalemia (57.0%). CVVH for metabolic acidosis was associated with the highest mortality at 81.06 % vs.67.02 % in patients who underwent CVVH for other indications. Escalating pressor support was associated with worse outcomes with a mortality of 78% and 79.17% in patients requiring 2 and 3 pressors, respectively. Increasing APACHE II scores were associated with higher mortality, scores ranging from 0–24 were associated with an overall mortality of 69.9% while scores ranging between 25–50 had a mortality rate of 80.5% Conclusions: This observational study in patients undergoing CVVH revealed that patients presenting with worse baseline APACHE II scores, requiring mechanical ventilation and pressor support, had worse in-hospital outcomes. CVVH initiation for metabolic acidosis was associated with higher mortality. Our study may aid in delineating the group of patients who may benefit the most from use of CVVH.