#6814

A NEW SORBENT DEVICE FOR MULTIPLE CLINICAL PURPOSES: CURRENT EVIDENCE AT A PRIVATE HOSPITAL IN MEXICO

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Background and Aims: Adsorption is an extracorporeal technique utilized for blood purification, it also complements convection and diffusion for solute removal. Since 1991 we had used blood purification techniques, over the years, new adsorption cartridges had been developed, the new ones involving treatment for inflammatory conditions, chronic uremic symptoms and autoimmune diseases. HA130, HA230, and HA330 (Jafron, Zhuhai City, China) are among the widely used adsorption cartridges in China. We report highlights of the use of hemoperfusion using HA130 cartridges in the Mexican population cohorts in the context of multiple chronic inflammatory conditions in order to support evidence of effectiveness and safety.
Method: We retrospectively analyzed the medical records of 14 critically ill patients in the context of chronic inflammatory conditions such as acute kidney injury in chronic kidney disease, acute lung injury due to SARS-COV-2 infection and sepsis. Hemoperfusion in addition to standard therapy (fluid resuscitation, vasopressors, antimicrobial therapy and ventilatory support) resulted in the improvement of inflammatory substances levels when compared to standard therapy alone. Out of the 14 patients, 7 patients used HA130 cartridges and 7 patients with standard therapy alone.
Results: There were no significant side effects associated with HA130 cartridge use. HA 130 cartridges were found to be effective in reducing uremic symptoms in chronic hemodialysis patients, improvement of pruritus score and decreased parathyroid hormone and phosphate product ($p<0.5$) when compared to HD alone, creatinine (MARS: -24 μmol/L, -19.5 to -10.46, $p < 0.001$; SPAD: -2 μmol/L, -9.0 to $+7.0$/L, $p = 0.314$) and urea (MARS: -0.9 mmol/L, -318 to -0.189, $p = 0.024$; SPAD: -0.1 mmol/L, -1.0 to $+0.68$, $p = 0.523$). 66.6% of cost-effectiveness when compared to standard therapy.
Conclusion: In the group of patients that used HA130 cartridges we found statistically significant ($p < 0.05$) reduction of pruritus score, PTH, phosphate product, creatine and urea when compared to the group of patients with standard therapy alone. The development in new cartridges technology allows more wide applications for renal patients. As we expand to involve other indications for this therapy there is cost-effectiveness improvement for the patients.More studies in different clinical settings are needed in order to achieve adsorption therapy national recommendations. We also found that the HA130 cartridges are effective in reducing uremic symptoms and microinflammatory status in acute kidney injury in chronic kidney disease patients due to the elimination of middle and small molecule uremic toxins and inflammatory mediators and endotoxins. This may translate as an improvement of quality of life and survive rates in patients with chronic hemodialysis, even though more studies are needed in order to prove this assumption.

#5471

THE URINARY BIOMARKERS IGFBP7 AND IGFBP7 X TIMP2 PRE-EMPTIVELY IDENTIFY PATIENTS AT RISK OF CONTRAST NEPHROTOXICITY

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Background and Aims: Drug nephrotoxicity is a serious medical and economic concern. In fact, 25% of the 100 most used drugs in intensive care units are toxic to the kidney, which limits their use and, therefore, the correct therapy for the patient. The administration of contrast media (CM) during diagnostic tests or surgical interventions carries the risk of contrast-induced nephropathy (CIN), which is a clinical condition defined as an increase in plasma creatinine of 25% or 0.5 mg/dL above baseline within 3-5 days after administration. Because once installed CIN has no treatment, identification of new biomarkers predicting patients at risk of CIN before receiving CM may be crucial to prevent future kidney complications. Clinical studies conducted in other medical areas have identified new urinary biomarkers, such as insulin like growth factor binding protein 7 (IGFBP7) and tissue inhibitor of metalloproteinases 2 (TIMP2), that anticipate the risk of developing kidney damage after the administration of different potentially nephrotoxic compounds. The objective of this work was to evaluate the usefulness of these biomarkers to predict CIN in cardiac patients.
Method: A clinical study was carried out with 154 patients from the University Hospital of Salamanca Cardiology Department who subsequently received a CM. Prior to contrast administration, urine samples were collected. In addition, their plasma creatinine level was registered for the following 5 days to evaluate the development of CIN. Patients were divided into Controls (who did not develop CIN) and Cases (who developed CIN). IGFBP7 and TIMP2 biomarkers were quantified in urine samples by ELISA. Subsequently, the differences between both groups were evaluated using the Mann-Whitney U test and the diagnostic capacity of each biomarker was analyzed through the generation of its receiver operating characteristic (ROC) curve.
Results: Of the total number of patients, 123 were assigned to the Controls group and 31 to the Cases group. In both groups the distribution of sex and risk factors was similar, except for the case of age and body mass index, which was slightly lower and higher, respectively, in the Controls group. IGFBP7 was significantly higher in Cases ($p < 0.01$) compared to the Controls, and the IGFBP7 x TIMP2 product further improved this significance ($p < 0.001$). Specifically, the area under the ROC curve for IGFBP7 was 0.67 (95% confidence interval of 0.56-0.78); while that for IGFBP7 x TIMP2 increased to 0.73 (with a 95% confidence interval of 0.63-0.84). In contrast, TIMP2 alone showed no differences between both groups of patients.
Conclusion: The biomarkers IGFBP7 and IGFBP7 x TIMP2 could therefore be used for the prophylactic identification and management of patients at risk of developing CIN.

#3945

ACUTE KIDNEY INJURY (AKI) AMONG COVID-19 POSITIVE PATIENTS INCREASES THE RISK OF MORTALITY: A SINGLE CENTER EXPERIENCE

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Background and Aims: Renal complications of COVID-19 are not yet well studied. We aimed to evaluate the prevalence of acute kidney injury (AKI) among positive COVID-19 hospitalize cases and explore its impact on patient outcomes.
Method: 586 hospitalized patients with COVID-19 were retrospectively evaluated. of them, 267 (45.5%) developed AKI- classified according to the Kidney Disease Improving Global Outcomes (KDIGO) guidelines- compared with 319 (54.5%) patients without AKI.
Results: Most cases were males (72.7% vs. 69.7%), and their ages ranged (60.8 ± 14 vs. 51.7 ± 16 years). Comorbid conditions significantly predominant among the AKI group were diabetes mellitus (64 vs. 42.9%), hypertension (72.6% vs. 43.5%), and ischemic heart disease (25% vs. 14.7%). Fever, cough, shortness of breath, and dehydration were the main presentations among the AKI group, and they had significant radiological findings concordant with COVID-19 (86.8% vs. 59.8%). Sepsis, volume depletion, shock, arrhythmias, and ARDS were significantly higher in the AKI group. Anticoagulation (85% vs. 59.2%), vasopressors, plasma infusions, antimicrobials, and steroids were more frequently used in the AKI group. Acute respiratory failure requiring mechanical ventilation and the overall mortality rate were significantly higher in the AKI group (62.3% vs. 32.9% and 63.2%. vs. 31.1%, respectively).
Conclusion: AKI associated with severe COVID-19 was more frequent than reports from Chinese, European, and North American cohorts. AKI risk factors included COVID-19 comorbidities like hypertension, diabetes, mechanical ventilation, male gender, and older age. Mortality was high in this population, especially elderly patients, and in those who develop KDIGO stage 3 AKI.

#4641

RISK FACTORS FOR RRT RESTART AFTER CESSATION OF CRRT: A MULTICENTER STUDY

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Background and Aims: Acute Kidney Injury occurs frequently in patients admitted to the Intensive Care Unit (ICU) and continuous renal replacement therapy (CRRT) is a commonly used treatment modality in these patients. Restart of renal replacement therapy (RRT) after initial discontinuation of

CRRT is also frequently needed. The purpose of this study is to identify clinical characteristics and biomarkers influencing the restart of RRT after the cessation of CRRT, and to build a predictive model using these parameters.
Method: This multicenter retrospective study includes 891 patients who were treated using CRRT from July 2012 to December 2020 in the ICU of 3 academic hospitals. The primary end point observed was the restart of RRT during hospitalization. Baseline characteristics were compared between the no restart and restart RRT groups. Using univariate analysis and logistic regression, a prospective index was developed, and receiver operator characteristic (ROC) curve analysis was performed to confirm the predictivity of the prognostic index.
Results: Restart of RRT was needed in 632 (71.2%) patients. Compared to patients that did not restarting, patients in the restart RRT group demonstrated higher age, higher BMI, higher baseline serum creatinine (Cr), lower urine output, longer ICU admission, and more comorbid conditions (HTN, DM, HF, ischemic heart disease). In the multivariate analysis, five parameters demonstrated independent influence on restart of RRT: HTN, Cr, ICU admission duration, BMI, and mean blood pressure. The prognostic index, which was calculated from these variables, showed a satisfactory potential to predict the restart of RRT after discontinuation of CRRT. ROC analysis revealed an area under the curve of 0.738 (95% CI, 0.703-0.773, $p<0.001$).
Conclusion: We found that 5 of the 40 parameters observed in our study were independent risk factors for the restart of RRT during admission and we successfully developed a prognostic index based on these variables to predict the restart of RRT after discontinuation of CRRT.

#6376

TREATMENT OF DABIGATRAN INTOXICATION IN CRITICALLY ILL PATIENTS WITH ACUTE KIDNEY INJURY: THE ROLE OF SUSTAINED LOW-EFFICIENCY DIALYSIS

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Background and Aims: Dabigatran, a direct thrombin inhibitor, is a commonly used direct oral anticoagulant (DOAC) prescribed for non-valvular atrial fibrillation. Despite its benefits in term of safety/effectiveness along with the possibility to treat patients who were ineligible for vitamin K inhibitors (VKAs), a great degree of attention is required in elderly patients with multiple comorbidities. Notably, dabigatran mainly undergoes renal elimination, and dose adjustment is recommended in patients with Chronic Kidney Disease (CKD). In this regard, the onset of an abrupt decrease of kidney function may further affect dabigatran pharmacokinetic profile, increasing the risk of acute intoxication. Idarucizumab is the approved antagonist in the case of dabigatran-associated major bleeding or concomitant need of urgent surgery, but its clinical use is limited by the lack of data in patients with Acute Kidney Injury (AKI). Given the dabigatran PK parameters (low MW, low Vd, negligible protein binding), the early start of Extracorporeal Kidney Replacement Therapy (EKRT) may represent the optimal reversal strategy. We present a case series of three critically ill patients with AKI and dabigatran overdose treated with Sustained Low-Efficiency Dialysis (SLED).
Methods: Three critically ill patients (Table 1) were admitted to the Renal Intensive Care Unit (ICU) for stage 3 AKI and intercurrent dabigatran intoxication. SLED sessions with Regional Citrate Anticoagulation (RCA) were prescribed with SURDIAL X machine, ELISIO-21M filter (Nipro Co., Osaka, Japan) [blood flow rate 200 mL/min, dialysis fluid rate 300 mL/min; citrate flow rate 350 mL/h (ACD Fresenius Kabi, Italia)]. Dabigatran plasma levels (dilute thrombin time, dTT) along with coagulation parameters were monitored before, during and after SLED session.
Results: A rapid and sustained decreased of plasma dabigatran level was observed in each patient in course of SLED sessions. No clinically relevant post-treatment rebound was reported (Figure 1).
Conclusions: SLED meets the requirements to be a viable reversal anticoagulation option in the context of dabigatran overdose. Indeed, it efficiently provides dabigatran removal, by reaching a safe plasma concentration within the first hours and avoiding significant rebound effect.

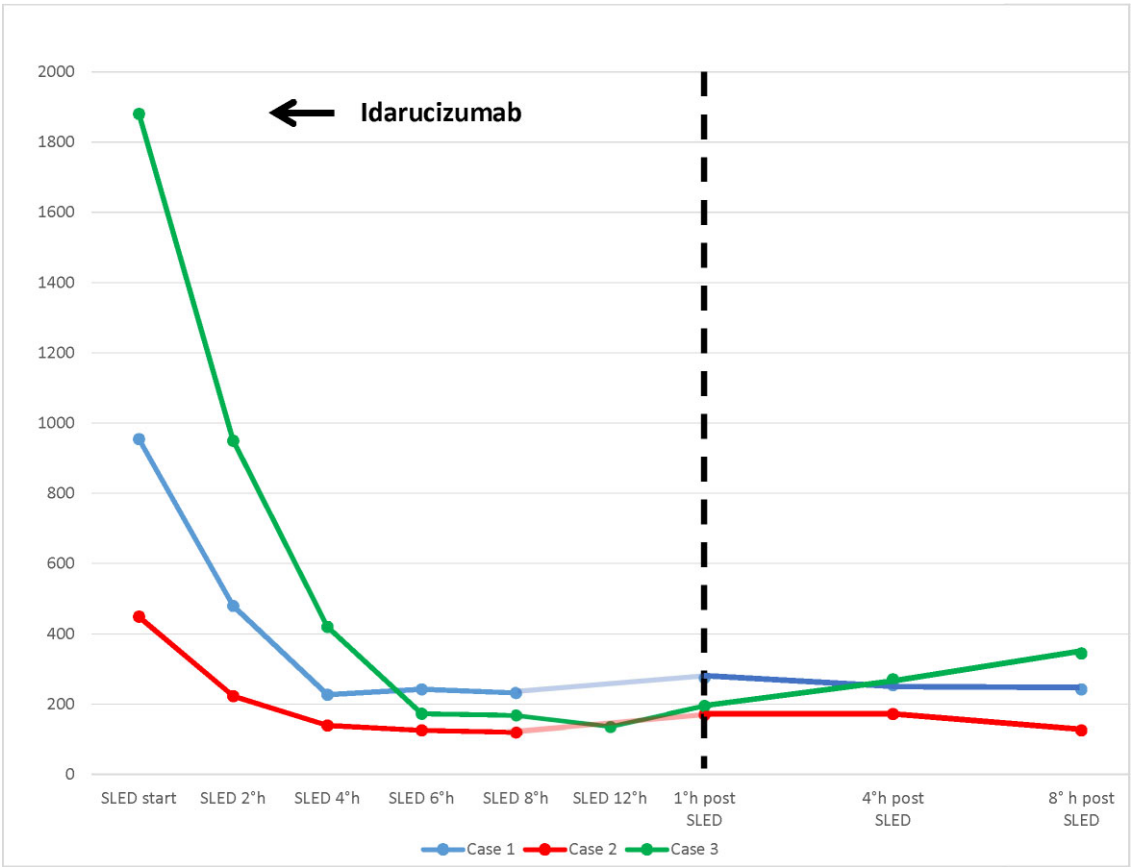

Figure 1: Dabigatran plasma level (ng/mL) in course of SLED session.