

OBJECTIVE: Our hospital is a national reference center for ECMO support therapy as for lung transplantation, it is the only center that has an active program, so understanding the epidemiology of AKI associated with ECMO in our population is important, in addition to representing a part of the experience in Latin America. **METHOD:** Retrospective and descriptive studies were included all patients 18 years or older connected to ECMO with a diagnosis of severe pneumonia for COVID-19 from June 2020 to August 2021. Data were collected in Excel and using the ECMO Team platform data that is shared in the ELSO. Descriptive data analysis was performed with SPSS V21 and Excel.

RESULTS: A total of 48 patients were connected to ECMO for COVID-19 severe pneumonia in our center, of which 39 were men. Average age 49 years (min 21 year, max 68 year), average weight 93 kg (min 55 kg, max 125 kg) 25 patients (52%) with AKI, 22 (45%) required KRT and 100% CKRT. Of them, 10 patients (20%) have kidney recovery function, all of them get out form ECMO. From all, 45% patients died, these 45% were still in ECMO. In most of the cases, the AKI cause is multifactorial, but the most common cause identified was sepsis, the second nephrotoxicity (antibiotics like vancomycin and colistin) and the third hemolysis (an ECMO membrane complication). About the indication of star KRT: 50% fluid overload, 30% acidosis and uremia and 20% anuria. A total of 100% of patients were in ECMO-VV at time CKRT started, all were connected in parallel in ECMO in post-blood pump and return pre-blood pump, with no coagulation problems as long as they have the ECMO anticoagulation, 93% patients with heparin and 7% with argatroban for HIT suspicious. As data to highlight from our population, there is the first bilateral lung transplant secondary to COVID-19 in Latin America and the longest air transfer in ECMO in the world.

CONCLUSION: In our center, the AKI, KRT and mortality in patients with ECMO are much like other centers reported. In COVID-19, there is not yet very clear evidence and more studies should be done. This is the first study in Mexico about ECMO, AKI and COVID-19.

MO320 RISK FACTORS AND OUTCOMES RELATED TO ACUTE KIDNEY INJURY AMONG ENHANCED RECOVERY AFTER SURGERY (ERAS) COLORECTAL SURGERY

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BACKGROUND AND AIMS: Enhanced recovery after surgery (ERAS) protocol is an evidence-based programme that englobe more restrictive fluid therapy to maintain euolemia and the use of multimodal analgesia, which includes non-steroidal anti-inflammatory drugs (NSAIDs). Consequently, it's pertinent to assess the risk and potential consequences of acute kidney injury (AKI) in the short and medium term. **METHOD:** A descriptive and single-center retrospective study, which included 428 patients that were submitted to colon-rectal surgery according to ERAS protocol between November 2016 and May 2020. AKI was defined according to KDIGO criteria.

RESULTS: Data were collected from 428 patients. AKI occurred in 25.2% of patients (108), mostly KDIGO 1 (63.9%) and 6.5% required haemodialysis. The median time of follow-up was 25.6 months (IQ 15.6–38.8). Patient-related variables that positively influenced AKI were ASA Class III/IV [$F(1, 426) = 23.2; P < .001$], diabetes [$F(1, 426) = 9.96; P = .002$], severe heart disease [$F(1, 426) = 7.12; P = .008$], CKD [$F(1, 425) = 11.58; P < .001$], obesity [$F(1, 423) = 14.21; P < .001$] and use of ACE inhibitors/ARBs [$F(1, 425) = 17.4; P < .001$]. Preoperative and surgery-related variables that influenced AKI were preoperative haemoglobin [$F(85, 338) = 1.36; P = .030$], open approach [$F(1, 424) = 21.5; P < .001$], NSAIDs [$F(1-426) = 5.77; P = .017$], iodinated intravenous contrast exposure [$F(1, 424) = 26.8; P < .001$], postoperative support aminergic [$F(1, 424) = 18.9; P < .001$], surgery complications [$F(1, 426) = 36.5; P < .001$] and blood transfusion [$F(1, 426) = 10.15; P = 0.002$]. AKI group had a superior length of stay (9 versus 6 days; $P < .001$), ICU admission (31.5% versus 8.8%; $P < .001$), readmission at 30 days (12% versus 5.6%; $P = .027$) and mortality (23.1% versus 6.6%; $P < .001$). Kaplan–Meier analysis showed that the AKI group was associated with lower survival (log-rank test = 26.601; $P < .001$). We also found that the AKI group was associated with a greater reduction in GFR after 2 years (3.3 mL/min/1.73 m² versus 1.8 mL/min/1.73 m²; $P = .009$).

CONCLUSION: AKI was frequent among ERAS patients and was associated with worst outcomes—higher costs (since it was associated to longer hospitalization, higher readmission at 30 days and ICU admission), higher risk of reduction in GFR in the first 2 years and higher mortality.

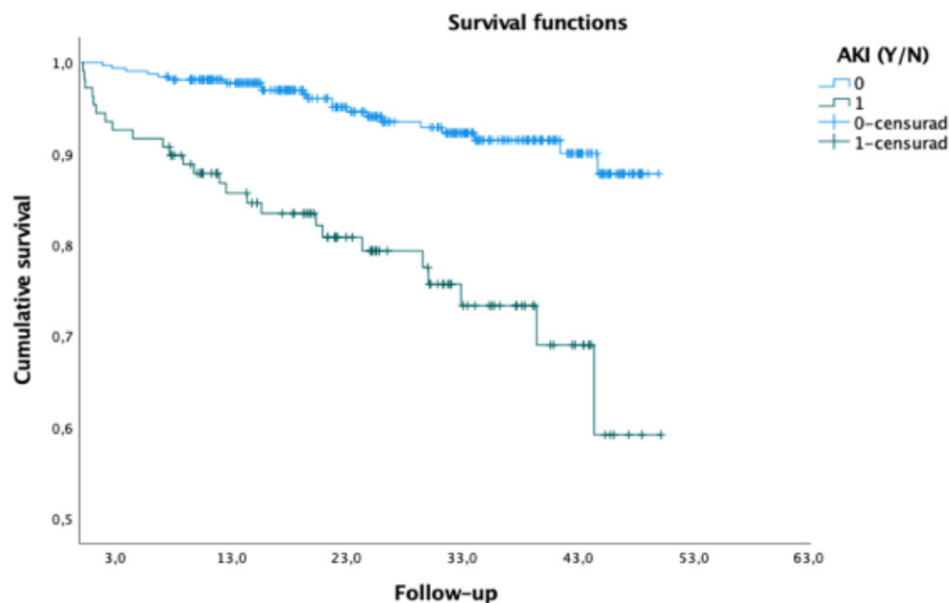
MO321 THE CRITICAL ROLE OF CYTOKINE DYSREGULATION IN ACUTE KIDNEY INJURY DEVELOPMENT IN PATIENTS WITH COVID-19

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BACKGROUND AND AIMS: One of the complications described in critically ill patients in intensive care units with severe COVID-19 was acute kidney injury (AKI). The pathophysiology of AKI in patients with COVID-19 is multifactorial. In addition to the direct virulence of SARS-CoV-2 in renal cells, the tissue inflammation and local immune cell infiltration, cytokine storm, secondary infections and nephrotoxicity associated drugs may contribute to AKI [1]. Mounting evidence throughout the pandemic suggests that patients with severe COVID-19 may have a cytokine storm syndrome, one of the possible causes of AKI in these patients [2]. The present prospective cohort study analysed the correlation between circulating cytokine profile and estimated glomerular filtration rate (eGFR) in patients with COVID-19.

METHOD: After signing the informed consent, patients positive for SARS-CoV-2 infection ($n = 74$) had blood samples ($n = 139$) collected at hospital admission until the day of the outcome. ELISA measured the cytokines IL-10, IL-4, L-6, TNF- α and IFN- γ , and the eGFR was calculated by the CKD-EPI Cystatin C equation.



Statistics description: Continuous variables were checked for normality and presented as mean \pm standard deviation or median and interquartile range. The association between continuous variables is shown in scatterplots, and a predicted response with 95% confidence interval (95% CI) is plotted using fractional polynomials. For linear correlations, we obtained *P*-values using Pearson's correlation coefficient.

RESULTS: There is a more significant distribution of eGFR below 90 mL/min in the population studied, associated with older patients. Glomerular filtration rates were negatively correlated with age as expected (-0.60 ; $P < 0.0001$). Lower eGFR was correlated with levels of proinflammatory cytokines such as IL-6 (-0.33 ; $P < .0007$) and TNF- α (-0.21 ; $P < .03$); but without positive correlation with IL-10 (0.04 ; $P < 0.68$) or IFN- γ (-0.14 ; $P < .16$), even though higher IFN- γ levels have been linked to a worse prognosis in patients with severe COVID-19 [3]. Curiously, a positive correlation was observed between lower eGFR and IL-4 levels.

CONCLUSION: These results demonstrate that a shift in the immune response profile, cytokines with a Th2 profile such as IL-4, and cytokines with systemic functions such as IL-6 and TNF- α can be related to renal failure. The elucidation of the potential pathophysiological mechanisms of AKI associated with COVID-19 as well as monitoring of cytokine levels can (a) help to identify patients with severe COVID-19 at risk of loss of renal function, (b) provide information on specific therapeutic strategies.

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MO322 UTILITY OF CONTRAST-ENHANCED ULTRASOUND TO PREDICT RENAL RECOVERY IN PATIENTS WITH SEPSIS-ASSOCIATED ACUTE KIDNEY INJURY RECEIVING RENAL REPLACEMENT THERAPY

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BACKGROUND AND AIMS: Microcirculation plays a critical role in the development of sepsis-associated acute kidney injury (S-AKI); however, it remains uncertain whether microcirculatory dysfunction influences recovery. We investigated the association of contrast-enhanced ultrasound (CEUS)-assessed microcirculatory parameters with dialysis dependence in patients with S-AKI receiving renal replacement therapy.

METHOD: This study included 23 patients who underwent renal replacement therapy due to S-AKI, in addition to 17 healthy individuals and 18 subjects with chronic kidney disease (CKD). Parameters obtained from CEUS were compared.

RESULTS: Of the CEUS-derived parameters, patients with S-AKI had delayed rise time, time to peak and fall time, compared with healthy individuals ($P = .039$, $.045$ and $.072$), but they had similar values of peak enhancement, wash-in/out area under the curve (AUC), and wash-in perfusion index. Parameters did not differ between the S-AKI and CKD groups. Among patients with S-AKI, 10 (43.5%) patients did not experience renal recovery and required the lifelong dialysis treatment. They had lower values of peak enhancement, wash-in/out AUC, and wash-in perfusion index than in those with recovered renal function ($P = .049$, $.021$, $.036$ and $.049$). In addition, these values were slightly related to renal recovery after the adjustment with age, sex and disease severity ($P = .096$, $.065$, $.094$ and $.072$, respectively). We further evaluated the receiver operating characteristic curve and observed that CEUS-derived peak enhancement, wash-in/out AUC, and wash-in perfusion index predicted renal recovery ($P = .047$, $.022$, $.035$ and $.047$).

CONCLUSION: Assessment of microcirculatory alterations using CEUS may help to predict the probability of renal recovery in patients with S-AKI receiving renal replacement therapy. Further studies are needed to confirm the utility of CEUS, in consideration with baseline renal function and pathological findings.

MO323 EFFECTS OF PATIENT FRAILTY AND COMORBIDITY ON DURATION OF HOSPITALISATION AS AN OUTCOME AMONG ADULTS WITH ACUTE KIDNEY INJURY

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BACKGROUND AND AIMS: Acute kidney injury (AKI) is commonly associated with an adverse outcome in hospitalised patients. Frailty and comorbidity are risk factors for acute kidney injury. The aim of this study was to assess the strength of association between frailty and comorbidity as modifiers for duration of hospitalisation (LOS) as an outcome among inpatients with acute kidney injury in our institution.

METHOD: A retrospective observational study as part of a service assessment of adult inpatients, in a 1-month period, during the pre-pandemic phase was conducted to evaluate for changes needed to existing care pathways in our institution. AKI was identified with the help of the national algorithm endorsed by NHS England, which is incorporated in hospital reporting systems. Clinical frailty and comorbidity were estimated using the Rockwood Clinical Frailty Scale (CFS) and the Charlson comorbidity index (CCI). Pairwise correlations between LOS, CFS and CCI were estimated and tested for statistical significance using Bonferroni-adjusted significance levels. Ordinary least-squares linear regression was used to assess the prediction of LOS using CFS and CCI in separate models.

RESULTS: In 148 patients in our cohort, the mean age was 76.4 [95% confidence interval (95% CI) 74.1–78.8] years. Of these, 54% were male, 24.3% were diabetic, 29.7% had at least one criterion for prior vascular disease and 16.2% had a history of cancer. A total of 22.3% had a prior history of chronic kidney disease. In terms of severity at presentation, 67.6% had stage 1 AKI, 18.9% had stage 2, and 13.5% had stage 3 AKI.

The mean CCI was 5.4 (95% CI 5.06–5.81) and the mean RFI was 4.6 (95% CI 4.3–5.0). 50% were both at least moderately frail (CFS ≥ 5) and had a CCI of > 5 .

The mean duration of hospitalisation was 8.7 days.

Spearman's correlation coefficient constant for CFS with LOS was 0.23 and was 0.11 with CCI, with only the correlation between LOS and CFS being statistically significant at the 5% level after Bonferroni correction. As expected, there was a statistically significant correlation between CCI and CFS (0.49). Beta coefficients for ordinary least-squares linear regression individual models with LOS as the outcome variable were 0.69 (95% CI 0.18–1.19; $P < .007$) for CFS and 0.27 (95% CI -0.16 to 0.70; $P = .22$) for CCI.

CONCLUSION: Compared with patient comorbidity, clinical frailty has a stronger and statistically significant association with the duration of hospitalisation among hospitalised adults with AKI. This study quantifies the magnitude of factors over and above those resulting from patient comorbidity that are contributory to frailty in adult inpatients with AKI. Further studies are required to improve understanding of how clinical frailty affects duration of hospitalisation in patients with AKI, to help inform future clinical care pathways and improve duration of hospitalisation as a clinical outcome.

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MO324 SERUM POTASSIUM TRAJECTORY DURING AKI AND MORTALITY RISK

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BACKGROUND AND AIMS: Kidneys play a primary role in potassium homeostasis. The association between potassium (sK⁺) level and mortality or the need for kidney replacement therapy (KRT) during acute kidney injury (AKI) has not been adequately explored.

METHOD: In this prospective cohort study, AKI patients admitted to the Hospital Civil de Guadalajara were enrolled from August 2017 to June 2021 with AKI. We divided patients into eight groups based on the serum potassium level trajectories up to 10 days following hospitalization: (1) normokalemia (normoK), defined as sK⁺ + values between 3.5 and 5.5 mEq/L; (2) corrected hyperkalemia (hyperK), sK⁺ + > 5.5 mEq/L on hospital admission and decreased to normoK; (3) corrected hypokalemia (hypoK), sK⁺ + < 3.5 mEq/L on hospital admission and increased to normoK; (4) fluctuating potassium, sK⁺ + increased/decreased in and out of normoK parameters; (5) uncorrected hypoK, sK⁺ + < 3.5 mEq/L; (6) normoK to hypoK, sK⁺ + that were normal on hospital admission and decreased to hypoK and never went back to normal; (7) normoK to hyperK, sK⁺ + that were normal on hospital admission and increased to hyperK and never went back to normal; and (8) uncorrected hyperK,