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 intracelluler solution (dilatate) was collected in special 200 μl vials. The basal 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 interstice space, the following biochemical values were read: glucose, lactate, piruvate, glyceral, lactate/piruvate ratio. The data obtained has been presented as mean values ± σ (p < 0.05 Student).

RESULTS. Having analyzed the results of the renal allotransplant dialatate evaluation, reference values have been established for the following biomarkers: glucose, lactate, piruvate, glyceral, and lactate/piruvate ratio. A correlation between the renal transplant dialatate values and the function has been established. In 10 patients with the initial function of the transplanted kidney, the reference values were: lactate -1.48 ± 0.26 mM/l, glucose -17.96 ± 23.20 μmol/l, lactate/piruvate ratio -11.81 ± 1.15; glyceral -137.81 ± 32.92 μmol/l, and we determined significant difference from those received concerning the patient with delayed function: the renal transplanter: lactate -1.08 ± 0.84 mM/l, glucose -213.75 ± 43.84 μmol/l, lactate/piruvate ratio -29.51 ± 4.64, glyceral -342.13 ± 65.95 μmol/l, during the entire period of observation.

CONCLUSION. On the basis of lactate, glyceral, 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

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INTRODUCTION. Acute kidney injury may occur in patients undergoing major surgery and requires appropriate therapy. In the literature, risk factors for acute kidney injury are frequently reported, but their incidence and frequency in specific patient groups of different origin are poorly known. 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 transplantation was 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. Group 1 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, previous infections, positivity of cytomegalovirus (CMV) serology and of cytomegalovirus, non steroidal antiinflammatory drugs, preoperative creatinine and bilirubine level, postoperative lactate level, need for postoperative vasoactive drugs, surgical repair, mechanical ventilation for more than 24 h, postoperative peaks in bilirubine and transamine 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 15 in group 4 (13.4 %). Eighteen patients required RRT: 13 (7 %) during the early postoperative period with the biochemical values being read every hour. In the transplant’s operative period with the biochemical values being read every hour. In the transplant’s operative period with the biochemical values being read every hour.

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 vasoressor and post-operative anemia.

0628 EFFECTS OF ACUTE PLASMA VOLUME EXPANSION ON RENAL PERFUSION, FILTERATION AND OXYGENATION AFTER CARDIAC SURGERY - CRYSTALLOID VS. COLLOID

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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). The experimental study has shown that haemodilution with crystalloids, in contrast to colloids, induce intrarenal hypoxia (1). 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 cardiac surgery, where studied in the ICU after early surgery. Patients were randomized to receive either a balanced crystalloid (Ringers-Acetate, 20 ml/kg, n = 12) or a colloid solution (HES 6 %, 1300/4, 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 (CaO2) and renal vein (CrO2) oxygen contents. Renal oxygen consumption [RVO2 = RBF x (CaO2-CrO2)], renal oxygen delivery (RDO = RBF x CaO2) and renal oxygen extraction [RDO/Ex = (CaO2-CrO2)/CaO2] were calculated.

RESULTS. The plasma volume expansion was greater in the colloid group, compared to the crystalloid group, as indicated by significantly higher haematocrit and CaO2, 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 treated. In neither one of the groups did plasma volume expansion render a change in RDO, GFR increased to a similar extent with both fluids. In the crystalloid group, there was a significant increase in both RVO2 and RDO/Ex, 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, the difference in the haemodilution between 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 render a change in RDO, GFR increased to a similar extent with both fluids. In the crystalloid group, there was a significant increase in both RVO2 and RDO/Ex, which was not seen in the colloid group (see figure).

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