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AKI / ARF / SIS - Miscellanea of mechanical ventilation, AKI and sepsis

001611

The outcome of Acute kidney injury in the intensive care unit of A sub Saharan Tertiary Hospital

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INTRODUCTION. Acute kidney injury is characterized by sustained rise in serum creatinine and reduction in urine output. It may also be accompanied by retention of nitrogen products and electrolyte disturbances. The incidence of AKI varies between 36 and 67% among critically ill patients with a mortality rate of 50 to 70%.
OBJECTIVES. We determined the incidence and outcome of acute kidney injury in critical care patients
METHODS. A total of 177 patients, 18 years and older were studied. Data were collected on admission and daily during hospitalization until discharge or death. AKI was defined as:1-2 1) absolute increase in serum creatinine ≥0.3 mg/dL or ≥1.5 times the baseline level, or 2) requirement for renal replacement therapy, or 3) oliguria defined as urine output <400 ml in 24 hours
RESULTS. AKI was observed in 34.3% of our ICU admission, among of whom 4.7% developed AKI during their ICU stay. The mean duration of onset of AKI was 1 (25th to 75th percentile 1-2) days. The overall ICU 30 days mortality was 42.4%, however the 30 days mortality in patients with AKI was 85.5%. Renal replacement therapy was only possible in 36.6% patients. Inotropic support was administered in 59.1% patients with AKI. Factors mitigating against dialysis included proctated hypotension in 63.6%, lack of fund in 18.1%, delayed screening for HIV and Hepatitis B in 18.3%.
CONCLUSION. Acute kidney injury is a common problem in the critically ill patient and is associated with a high mortality rate at our institution.

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000742

Acute kidney failure in the post operatory of peripheral vascular surgery, a prospective single- center experience

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INTRODUCTION. Acute kidney failure (AKF) is identified in 30-40% of cases in post-operative patients. There is limited literature on the importance and the correlation between peripherical vascular surgeries and the development of AKF.
OBJECTIVES. Analysis of the connection between factors related to AKF or acute-on-chronic-kidney failure (AOCKF) in the ICU during the first 7 days after peripherical vascular surgeries, for example: arterial bypasses, amputations, angioplasties and embolectomies.
METHODS. The definition of AKF is defined by the AKIN: abrupt increase in serum creatinine ≥ 0.3 mg/dL or 50% from the baseline. This study is prospective, observational and non-randomized. Patients on previous dialysis were excluded. Continuous variables were summarized as medians and ranges, and categorical variables as percentages.
RESULTS. A database of 65 patients was evaluated. The data was acquired between April 2018 and March 2019. The median age was 70 (range 22-88 y); 73% were male. 25 patients (38%) had AKF.
The average age in both groups is similar, as well the prevalence of comorbidities (hypertension and DM), distribution of sexes and mortality. 46% of the patients with chronic-kidney disease developed an AOCKF (28% of the AKF group). The frequencies of the following values are bigger in AKF group: Re-surgery, emergency surgery, use of vancomycin, gentamicin or amikacin.
CPK values were different in the two groups (4332 AKF; 2937 no AKF), but our sample was inconclusive to demonstrate a real correlation with AKF. When CPK in the first 24h was divided in three categories (<10.000; 10000-20000 and >20000), it was observed in a Kaplan Meier analyses a correlation between these categories and post-operative hemodialysis.
CONCLUSION. Despite our small sample, CPK when analyzed as a categorical variable, showed a statistical significance in patients submitted to hemodialysis. Despite differences in both groups, as CPK average as well as further factors related to a more serious condition; like patient urgency surgery, re-surgery and the use of antibiotics; our analysis was inconclusive to stablish those factors as predictive

001604

Cytomix Preactivated UC-MSCs as a Treatment of Acute Lung Injury in a New Model of Rodent Staphylococcus Aureus–Induced Pulmonary Acute Respiratory Distress Syndrome

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INTRODUCTION. Models of gram negative bacteria induced acute respiratory distress syndrome (ARDS) have been well established in rats. The therapeutic role of mesenchymal stromal/stem cells (MSCs) looks promising in such a model (1). Contrarily, no information is available on the role of MSCs in the treatment of pulmonary ARDS induced by gram positive bacteria. *Staphylococcus Aureus* is a clinically relevant gram positive bacteria, which is associated with >40% health care pneumonia cases and with mortality rates of >50% (2).
OBJECTIVES. Objectives of our investigation were: 1. to establish a model of gram positive bacterial pneumonia using a clinically relevant strain of *S. Aureus* from a human isolate (Newman) (3); 2. To evaluate the potential therapeutic role of naïve and preactivated umbilical cord (UC) MSCs freshly harvested from culture in the treatment of acute lung injury in a new model of Rodent *S. Aureus*–induced ARDS.
METHODS. Adult male Sprague Dawley rats underwent intratracheal instillation of *S. Aureus* Newman to induce pulmonary ARDS. Animals were randomized, within 2 hours post infection, to intravenous administration of: (1) vehicle (phosphate buffered saline (PBS)); (2) 1x10^7/kg fresh UC-MSCs; and (3) 1x10^7/kg fresh UC-MSCs preactivated for 24 hours with cytomix (TNF-α; IL-1β; and IFN- γ [50 ng/mL each]). Comparisons among the groups were tested for differences in bacterial load and white blood cell count in the bronchoalveolar lavage (BAL), and arterial oxygenation after 48 hours.
RESULTS. Endotracheal instillation of *S. Aureus* Newman induced a model of moderate ARDS in rats. Fresh naïve UC-MSCs did not treat the lung injury at 48 hour post infection. In contrast, the preactivation of fresh UC-MSCs with cytomix for 24 hours allowed to significantly increase the pulmonary bacterial clearance – as shown by the lower bacterial load in the BAL (**Figure 1A**), to reduce the lung cell infiltrates – as shown by the lower white blood cell count in the BAL (**Figure 1B**), and to improve oxygenation with an average PaO2/FiO2 ratio above 300 at an FiO2 of 1.0 (data not shown).
Data are expressed as mean (SEM). n=6-8 per group. p-UC-MSCs=preactivated UC-MSCs.
CONCLUSION. Fresh preactivated UC-MSCs therapy decreased the severity of *S. Aureus* induced ARDS by the reduction of bacterial load and white blood cell infiltrates into the lungs, and by the increase of arterial oxygenation. The use of preactivated UC-MSCs could represent a potential clinically relevant treatment of acute lung injury in patients with gram positive induced ARDS.

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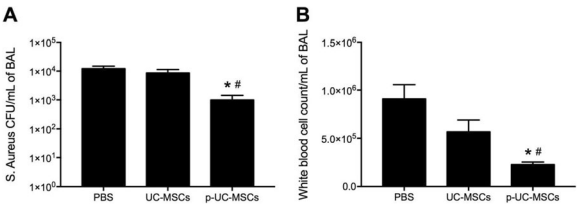

Fig. 1 (abstract 001604). Bacterial load (A) and white blood cell count (B) in BAL. Differences among the groups were tested using an ordinary one-way ANOVA. Post-hoc comparisons were performed using the Newman-Keuls test. *p<0.05 vs PBS; # p<0.05 vs UC-MSCs.

SIS - Septic shock and respiratory infection

000258

Genetic Association of Body Mass Index With Risk of Dying from a Bloodstream Infection: A Study of 56,000 Subjects from the HUNT Study With 23 Years Follow-Up

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INTRODUCTION. In observational studies, higher body mass index (BMI) has been associated with increased incidence and mortality of bloodstream infection (BSI) and sepsis in the general population (1,2), but with reduced mortality among patients with BSI or sepsis (3). However, traditional observational studies are subject to bias and confounding (4). Mendelian randomization studies utilizes the fact that genotypes are randomly assigned at conception, which make these studies less susceptible to reverse causation and confounding (5).
OBJECTIVES. To evaluate the causal association of BMI with risk and mortality of BSI in the general population, and with mortality among patients with BSI.
METHODS. Non-linear Mendelian randomization study with a 23-year prospective follow-up between 1995 and 2017 using a population-based cohort in Norway (The HUNT Study). Of 93,865 invited subjects, 65,236 (70%) participated, and 55,908 (60%) had complete data on genotype and anthropometric measures. Genetically-predicted BMI was calculated based on 939 single nucleotide polymorphisms identified in an independent genome-wide association study. To account for selection bias, inverse-probability weighting was used in the sub-analysis restricted to patients with BSI.
RESULTS. The mean age at enrollment was 48.3 years, 26,324 (47.1%) were men, and mean BMI was 26.3 kg/m2. During median 21 years