

MATERIALS AND METHODS. Upon remodulation of blood flow (reperfusion) in the donor renal transplant, a two-channel microdialysis polyurethane catheter has been implanted in the kidney's cortex (CMA70, CMA Microdialysis, Sweden). The intracellular substrate (dializate) was collected in special 200 μ L vials. The biochemical values have been obtained with the help of CMA 600 Microdialysis (CMA Microdialysis AB, Stockholm, Sweden) analyzer. This research has been conducted over 38 h in the early postoperative period with the biochemical values being read every hour. In the transplant's interstitium space, the following biochemical values were read: glucose, lactate, piruvate, glycerol, and lactate/piruvate ratio. The data obtained has been presented as mean values \pm σ ($p \leq 0,05$ Student)

RESULTS. Having analyzed the results of the renal allotransplant dializate evaluation, reference values have been established for the following biomarkers: glucose, lactate, piruvate, glycerol, and lactate/piruvate ratio. A correlation between the renal transplant dializate values and the function has been established. In 10 patients with the initial function of the renal allotransplant, the values were: lactate $-1,48 \pm 0,26$ mM, piruvate $-129,76 \pm 23,20$ μ mol/L, lactate/piruvate ratio $-11,81 \pm 1,15$; glycerol $-137,81 \pm 32,92$ μ mol/L, and we determined significant difference from those received concerning 10 patients with delayed function of the renal transplant: lactate $-5,83 \pm 1,08$ mM, piruvate $-213,75 \pm 43,84$ μ mol/L, lactate/piruvate ratio $-29,51 \pm 4,64$, glycerol $-342,33 \pm 65,95$ μ mol/L during the entire period of observation.

CONCLUSIONS. Our accumulated experience proved that levels of lactate, glycerol, and the lactate/piruvate ratio, received by means of microdialysis, present valuable prognostic markers allowing for the evaluation of renal functions.

0627

INCIDENCE AND RISK FACTORS FOR EARLY RENAL DYSFUNCTION AFTER LIVER TRANSPLANTATION

P. Wiesen¹, E. Georganta¹, I. Van Cauwenberge¹, C. Gerard², J. Joris³, O. Detry⁴, P. Damas¹

¹CHU of Liege, Department of General Intensive Care, Liege, Belgium, ²CHU of Liege, Department of Biological Hematology and Immuno Hematology, Liege, Belgium, ³CHU of Liege, Department of Anesthesia and Intensive Care Medicine, Liege, Belgium, ⁴CHU of Liege, Department of Abdominal Surgery and Transplantation, Liege, Belgium

INTRODUCTION. Renal dysfunction often occurred after liver transplantation.

OBJECTIVES. The aim of the study was to determine its incidence and its risk factors in a clinical series at the University Hospital of Liege, Belgium.

METHODS. Orthotopic liver transplantations performed from January 2006 until September 2012 were retrospectively reviewed ($n = 187$). Patients, with no renal replacement therapy (RRT) before transplantation were classified in four groups according to their highest creatinine plasma level during the first postoperative week. First group had a creatinine level below 12 mg/l, the second group between 12 and 20 mg/l, the third group between 20 and 35 mg/l, and the fourth above 35 mg/l. In addition, patients who needed RRT during the first week after transplantation were also classified in the fourth group. Preoperative and perioperative parameters were tested as risk factors: age, sex, body mass index (BMI), length of hospital preoperative stay, prior bacterial infection within one month, preoperative ascites, preoperative treatment with β -blocker, converting enzyme inhibitor, or non steroidal antiinflammatory drugs, preoperative creatinine and bilirubine level, postoperative lactate level, need for postoperative vasopressive drugs, surgical revision, mechanical ventilation for more than 24 h, postoperative peaks in bilirubine and transaminase levels, postoperative hemoglobin level, amount of perioperative blood transfusions, type of immunosuppression. Univariate and multivariate analysis were performed using logistic ordinal regression method.

RESULTS. There were 78 patients in group 1 (41.7 %), 46 in group 2 (24.6 %), 38 in group 3 (20.3 %) and 25 in group 4 (13.4 %). Eighteen patients required RRT: 13 (7 %) during the first week after transplantation (group 4), the 5 others after the first week after transplantation (2 in group 1 and 2, and 1 in group 3). There were 7 (3.7 %) early deaths within 28 days after transplantation. Using univariate analysis, the severity of renal dysfunction was correlated with presence of ascites and prior bacterial infection, preoperative bilirubin and creatinine level, need for surgical revision, use of vasopressor, postoperative mechanical ventilation, postoperative bilirubine, transaminase, and hemoglobin levels. The need for transfusion of each type of products also affected renal dysfunction. The ordinal logistic analysis pointed out the BMI (OR = 1.1, $p = 0.004$), preoperative creatinine level (OR = 11.1, $p < 0.0001$), use of vasopressor (OR = 3.31, $p = 0.0002$), maximal postoperative bilirubine level (OR = 1.44, $p = 0.044$) and minimal postoperative hemoglobin level (OR 0.059 $p = 0.0005$).

CONCLUSIONS. More than half of liver transplanted patients experienced some degree of early renal dysfunction after transplantation. Risk factors are preoperative renal dysfunction, and mainly perioperative circulatory instability requiring the use of vasopressor and postoperative anemia.

0628

EFFECTS OF ACUTE PLASMA VOLUME EXPANSION ON RENAL PERFUSION, FILTRATION AND OXYGENATION AFTER CARDIAC SURGERY - CRYSTALLOID VS. COLLOID

J. Skytte Larsson¹, G. Bragadottir¹, B. Redfors¹, V. Krumbholz¹, S.-E. Ricksten¹

¹Sahlgrenska University Hospital, Department of Anaesthesiology and Intensive Care Medicine, Gotheburg, Sweden

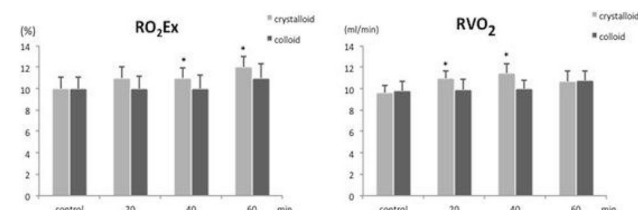
INTRODUCTION. Acute kidney injury may occur in patients undergoing major surgery because of hypovolemia and reduced renal oxygen perfusion. Hypovolemia is commonly treated with artificial solutions to decrease the need for allogenic blood transfusions. A recent experimental study has shown that haemodilution with crystalloids, in contrast to colloids, induce intrarenal hypoxia (1).

OBJECTIVES. The aim of the study was to evaluate the differential effects of a crystalloid and a colloid solution on renal perfusion, filtration and oxygenation, when used as postoperative plasma volume expanders.

METHODS. Twenty-four patients with preoperatively normal renal function, undergoing uncomplicated cardiac surgery, where studied in the ICU early after surgery. Patients were randomized to receive either a balanced crystalloid (Ringers-Acetate, 20 ml/kg, $n = 12$) or a colloid solution (HES 6 %, 130/0.4, 10 ml/kg, $n = 12$) during 20-30 min. Effects on systemic haemodynamics (pulmonary artery catheter) and renal variables were obtained before and 20, 40 and 60 min after

plasma volume expansion. Renal blood flow (RBF) and glomerular filtration rate (GFR) were measured by the renal vein retrograde thermodilution technique and by renal extraction of Cr-EDTA, respectively. Arterial and renal vein blood samples were taken for measurements of arterial (CaO_2) and renal vein (CrVO_2) oxygen contents. Renal oxygen consumption [$\text{RVO}_2 = \text{RBF} \times (\text{CaO}_2 - \text{CrVO}_2)$], renal oxygen delivery [$\text{RDO}_2 = \text{RBF} \times \text{CaO}_2$] and renal oxygen extraction [$\text{RO}_2\text{Ex} = (\text{CaO}_2 - \text{CrVO}_2)/\text{CaO}_2$] were calculated.

RESULTS. The plasma volume expansion was greater in the colloid group, compared to the crystalloid group, as indicated by significantly lower haematocrit and CaO_2 , and higher cardiac filling pressures. Urine flow increased significantly (170 %) only in the crystalloid group. Cardiac index and RBF increased by 15 % respectively 5-10 %, in both groups (ns). In neither one of the groups did plasma volume expansion render a change in RDO_2 . GFR increased to a similar extent with both fluids. In the crystalloid group, there was a significant increase in both RVO_2 and RO_2Ex , which was not seen in the colloid group (see figure).



[Fig 1: Renal oxygen extraction and consumption]

CONCLUSION. Postoperative plasma volume expansion with a crystalloid and a colloid solution both increases GFR. Despite the increase in cardiac index and RBF caused by both fluids, none of them increased RDO_2 , due to the haemodilution. Crystalloids, in contrast to colloids, impair the renal oxygen demand/supply relationship, i.e. renal oxygenation, as demonstrated by an increase in renal oxygen extraction. This clinical study support recent experimental findings that acutely expanded plasma volume acute plasma volume expansion with crystalloid, but not with colloid, impair renal oxygenation.

REFERENCE. 1. Konrad et al. Acute normovolemic hemodilution in the pig is associated with renal tissue edema, impaired renal microvascular oxygenation, and functional loss. *Anesthesiology* 2013;119:256-69

0628A

RISK FACTORS FOR ACUTE KIDNEY INJURY IN SEPSIS PATIENTS TREATED WITH COLISTIN

B. Bilgili¹, F. Gül², T. Evran², M. Haliloğlu², I. Cinel², A. Karamaz²

¹Marmara University, Faculty of Medicine, Anesthesiology and Reanimation, Istanbul, Turkey, ²Marmara University, Faculty of Medicine, Istanbul, Turkey

INTRODUCTION. Colistin is widely used in resistant gram-negative bacterial infections. The common side effect of colistin is nephrotoxicity, 14 %-55 % reported. Risk factors for nephrotoxicity are advanced age, nephrotoxic agent usage and chronic renal failure in general population.

OBJECTIVES. The aim is to identify the risk factors for acute kidney injury in sepsis patients treated with colistin.

METHODS. Gram-negative sepsis patients admitted to ICU in two years were analyzed retrospectively. APACHE II, the presence of shock, initial glomerular filtration rate, the duration of colistin administration, simultaneous nephrotoxic agent administration (NSAID, antibiotics) were recorded. Acute renal injury was classified according to RIFLE criteria. Patients with chronic renal failure were excluded.

RESULTS. 64 (32 male, 32 female) gram-negative sepsis patients were evaluated. Acute kidney injury was detected in 56 (87 %) patients. 42 patients out of 56 were administered colistin and the mean duration of administration was 6,43 days. The distribution of acute kidney injury in patients using colistin is given in Table 1. Acute kidney injury was significantly higher in colistin, nephrotoxic agent, shock (+) patients compared to colistin, nephrotoxic agent (-) shock (-) patients ($p=0,049$). In the presence of shock, acute kidney injury was higher in patients using colistin but not nephrotoxic agent according to patients without shock ($p=0,023$). In septic shock patients using colistin, there is no difference in acute kidney injury between patients with nephrotoxic agent and without nephrotoxic agent usage ($p=0,367$). 57 % of the patients using colistin who developed acute kidney injury were in the Failure (F) group according to RIFLE criteria. Acute kidney injury was significantly higher in septic shock patients who were using colistin compared to septic shock patients who were not using colistin ($p=0,0001$).

CONCLUSIONS. The incidence of acute kidney injury classified according to RIFLE criteria is high in sepsis patients. New onset acute kidney injury is correlated with the presence of shock and colistin usage but not with simultaneous nephrotoxic agent usage. The presence of shock is a risk factor for acute kidney injury in sepsis patients treated with colistin.

REFERENCES. 1) Rocco M, Montini L, Alessandri E et al. Risk factors for acute kidney injury in critically ill patients receiving high intravenous doses of colistin methanesulfonate and/or other nephrotoxic antibiotics: a retrospective cohort study. *Critical Care* 2013, 17:R174

Shock resuscitation: 0629–0641

0629

PROCALCITONIN AS A PROGNOSTIC TOOL OF SIRS DEVELOPMENT AFTER CARDIAC SURGERY WITH CARDIOPULMONARY BYPASS

Y. Petrishchev¹, A. Levit¹, I. Leyderman²

¹Sverdlovsk Regional Clinical Hospital #1, ICU, Ekaterinburg, Russian Federation, ²Ural State Medical University, ICU Chair, Ekaterinburg, Russian Federation

INTRODUCTION. Increased serum procalcitonin after cardiac surgery is associated with prolonged LOS in ICU and negative clinical outcome. But the real mechanisms of such



The Intensive Connection

27th ANNUAL CONGRESS—BARCELONA, SPAIN—27 SEPTEMBER–1 OCTOBER 2014



Intensive Care Medicine Supplement 1, Volume 40 October 2014

Abstracts

ESICM LIVES 2014 27th Annual Congress

BARCELONA, SPAIN 27 SEPTEMBER–1 OCTOBER

This supplement issue of the official ESICM/ESPNIC journal *Intensive Care Medicine* contains abstracts of scientific papers presented at the 27th Annual Congress of the European Society of Intensive Care Medicine.

The abstracts appear in order of presentation from Saturday 27 September to Wednesday 1 October 2014. The same abstract numbering is used in the Congress Final Programme.

This supplement was not sponsored by outside commercial interests; it was funded entirely by the society's own resources.

DOI:10.1007/s00134-013-3451-5

 Springer

