POSTERS

RESULT STRUCTURE AND PROCESS QUALITY ASSURANCE IN TRANSPLANTATION

P001B A NEW TOOL FOR SAFE TEAM COMMUNICATION IN MEDICAL PRACTICE

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Background: Use of mobile communication tools in medicine has increased rapidly. According to recent studies, 95–99% of nurses and physicians use smartphones and related devices in the healthcare context. A high percentage considers their mobiles very helpful to communicate about patient-related clinical information with colleagues and is in search for secure means of sending such information. We present an App that enables fast and secure data transmission in a medical environment, preventing transmission of identifiable patient data.
Methods: Medical and legal issues as well as hardware requirements were developed and finalized throughout a 6-month period. After introduction and training team members were included in a pilot training environment. The App was used for communication between organ explant teams and implant teams during procurement and implantation as well as in treatment teams on call to simultaneously inform on actual developments on emergency incoming patients, in the OR, ICU and others. Communication included short written messages, pictures, movies etc.
Results: The number of communications increased during a 6-month period from 1 per week to 20. Learning curve was slow initially, but accelerated when more members started using the App. Incoming messages were noticed simultaneously by 2–3 team members in the first months and up to 12 (from a total of 20) at the end of the observation. Younger team members adapted faster to the new technology and had more fun.
Conclusion: We present a new tool for safe and fast medical data transmission that facilitates optimized timing and coordination of upcoming procedures in diagnosis and treatments. The App, legal considerations and communication rules help to ensure that no identifiable patient data is transmitted.

P002B STATE AND POTENTIAL OF DIGITAL INFORMATION AND COMMUNICATION TECHNOLOGY IN SOLID ORGAN TRANSPLANTATION

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Objectives: The use of digital information and communication technology (ICT) in healthcare is growing rapidly. The aim of this study is a quantitative evaluation of these technologies regarding the present use and the potential for health reasons in solid organ transplant recipients.
Methods: This questionnaire-based cross-sectional study was addressed to patients after kidney, liver, pancreas or combined solid organ transplantation. It focused on: (i) sociodemographic data, (ii) present use of digital ICT in daily life, and (iii) for health reasons as well (iv) the basic attitude towards eHealth.
Results: A total of 234 transplant recipients completed the questionnaire. 90% have a web-enabled computer, 78% a smartphone, and 5% a smartwatch. 71% use the internet regularly in daily life and 72% for health related information search. 67% would like to get discharge summaries by email and 54% would like to chat online with their physicians. Interestingly, even though digital ICT use in daily live is significantly age-related, no significant difference could be demonstrated regarding health reasons. Also, the transplanted organ showed no significant effect on digital ICT use for private live and for health reasons. Patients with lower adherence significantly more often expect that, via eHealth, physician-patient contact and treatment quality could be improved.
Conclusion: Digital ICT use is an integral part of daily life and is also predominantly accepted for health reasons by solid organ transplant recipients. This study implies that a deeper integration of eHealth has high potential for improving quality and efficacy of intersectoral care. Therefore, further studies are needed with special focus on data safety and data security in health-related digital ICT use.

KIDNEY TRANSPLANTATION

P005A SURGICAL OUTCOME OF PEDIATRIC KIDNEY TRANSPLANTATION AT THE UNIVERSITY OF HEIDELBERG

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Background: Kidney transplantation (KTx) is the treatment of choice for children with end-stage renal disease (ESRD). Here, we present an update of our 48 years of surgical experience with pediatric KTxs (PKTx) and compare the results between recipients of organs from deceased donors (DD) and living-related donors (LD).
Methods: Data from 540 PKTx operations (409 DD, 131 LD), were obtained from our transplant center database. Perioperative data, graft survival, and patient survival were analyzed in DD and LD groups.
Results: Fewer recipients in the LD group underwent dialysis before PKTx than the DD group (50.8% in LD vs. 94.9% in DD, $p < 0.001$). The mean duration of dialysis (DD: 798 $\pm$ 525 days vs. LD: 625 $\pm$ 650 days, $p = 0.03$), time on the waiting list (DD: 472 $\pm$ 435 days vs. LD: 120 $\pm$ 243 days, $p < 0.001$), and cold ischemia time (CIT) (DD: 1206 $\pm$ 368 min vs. LD: 140 $\pm$ 63 min, $p < 0.001$), operation time, and hospital stay were lower in the LD group. Except for arterial stenosis, the rates of postoperative vascular and urological complications were not different between the two groups. The cumulative 25-year graft and patient survival rates were 46.4% and 84.1% in the DD group and 76.5% and 96.1% in the LD group, respectively.
Conclusions: PKTx is the treatment of choice for children with ESRD. Compared with DD PKTx, LD PKTx has better graft survival associated with a shorter duration of preceding dialysis, waiting time, and CIT. Therefore, LDKTx is more beneficial for children with ESRD.

P006A IGA ISOTYPE ANTI-HLA ANTIBODIES AND ORGAN GRAFT SURVIVAL IN KIDNEY TRANSPLANTATION

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Little is known about the influence of non-complement fixing IgA anti-HLA Abs on graft survival. Previously we reported a high prevalence of IgA Abs in sera of kidney transplanted (Tx) patients leading us to investigate the donor specificity and the effect of IgA Abs on graft survival. Sera from 276 kidney re-Tx candidates from the wait list of Erlangen-Nuremberg were selected. The time to first dialysis after Tx (TtD) -measured in months (mo)- was used as a precise endpoint marker for loss of graft function. IgG- and IgA Abs were investigated using Luminex assays. Of the 276 sera, 89 were tested positive for IgA and 243 for IgG Abs. The presence of IgA was highly linked to the presence of IgG ($p < 0.0001$). Stratification by IgA- and IgG Ab status revealed the longest median graft survival in IgA/IgG double negative patients (TtD 126.2 month). Patients tested positive exclusively for IgG Abs displayed intermediate graft survival (TtD 115.9 month) whereas, IgA/IgG double positive patients had a significantly reduced median graft survival compared to any other subgroup (TtD 87.5 month, $p < 0.001$). Only three patients showed exclusively IgA Abs and were not possible to analyze statistically. As expected, the presence of donor specific IgA (IgA-DSA) Abs correlated with a significant worse outcome (TtD 75.6 month) compared to the total Ab positive cohort (TtD 105 month) as well as compared to IgA positive patients without showing IgA-DSA (TtD 82 month). The presence of anti-HLA IgA Abs in conjunction with IgG Abs marks a high risk subgroup in kidney Tx patients with a significantly reduced graft survival compared to patients displaying exclusively IgG Abs. This influence of IgA may indicate a novel functional contribution for improved risk stratification in transplantation.

P007A LONG-TERM CONSEQUENCES OF EARLY MAMMALIAN TARGET OF RAPAMYCIN-INHIBITOR-BASED IMMUNISUPRESSION AFTER KIDNEY TRANSPLANTATION

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The early use of mammalian target of rapamycin- (mTOR-) inhibitors in kidney graft recipients increases the risk of donor-specific HLA-antibody (DSA)-formation and rejection. We proofed the hypothesis that mTOR-inhibitor-use compared with a standard calcineurin inhibitor- (CNI-) based immunosuppression impairs graft- and patient-survival. In this retrospective single center analysis, long term graft and patient survival in kidney transplant recipients (KTR) transplanted between 10.09.1998 and 08.02.2011 were compared based on early immunosuppression. KTR who received at least 1 month an mTOR-inhibitor during the first year (CNI-free, $n = 128$; MPA-free, $n = 83$) were compared with patients treated with a CNI-based-mTOR-inhibitor free regimen; $n = 626$). Later in the course (>12 months) 132 of 626 patients were switched to mTORI (late mTORi) whereas the remaining 494 patients never ever got mTORI. Donor-specific HLA-antibody formation is significantly more common in mTORI-based patients 60 months after tx (29.5% and 26.6% vs. 10.9%). Death censored graft survival is inferior in recipients with early mTOR-inhibitor based immunosuppression compared to patients remaining on CNI (67.9% and 77.7% vs. 83.3%). A later switch from CNI to mTORI (>12 months) is not associated with a better preservation of graft function compared with early mTORI-treatment or remaining on CNI. Patient survival in our analysis was not different between treatment groups. mTOR-inhibitor based immunosuppression is less effective than CNI-based immunosuppression. This relates to impaired graft survival in the long-term but does not affect patient survival. Subgroups of patients who benefit from mTORI-based, CNI-free immunosuppression after kidney transplantation remain to be defined.

P008A APPLICATION OF NEW HYPERTENSION GUIDELINES TO RENAL TRANSPLANT RECIPIENTS: IMPACT ON CARDIOVASCULAR OUTCOME AND GRAFT SURVIVAL

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Background: Based on data of the SPRINT trial, American national guidelines recently reduced the blood pressure goal from 140/90 mm Hg to 130/80 mm Hg for subjects with increased cardiovascular risk, e. g. those with chronic kidney disease. To date it remains elusive whether renal transplant recipients benefit from these goals as well.
Methods: We performed a retrospective analysis of 877 patients who underwent kidney transplantation between 1997 and 2011 in three transplant centers in Germany (Berlin and Bochum) with a follow-up of 12–120 months. Blood pressure was obtained at regular follow-up examinations in the transplant outpatient clinic. Patient and graft survival was defined as composite endpoint. Subjects were stratified according to mean systolic blood pressure values <130 mmHg, 130–139 mmHg, or ≥140 mmHg.
Results: Mean SBP of the overall follow-up period was significantly associated with patient and graft survival. Cumulative survival was significantly higher for those patients with a systolic blood pressure (SBP) <130 mmHg than those with 130–140 mmHg. Survival was lowest in renal transplant recipients with a mean SBP ≥ 140 mmHg. Analogously, mean SBP of the first 12 months posttransplant <130 mmHg was associated with better cumulative patient and graft survival than higher blood pressure values in Kaplan Maier analyses.
Conclusion: Renal transplant recipients who achieve a mean systolic blood pressure < 130 mmHg have a significantly lower mortality and a better allograft outcome than with the conservative blood pressure goal <140 mmHg. The new blood pressure targets should be considered suitable for renal transplant recipients as well.

P009A MULTI-OMICS BASED STRATEGY TO PREDICT GRAFT FUNCTION AND PERSONALIZE IMMUNOSUPPRESSIVE THERAPY IN KIDNEY TRANSPLANTATION

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Early personalized therapy in patients at risk could prevent allograft loss and associated complications. However, there are no established markers predicting chronic allograft injury so far. Previous studies in renal transplant patients demonstrated that one-year renal graft function is an important predictor of transplant survival at 10-years post-transplant. Within the collaborative project e:KID we tried to establish a tool supporting risk prediction and personalized treatment that can be applied at early stage after kidney transplantation.

596 renal transplant patients were included and monitored at 8 different time points. We aimed to predict renal function at 12 months post-transplant based on marker analyses of earliest possible time point. Several omics technologies were applied to analyze markers from different regulation levels such as gene expression, protein expression, epigenetics, metabolites, cellular and clinical parameters. Uni- and multivariate linear regression were used to predict 1-year graft outcome using marker or marker combinations from different time points. To further evaluate the classification performance, we ran a resampling analysis by randomly sampling class assignment.

Several single markers obtained already at week 2 post-transplant were able to predict 1-year graft function. While single parameter had a rather low predictive power, successive addition of more parameters (from one to finally four) increased the predictive value. Importantly, exclusively the combination of markers from different regulation levels significantly improved the classification outcome.

Taken together, our multi-omics data emphasize the importance of systems medicine approach enabling risk prediction in kidney transplant patients.

P010A JC POLYOMAVIRUS REPLICATION AND ASSOCIATED DISEASE IN PEDIATRIC RENAL TRANSPLANTATION: AN INTERNATIONAL CERTAIN REGISTRY STUDY

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Background: JC polyomavirus (JCPyV)-associated nephropathy (JCPyVAN) is a severe, but rare complication in adult renal transplant (RTx) recipients. Related data in pediatric patients are scarce.
Methods: Based on the CERTAIN Registry, we therefore performed a multicenter, retrospective study on the JCPyV antibody status, prevalence of JCPyV replication and its associated disease in 139 pediatric RTx recipients (mean age, 8.5 ± 5.3 years). JCPyV DNA in plasma and/or urine was measured by quantitative PCR at a median time of 3.2 (IQR: 0.3–8.1) years post-transplant.
Results: 53.2% of patients were JCPyV-seronegative prior to transplantation, younger age was associated with JCPyV seronegativity. 34/139 (24.5%) patients post-transplant showed active JCPyV replication in either urine (22.0%), plasma (13.4%) or both (7.6%). JCPyV viremia occurred significantly ($p < 0.001$) more often in patients with viruria (34.6%) than in those without (7.6%), but 7/118 (5.9%) had isolated viremia. High-level viruria (> 107 copies/mL) was found in 29.6% of viruric patients. A higher net state of immunosuppression constituted an independent risk factor for JCPyV replication both in urine and plasma (OR 1.2, $p < 0.02$). Male patients tended to have a higher risk of JCPyV viremia than females (OR 4.3, $p = 0.057$). There was one male patient (0.7%) with JCPyVAN seven years post-transplant, which resolved after reduction of immunosuppressive therapy. No patient exhibited progressive multifocal leukoencephalopathy.
Conclusions: This first multi-center study on JCPyV in pediatric renal transplant recipients shows that JCPyV replication is common (24.5%) with strong immunosuppression being a significant risk factor, but associated nephropathy is rare.

P011A EFFICACY OF RIBAVIRIN TREATMENT FOR ACTIVE HEPATITIS E INFECTION IN RENAL ALLOGRAFT RECIPIENTS

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Hepatitis E virus (HEV) infection with genotype 3 frequently progresses to chronic disease with persisting HEV viremia in immunocompromised patients after renal transplantation. This study was aimed to evaluate the prevalence of HEV infection in renal allograft recipients and patients on dialysis and to investigate the efficiency and tolerability of ribavirin monotherapy in recipients with active HEV infection.

A total of 947 renal allograft recipients and 132 patients on dialysis were screened for the prevalence of HEV infection. Serum samples were tested for anti-HEV IgG, IgM and HEV-RNA. 15 viremic recipients were treated with ribavirin for 12 weeks.

Past HEV infection (IgG positive and IgM negative) was detected in 148 (15.6%) renal allograft recipients while 20 (2.1%) patients showed signs of a past infection with IgM persistence (IgG and IgM positive without RNA detection). Prevalence of past HEV infections without and with IgM persistence was similar in patients on dialysis with 12.1% and 2.3%, respectively. Active HEV infection occurred in 16 recipients (1.7%). All patients presented with HEV genotype 3. A rapid virologic response after 4 weeks of treatment was achieved in 9 (60%) patients. 15 (93%) recipients showed a sustained virological response. Elevated baseline levels of liver enzymes quickly decreased after the initiation of ribavirin. Renal allograft function and proteinuria did not change during the treatment. Trough levels of tacrolimus and everolimus declined during therapy and normalized after dose adjustments.

Prevalence of active HEV infection is important before and after renal transplantation. This study indicates the high potency and good safety prolife of ribavirin treatment in actively HEV infected renal transplant patients.

P012A LOW-DOSE CIDOFOVIR AND CONVERSION TO MTOR IN POLYOMA VIRUS-ASSOCIATED NEPHROPATHY (PVAN) – A CASE SERIES

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Purpose: Polyoma virus-associated nephropathy is an emerging disease in renal allograft recipients with a high rate of allograft loss. Overall reduction in immunosuppression is a cornerstone of PVAN therapy, whereas optimal drug combination, as well as specific antiviral therapy remain a question. We report safety, efficacy and outcome data of a protocol using low-dose cidofovir in a case series of 19 patients with PVAN.
Methods: Patients with biopsy-proven PVAN received single low-dose cidofovir according to the Tübingen Cidofovir Protocol, developed to effectively deliver therapeutic drug concentrations at limited nephrotoxicity and were converted to mTOR-based maintenance immunosuppression.
Results: Results from an ongoing case series of currently 19 patients with a median follow-up of 4.54 [0.8 - 10.3] years. are reported. The protocol allowed for specific antiviral therapy without adverse nephrotoxicity, irrespective of allograft function at a median eGFR of 29 [25–35.6] ml/min/1.73 m^2. Of the 19 patients, nine patients lost their allograft during follow-up, but only two of these due to PVAN. 12 patients stabilized or improved allograft function. Polyoma virus clearance from plasma was achieved in 79% of patients after a median of 106 [75–222] days. Interestingly, the median eGFR at diagnosis was lower in patients with polyoma virus plasma clearance (40 [24–46] vs. 31 [27–37] ml/min/1.73 m^2, p = 0.07), indicating towards the need for repetitive applications of cidofovir in patients with better allograft function.
Conclusion: Low-dose cidofovir and conversion to mTOR-based immunosuppression allows for effective virus clearance and preservation of allograft function in a high proportion of patients with PVAN and may prolong allograft survival in these patients.

P013A URINE-DERIVED RENAL EPITHELIAL CELLS SECRETE CHEMOKINES IN RESPONSE TO BACTERIAL, VIRAL, AND ENDOGENOUS INFLAMMATORY STIMULI

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Currently immune modulatory capacities of renal epithelial cells are poorly understood. Such functions could facilitate or even suppress kidney-associated pathologies.

Urine-derived cells could be a suitable model to study distinct functions of renal cells such as tubular epithelial cells (TEC). The non-invasive isolation of human TEC allows frequent cell generation and cultivation. In contrast to commonly used artificial renal cell lines, TEC may better mimic the *in vivo* situation in renal tissue.

The purpose of this study was to investigate the immune modulatory capacities of TECs under inflammatory conditions mimicked by TLR ligands and inflammatory cytokines.

TEC were isolated from urine of healthy donors and stimulated with different proinflammatory cytokines and TLR ligands for 24 h. Thereafter, secretion of chemokines was analyzed. Activation of TLR2/TLR1, and TLR5, which both recognize bacterial compound led to secretion of chemokines such as IL8, CXCL5, CXCL1, MCP1 and CCL20. The TLR3 ligand polyinosinic-polycytidylic acid, a synthetic analog of double-stranded RNA, associated with viral infections, induced IL8, IL10, CCL5, CCL3, and MCP1. TEC stimulation with inflammatory cytokines led to the secretion of distinct chemokine pattern. The observed chemokine production by TEC could potentially modulate immune reactions. The assumption is supported by the augmented expression of HLA-DR and co-stimulatory molecules such CD80 and CD86.

Thus, data obtained from this study indicate that TEC have the intrinsic capacity to modulate immunity through secretion of different chemokines and expression of surface molecules when exposed to bacterial, viral, and endogenous inflammatory stimuli.

P014A ISCHEMIA REPERFUSION INJURY CAUSES RELEASE OF FREE HEME WHICH TRIGGERS TISSUE INFLAMMATION

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Background: Ischemia-reperfusion injury (IRI) contributes to delayed graft function (DGF) after kidney transplantation. IRI causes a robust inflammatory response which affects cell viability and triggers fibrosis. It has been shown that cell death causes release of free heme which is cytotoxic and pro-inflammatory. In this experimental study, the release of free heme in correlation to the warm ischemia time and subsequent inflammation after renal IRI were investigated in a mouse model.
Methods: Renal IRI was induced by renal pedicle clamping for 15 or 45 min in male C57BL/6 mice. Mice after sham surgery served as controls. After 2 and 24 h, free heme in the tissue was measured by an apo-peroxidase assay. Histology, immunohistochemistry and qPCR were done to measure inflammation and tissue injury. In addition, Western blotting for MAPKinase activation was done.
Results: Free heme in the renal tissue increased 5 fold after 15 min IRI compared to baseline and even 10 fold after 45 min already after 2 h. At that early 2 h time point first signs of AKI were seen after 15 min IRI and even more after 45 min. In addition, alpha 1 microglobulin (A1M) tubular transport was substantially after 45 min IRI. The pro-inflammatory cytokines IL-6, TNFa and MCP-1 were significantly increased and ERK phosphorylation was also significantly higher in 45 min IRI compared to 15 min IRI.
Conclusions: Our data suggest that the duration of warm ischemia time enhances release of free heme in the tissue. It consecutively aggravates local inflammation and MAPKinase activation after IRI. Strategies to block free heme release could be valuable in the prevention of AKI and improvement of the graft survival.

P015A DISEASE ACTIVITY IN ABMR AND ITS RELATIONSHIP TO DISEASE STAGE, GRAFT DYSFUNCTION AND INJURY

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Purpose: We recently showed that graft survival in antibody-mediated rejection (ABMR) in kidney transplants is not predicted by disease activity. This analysis specifically aimed to assess the relationship of ABMR disease activity to disease stage, graft dysfunction and injury.
Methods: Biopsies of 243 patients with a molecular diagnosis of ABMR were assessed by histology and molecular markers of disease activity, disease stage, tissue injury and dysfunction.
Results: Features of disease activity correlate with one another. Features of disease stage correlate with one another, but correlations are weaker. Disease activity is not related to disease stage. Injury does not correlate with disease activity but weakly correlates with scarring. By principal components analysis, ABMR features separate into three groups: disease activity (dim1) and disease stage, dysfunction, and injury (dim2); dim3 separates disease stage from dysfunction/injury. Archetype analysis identifies three subgroups: early ABMR (EABMR) with significant disease activity and little chronicity; full ABMR (FABMR) with high activity, high cg and moderate mm; and late ABMR (LABMR) with high mm and cg scores, significant activity by histology but low molecular activity. Injury does not differ across the groups.
Conclusions: ABMR disease activity has no relationship to injury, indicating that ABMR does not directly damage the parenchyma. Injury is weakly related to disease stage but mainly to features of dysfunction. Although high ABMR activity can occur with any disease stage, we identify a subgroup of late stage ABMR with low molecular disease activity yet poor graft survival, indicating that ABMR activity can burn out in some chronic cases, emphasizing the need to understand the natural history of ABMR.

P016A SPECIFIC PHARMACODYNAMICS MONITORING TO DETECT PATIENTS ON INCREASED RISK OF VIRAL COMPLICATIONS

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Background: Viral infections as cytomegalovirus (CMV) or BK virus replication are severe complications after renal transplantation. Until now, the best prophylaxis against viral complications is an individually adapted optimal immunosuppression. The first pharmacodynamics assay to measure the individual degree of immunosuppression of calcineurin inhibitors is established by quantitative assessment of NFAT-regulated gene expression (NFAT-RGE).
Method: Renal allograft recipients were included in this prospective observational study. All patients had regular CMV and BK viremia assessments every three months in the first year after transplantation and annually thereafter. Residual expression of NFAT-regulated genes (interleukin 2, interferon-y, GM-CSF) in PMA/ionomycin-stimulated peripheral blood from renal transplant patients was measured by quantitative real-time PCR at predose and 1.5 h after TAC intake.
Results: Mean NFAT-RGE was significantly lower in patients who developed CMV or BKV replication. MPA doses were comparable in both study groups. Patients with NFAT-RGE $\leq$30% were compared to patients with NFAT >30%. Incidence of viral complications was significantly higher with NFAT$\leq$30% compared to NFAT>30% ($p = 0.005$).
Conclusions: A high immunosuppressive load is an important risk factor to develop viral complications as CMV or BK viremia after renal transplantation. Tac treated renal allograft recipients with NFAT-RGE $\leq$30% are on increased risk to develop viremia. Monitoring of NFAT regulated gene expression in CNI treated transplant recipients might be useful tool to detect patients on risk of viral replication and provides an individual profile of response to CNIs.

P017A RENAL TRANSPLANT PATIENTS HARBOR NEUTROPHILS SECRETING B CELL ACTIVATING FACTOR (BAFF) WHICH CAN BE SUPPRESSED BY MTOR-INHIBITORS

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Background/Aim: B cell activating factor (BAFF) is a cytokine which drives B cell survival and maturation. Several studies have shown that elevated BAFF levels in renal transplant patients are associated with increased risk for the development of donor specific antibodies and antibody mediated rejection. It was the aim of this study to investigate neutrophils as cellular source of BAFF in renal transplant patients.
Methods: Neutrophils (NT) were freshly isolated from whole blood of healthy controls (HC) and renal transplant patients (RTX). After isolation, purity of neutrophils was usually above 98%. Neutrophils were stimulated with LPS or TNFα in presence of Granulocyte-colony stimulating factor (GCSF) or Granulocyte macrophage colony-stimulating factor (GMCSF). In selected conditions, FK506 or rapamycin was added. Supernatants were harvested after 20 h of culture and BAFF levels were determined by ELISA.
Results: GCSF/TNFα and GCSF/LPS were the most potent stimuli leading to BAFF secretion of NT in HC (403 ± 64 pg/ml and 421 ± 69 pg/ml). NT derived RTX showed increased capacity to secrete BAFF as compared to HC (GCSF/TNFα: 713 ± 100 pg/ml and GCSF/LPS: 694 ± 144 pg/ml). Treatment of cultures with rapamycin reduced BAFF levels (713 ± 100 pg/ml vs. 277 ± 100 pg/ml, $p = 0.0002$). Treatment with FK506 was less efficacious (713 ± 100 pg/ml vs. 527 ± 128 pg/ml, $p = 0.0007$). NT from RTX with anti-HLA antibodies showed an enhanced capacity to secrete BAFF as compared to RTX without anti-HLA antibodies (940 ± 235 pg/ml vs. 431 ± 89 pg/ml, $p = 0.06$).
Conclusion: NT may enhance of B cell maturation and survival via BAFF. BAFF-secretion by NT can be suppressed with mTOR inhibitors. In renal transplantation, NT might promote formation of allo-antibodies and drive antibody mediated rejection.

P018A DOES THE PROTON PUMP INHIBITOR USE IN KIDNEY TRANSPLANTED PATIENTS AFFECT RENAL FUNCTION?

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Recently, proton pump inhibitor (PPI) intake has been linked to acute kidney injury and chronic kidney disease. In the context of renal transplantation (RTx), a relevant drug interaction with mycophenolate mofetil (MMF) was hypothesized. However, current data is inconsistent and causal pathways are unknown. Objective of this study was to assess the effect of PPIs on RTx outcome.

We retrospectively analyzed 474 patients who received RTx from May 2010 to July 2015 at our center. PPI prescription was assessed in half-year intervals. Estimated GFR (eGFR, CKD-EPI), change in eGFR (ΔeGFR), 30% and 50% eGFR decrease for different time periods was analyzed as well as frequency of delayed graft function (DGF), biopsy proven acute rejections (BPAR) and patient and graft survival. Subanalyses were performed patients with stable MMF intake.

PPI mean daily intake did not affect ΔeGFR, 30% and 50% eGFR-decrease, while a negative correlation to 2- and 3-year eGFR-values (not ΔeGFR) was found. Further analysis, however, indicated that this was not an effect of PPI but likely attributed to a worse renal function since time of RTx. DGF frequency was correlated with baseline PPI-dose ($p = 0.041$). BPAR did not relate to mean PPI daily intake. Results remained consistent for the MMF-subgroup and subanalyses of BPAR types. Neither patient nor graft survival showed any relevant association with PPI intake.

We did not find a relevant adverse effect of PPI-intake on outcome after RTx. Our data highlight the need to examine changes in eGFR (ΔeGFR) rather than single eGFR measurements in similar studies, to avoid confounding. Polypharmacotherapy however, remains a problem in RTx patients, and it is advisable to question necessity of PPI-prescription when clear indications are missing.

P019A

PERIOPERATIVE ANTIBIOTIC PROPHYLAXIS IN RENAL TRANSPLANTATION: A SINGLE-CENTER COMPARISON BETWEEN TWO REGIMENS AND A BRIEF SURVEY AMONG THE EUROTRANSPLANT RENAL TRANSPLANTATION CENTERS

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Background: Perioperative antibiotic prophylaxis (PAP) is an integral part of the clinical routine in kidney transplantation (KT). The primary goal of PAP is the prevention of surgical site infections (SSI). We changed our standard prophylaxis from a multiple-dose (MD) to a single-dose (SD) regimen in 07/2015. Here, we report on results with both regimens and a related survey among the Eurotransplant (ET) KT centers.
Methods: From 07/2015, all kidney graft recipients of our center were scheduled to receive SD i.v. cefazolin (group SD, $n = 107$). For comparison, we analyzed a similar size group of consecutive patients, transplanted between 01/2014–06/2015, who received our previous standard regimen consisting of i.v. piperacillin plus flucloxacillin until postoperative day (POD) 7, plus oral sultamicillin until POD 10 (group MD, $n = 105$). The primary endpoint was the number of SSIs during a 3-month observational period.
Results: The frequency of SSI episodes was generally low (group SD vs. MD: 2 vs. 4, $p = 0.40$). Urinary tract infections occurred in 40 SD vs. 36 MD patients, respectively ($p = 0.60$), and were caused by *Escherichia coli in* 36.8%. Female gender was the only independent risk factor on multivariate analysis ($p = 0.002$). In addition, 12 episodes of urosepsis in both groups occurred. All-cause infection with multi-resistant bacteria occurred less frequently in SD vs. MD patients (3.7% vs. 8.6%, $p = 0.16$). The new PAP regimen generated cost savings of 380 € per patient. A majority of ET centers used i.v. SD cephalosporines (36.9%), although substances and duration varied remarkably.
Conclusion: Single-dose cefazolin was equally effective and less expensive compared to previous regimen. Based on these findings, we recommend further use of SD cefazolin in standard-risk patients.

P021A

ASSOCIATION OF SERUM URIC ACID CONCENTRATION WITH INTRARENAL RESISTANCE INDEX AND ALLOGRAFT FUNCTION AFTER RENAL TRANSPLANTATION

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Background: We have shown that treatment of asymptomatic hyperuricemia was associated with a benefit in patient and graft-survival. Inflammatory and hemodynamic effects of increased serum uric acid (SUA) levels are possible mechanism. This work examines the association of SUA levels with allograft function and intrarenal hemodynamics.
Methods: 338 renal transplant recipients were enrolled in this retrospective study and stratified by SUA and application of SUA lowering therapy: Those with SUA < 7 mg/dl and without SUA lowering medication 12 months post-transplant were regarded normouricemic, those with SUA lowering medication at any time in the follow-up period as treatment group and those with SUA ≥ 7 mg/dl without medication as control group. Follow-up was up to 120 months. Graft loss, mortality and intrarenal resistance index (RI) were analyzed.
Results: SUA differed significantly at any time during the follow-up with highest concentrations in the control group followed by the treatment and the normouricemic group ($p < 0.05$). RI was lowest in the normouricemic group during the follow-up, eGFR highest in normouricemic patients ($p < 0.05$ at month 12, 36 and 60). There was a significant correlation of SUA and RI 12 months posttransplant in treatment and control group ($p < 0.05$). Among subjects with an allograft still working after 120 months those with SUA lowering medication had a lower eGFR decline than those without medication. Cox regression analysis adjusted for baseline eGFR, age, and gender showed no significant differences for the endpoint "death or graft loss" among the 3 groups. Cumulative survival tended to be better, however, with SUA lowering medication.
Conclusions: The study shows that SUA concentrations are associated with RI after renal transplantation.

P023A

EFFECTS OF MTOR-IS ON MALIGNANCY AND SURVIVAL FOLLOWING RENAL TRANSPLANTATION: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED TRIALS WITH A MINIMUM FOLLOW-UP OF 24 MONTHS

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Background: mTOR-Is positively influence the occurrence and course of certain tumors after solid organ transplantation. The effect of mTOR-Is on the overall incidence of tumors irrespective of their origin is not entirely clear. Furthermore, conflicting data have been shown on mortality under mTOR-Is.
Methods: The current literature was searched for prospective randomized controlled renal transplantation trials. There were 1415 trials screened of which 13 could be included (pts. = 5924). A minimum follow-up of 24 months was mandatory for inclusion. Incidence of malignancies and patient survival was assessed in meta-analyses.
Results: The average follow-up of all trials was 40.6 months. Malignancy was significantly reduced under mTOR-Is compared to CNIs (RR 0.70, CI 0.49–0.99, $p = 0.046$). This effect remained stable when combined with CNIs (RR 0.58, CI 0.34–1.00, $p = 0.05$). When NMSCs were excluded the risk for malignancy remained significantly reduced under mTOR-I therapy (mono and combi) (RR 0.43, CI 0.24–0.77, $p = 0.0046$). Graft survival was minimally decreased under mTOR-Is (RR 0.99, CI 0.98–1.00, $p = 0.054$). This effect was abrogated when mTOR-Is were combined with CNIs (RR 0.99, CI 0.97–1.02, $p = 0.50$). Patient survival was not different (RR 1.00, CI 0.99–1.01, $p = 0.54$).
Conclusions: Posttransplant patients have a lower incidence of malignancy when treated with an mTOR-I no matter if it is used in combination with CNIs or not. This beneficial effect remains significant even when NMSCs are excluded. With currently used mTOR-I-based regimen patient and graft survival is not different compared to CNI therapies.
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P024A

IMPACT OF DONOR HYPERTENSION AND HISTOLOGIC CHANGES IN LIVING DONOR KIDNEY TRANSPLANTATION: A SINGLE CENTER RETROSPECTIVE STUDY

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Increasing organ shortage and excessive waiting times have led to a paradigm shift in the acceptance of potential living kidney donors with hypertension. It is not well examined whether kidneys from donors with controlled hypertension (HTD) are inferior compared to kidneys from normotensive donors (NTD). In this single center, retrospective study, we analyzed the association of renal function in recipients from living HTD including results from implant as well as one-year protocol biopsies to assess histologic changes which may precede a decrease in renal function.

HTD was defined as a donor who received antihypertensive medication or had abnormal blood pressures in 24 h- ABPM. The outcomes were donor renal function and chronic changes in kidney biopsy at donation as well as recipient renal function and chronic histologic changes at 12 months after transplantation. Biopsies were scored for a combined to a total renal chronicity score (TRCS).

HTD had significantly higher blood pressures and were on a mean of 1.24 antihypertensives. At transplantation, all recipients received the same amount of antihypertensives, however after 12 months recipients of NTD needed significantly less medication. At 12 months, the NTD group showed a higher eGFR, however not statistically significant. The TCRS from implant biopsies and 12 months protocol biopsies was significantly higher in the HTD group. In the multivariable model donor hypertension and acute rejection remained as independent predictors for a higher TCRS.

HTD kidneys display more severe histologic changes which persist after transplantation. Renal function is not affected at 12 months, however a longer follow up is warranted. Our data thus support current practice of using only carefully selected HTD for kidney donation.

P025A

INFECTIONS AFTER SOLID ORGAN TRANSPLANTATION: IS THERE A BENEFIT FOR MTOR-I OR CNI AS BASIC IMMUNOSUPPRESSANT? A SYSTEMATIC REVIEW AND METAANALYSIS

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Background: Side effects of the immunosuppressive therapy after solid organ transplantation are well known. Naturally, immunosuppressed patients are more susceptible to infections. Recently, significant benefits were shown for mTOR-Is with respect to CMV infections in comparison to CNIs. With other infections, i.e. pneumonitis the situation may look different.

We aimed to investigate the differences of mTOR-Is and CNIs with respect to the overall incidence of infections after renal transplantation.

Methods: The current literature was searched for prospective randomized controlled trials in solid organ transplantation. There were 526 trials screened of which 12 could be included (pts. = 6246). The 1-year incidence of infections, patient and graft survival was assessed in metaanalyses.

Results: Metaanalysis on 1-year incidence of infections showed a signifant benefit of an mTOR-I based therapy versus CNI"s (RR 0.86, CI 0.77–0.96, p = 0.009). After separating trials in mTOR-I based therapy either with or without CNI"s, this effect remained stable only when mTOR-Is were given with CNIs (mTOR-I w/o CNIs vs. CNIs: RR 0.97, CI 0.81–1.16, p = 0.73; mTOR-I with CNIs vs. CNIs: RR 0.80, CI 0.69–0.92, p = 0.002). There was no difference between mTOR-I and CNI therapy in respect of patient (RR 1.18, CI 0.84–1.67, p = 0.34) and graft survival (RR 1.05, CI 0.70–1.58, p = 0.80).

Conclusion: The numerical incidence of posttransplant infections, as we already know for CMV-infections, seems to be lower under mTOR-I based therapy, especially if combined with CNI"s. Nevertheless a more detailed description of infections in future randomized trials should be pursued. With currently used mTOR-I-based regimen patient and graft survival is not different compared to CNI therapies.

P029B

PNEUMONIA AFTER KIDNEY TRANSPLANT: RISK FACTORS ASSOCIATED WITH MORTALITY

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Background: Pneumonia is the second most common infection after a kidney transplant with a high complication rate, often resulting in death. The aim of this study was to identify risk factors associated with mortality to improve survival in this population.

Methods: We retrospectively included all kidney transplant recipients with pneumonia treated at our Transplant Center between 2004 and 2017. The diagnosis of pneumonia was made if the patient had at least one clinical symptom and compatible imaging. Patient base line characteristics, laboratory values and microbiological tests were analyzed. We placed special focus on acute and chronic graft failure, immunosuppressive regime and factors influencing mortality (including follow-up of 7.76 years).

Results: In 1467 kidney transplant recipients, there were 177 (12%) patients that had 270 episodes of pneumonia. The average time between transplant and infection was 76 months. Nosocomial pneumonia made up 40.7% of these cases. 72.3% were bacterial. 79.1% had acute graft failure, of which 12.9% needed renal replacement therapy. 7.3% of patients died. Although immunosuppression was reduced in 40.7% of patients there was no increase in graft rejection during follow up. Significant risk factors for mortality were CRP > 10 mg/dl and albumin <3 g/dl upon admittance, congestive heart failure, autosomal dominant polycystic kidney disease (ADPKD) as underlying renal disease, nosocomial pneumonia, septic shock, ICU admittance, mechanical ventilation and renal replacement therapy.

Conclusion: Several highly significant risk factors associated with mortality were identified. Keeping these in mind, patients at risk for death can be identified and the outcome of renal transplant recipients with severe pneumonia might be improved.

P030B

KIDNEY TRANSPLANTATION FROM EXPANDED CRITERIA DECEASED DONOR: COMPARISON WITH IDEAL DECEASED DONORS AND NON-EXPANDED CRITERIA DONORS

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Purpose: Our objective was to compare the clinical outcomes of expanded criteria donor (ECD) with ideal criteria donors (IDD) and Non-ECD in adult kidney transplant (KT).

Methods: Between February 2000 and December 2015, we analyzed 405 deceased donor KTs included 129 ECD (31.9%), 233 non-ECD (57.5%), and 43 grafts (10.6%) from IDDs. ECDs were classified by the UNOS definition, and IDDs is a younger person (10–39 years) with no medical risk factors who dies from traumatic head injury. Donor and recipient risk factors were separately analyzed and correlated with recipient graft function and survival (minimum 6-month follow-up).

Results: ECD kidney recipients also were older (50.6 ± 9.8 years), had a shorter waiting time (p = 0.031) and low frequency of re-transplantation (p = 0.028), but other baseline characteristics were no significant difference from those of IDD or Non-ECD kidney recipients. The mean MDRD GFR level at 1 month, 6 months, 1 year, 3 years and 5 years after KT was significantly lower in patients with ECDs but MDRD GFR level at 7, 10 years did not differ significantly (p = 0.074, 0.262). Actual patient and graft survival rates were similar among the three groups. There were no significant differences in graft survival (p = 0.394) and patient survival (p = 0.737).

Conclusions: In our center, 31.6% of deceased KT are performed from ECDs. Although long term renal function was lower in ECD kidney recipients, graft and patient survival of ECD kidney recipients were comparable to IDD or Non-ECD kidney recipients. In conclusion, the utilization of renal grafts from ECDs is an acceptable offer to resolve the disparity of critical organ shortage.

P032B

HUMAN ADIPOSE-DERIVED MESENCHYMAL STROMAL CELLS REDUCE CHRONIC PERITUBULAR INFILTRATION AFTER ISCHEMIA-INDUCED ACUTE KIDNEY INJURY (AKI-IR)

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Background: Although there are several studies showing therapeutic efficacy of stem cells in early stages of acute kidney injury induced by ischemia-reperfusion (AKI-IR), little is known about the long-term effects. In the present study, we assessed whether the treatment with allogeneic adipose-derived mesenchymal stromal cells (hASC) can prevent long-term damage associated with IR.

Methods: hASC were isolated from lipoaspirates from patients undergoing cosmetic surgery. Male Lewis rats were subjected to 60 min of left kidney ischemia. The right kidney was left unperturbed until 10 day before sacrifice at week 24. Animals were randomly assigned into three groups: control-sham (n = 7), AKI60 + vehicle (n = 8) and AKI60 + hASC (hASC, tail vein) (n = 10). hASC were injected 14 days after AKI induction. All animals were sacrificed 24 weeks after AKI induction.

Results: AKI60 + vehicle group showed diffuse areas of tubular dilation as well as disperse foci of peritubular infiltration at week 24. Mild interstitial fibrosis was observed, affecting 10–20% of renal parenchyma. Although serum creatinine was slightly increased compared to age matched control animals it was within the normal range. In the AKI+hASC group both peritubular infiltration and serum creatinine were slightly decreased compared to the vehicle-treated group.

Conclusion: 60 min of unilateral ischemia without contralateral nephrectomy is insufficient to inflict severe long-term renal function deterioration in Lewis rats. Nevertheless, hASC were able to decrease peritubular infiltration.

P033B

WHEN THE REMOVAL OF THE DIALYSIS CATHETER BECOMES AN UNEXPECTED CHALLENGE AFTER SUCCESSFUL RENAL TRANSPLANTATION

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Purpose: Kidney transplantation is the best renal replacement therapy in end-stage renal disease. Bridging the unknown time until transplantation and providing dialysis treatment can be administered in various ways. One intermittent access modality are tunnelled dialysis catheters which should remain as shortly as possible, mainly to avoid infectious and thrombotic complications. Here we present the case of a young woman requiring thoracic

surgery after successful kidney transplantation to explant her tunnelled dialysis catheter after eight years of usage.
Clinical setting: A 30 yr. old female patient received kidney transplantation after eight years of hemodialysis for CKD due to systemic lupus erythematodes. Before discharge, extraction of the tunnelled dialysis catheter failed because the catheter could not be mobilized. Angiography showed subtotal constriction and calcification of the upper caval vein around the tip of the catheter which lead to clinically relevant upper venous congestion. Another attempt to extract the catheter in general anesthesia using sharp pacemaker extraction supplies also failed because of thorough adhesion to the upper vena cava wall.
Outcome: Open thoracic surgery using heart-lung-machine-support was necessary to explant the calcificated vein and the hereto attached functional tunnelled dialysis catheter. A pericard patch of 4x5 cm was used to cover the venal wall defect, requiring systemic anticoagulation therapy for at least six months.
Conclusion: Tunelled dialysis catheters are convenient, easy to insert and immediately to use tools to safely perform hemodialysis. A longer use is associated with severe complications. Despite patients" wishes, nephrologists should insist upon reasonable dialysis access in long-term hemodialysis.

P035B PREDICTORS OF GRAFT SURVIVAL AT DIAGNOSIS OF ANTIBODY-MEDIATED RENAL ALLOGRAFT REJECTION

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Treatment of antibody-mediated rejection (ABMR) after renal transplantation is unsatisfactory. In order to improve treatment efficacy, it is necessary to identify parameters, which independently predict graft survival at diagnosis.

54 consecutive renal allograft recipients with proven ABMR from 2005 to 2015 were included. Patient (pts) characteristics, renal function, HLA antibody status, renal biopsy histology and immunosuppressive treatment were analyzed at baseline. The aim of this study were to identify independent risk factors of graft loss 24 months after ABMR diagnosis by Cox proportional hazard model (uni- and multivariate).

With regard to pts baseline characteristics, we found no major differences between ABMR treatment regimens. Multivariable analysis revealed transplant glomerulopathy (TG; HR 1.57; 95% CI 1.01–2.58; p = 0.045), microvascular inflammation (MVI; HR 1.37; 95% CI 1.01–1.88; p = 0.048), and eGFR (HR 0.94; 95% CI 0.89–0.98; p = 0.018) were predictive for graft loss 24 months after diagnosis. Proteinuria was statistically not a risk factor in the univariate analysis (HR 1.12; 95% CI 0.99–1.27; p = 0.072). Notably, a significant decrease of DSAmax (HR 0.62; 95% CI 0.25–1.52; p = 0.294) following treatment was not associated with an improved graft survival compared to pts with no significant DSA decrease. Treatment with cyclophosphamide (6×15 mg/m^2) + high-dose intravenous immunoglobulins (IVIG) (1.5 g/kg) was superior compared to treatment with rituximab (1x500 mg) (HR 0.10; 95% CI 0.02–0.54; p = 0.008) or bortezomib (4x1.3 mg/m^2) + low-dose IVIG (30 g) (HR 0.16; 95% CI 0.02–0.99; p = 0.049).

TG, MVI and eGFR are independent risk predictors for graft survival at diagnosis of ABMR. Treatment with cyclophosphamide plus high-dose IVIG seems to be advantageous.

P037B TYPE I INTERFERONS ARE UPREGULATED IN THE EARLY POST-TRANSPLANT PERIOD AFTER RENAL TRANSPLANTATION

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Background/Aim: Extended cold and/or warm ischemia times are associated with worse renal allograft function and increased rates of rejection after transplantation. It was the aim of this study to characterize the immunologic response of the allograft in the early post-transplant period after renal transplantation.
Method: F344 rats were used as donors and Lewis rats served as recipients in this rodent renal transplant model. Donor rats underwent nephrectomy of the left kidney. The graft was stored after perfusion with custodiol at 4 °C for 12 h. The graft was transplanted into Lewis rats after nephrectomy of the left native kidney. The right native kidney remained in the recipient. Two hours after reperfusion, the native right kidney and the renal allograft were harvested for further analysis. RT-PCR of the renal allograft and the native right kidney was performed and values are expressed as fold changes (FC) relative to the right native kidney serving as control.
Results: The mean warm ischemia time was 25 ± 7 minutes. Two hours after reperfusion, CXCL1 was strongly upregulated within the renal allograft (700 ± 100 FC, expressed as fold change over control). Interestingly, pro-inflammatory cytokines were also upregulated (IFNγ: 15 ± 4 FC, IL-17A: 61 ± 22 FC and IL-22: 57 ± 13 FC). Transcripts of type I interferons were found to be upregulated (INFα: 2 ± 0.6 FC, IFNβ: 43 ± 13 FC).
Conclusions: Pro-inflammatory cytokines and type I interferons are upregulated within the renal allograft already 2 h after reperfusion. Type I interferons usually promote inflammation and have been known to abrogate immune tolerance. Thus, IFNα and IFNβ may shape the immunogenicity of the renal allograft during the early post-transplant period and contribute to the formation of alloimmunity.

P039B PROPHYLAXIS AGAINST CYTOMEGALOVIRUS IS ASSOCIATED WITH LOWER KIDNEY FUNCTION IN TRANSPLANT PATIENTS WITH INTERMEDIATE REACTIVATION RISK

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Current studies show that prophylactic strategy might prevent CMV disease more effectively than pre-emptive approach, but its effects on renal function, graft survival and patient survival are largely unclear. In our work, we compare the outcomes of both strategies with respect to viral reactivations, renal function and adverse effects one year after transplantation. We analysed 436 patients from the multicenter study HARMONY during the first post-transplantation year for glomerular filtration rate (GFR) and CMV and EBV load. Patients were classified according to their CMV risk constellation. Due to the group sizes, only patients with intermediate risk (CMV seropositive recipient) were considered for further analyzes.

From 183 patients with intermediate CMV risk, 64 (35.0%) received prophylaxis. There were no cases of elevated CMV viral load (>2000 copies/mL) in the prophylaxis group, compared to 11 in the preemptive group (9.24%, p = 0.0089). There were no cases of elevated EBV viremia in the prophylaxis group, compared to 8 cases (6.72%) in the preemptive group (p = 0.052). Importantly, prophylaxis had a significant negative effect on graft function: One year after transplantation, the prophylaxis group showed a median GFR of 39.3 mL/min·1.73/m^2, compared to 47.6 mL/min·1.73 m^2 in the preemptive group (p = 0.035). Remarkably, a difference was observed from the first month on after transplantation. No substantial demographic differences between groups or center effects on GFR were found.

Our study shows that for intermediate risk group, prophylaxis is associated with significantly lower renal function at the end of the first post-transplantation year. Further studies are required to explore the current observation.

P040B ARTERIAL STIFFNESS, BODY MASS INDEX AND IMMUNOSUPPRESSIVE REGIMEN IN RENAL TRANSPLANTS RECIPIENTS

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Introduction: The aim of the study was to assess the relation between pulse wave velocity (PWV), body mass index and different immunosuppressive treatments.
Methods: 103 RTR after 1st (88), 2nd (14) and 3rd (1) kidney transplantation (KT), of our outpatient clinic were enrolled. Clinical and laboratory data were analyzed. eGFR was calculated with the CKD-EPI formula. Arterial stiffness was assessed with brachial-ankle (baPWV) and carotid-femoral pulse wave velocity (cfPWV) measured with the ABI-system100. Categorization by body mass index (BMI) was performed.
Results: Median age (IQR) was 53 (37–61) years. 62.1% RTRs were male. Mean time after last KT was 61 (22–110) months, mean time of RRT before the last KT was 45 (10–95) months. Mean creatinine level was 1.41 (1.05–1.88) mg/dl, mean eGFR 52 (38–72) ml/min. Values of baPWV was 11.9 (10.9–13.6) m/s, cfPWV was 8.1 (6.9–9.7) m/s. Mean BMI was 25.22 kg/m^2 (14.10–41.20).

Immunosuppressive regimen included CNIs (68.9/17.5 on TAC/CsA, respectively), antiproliferative agents (48.5/47.6% on MPS/MMF, respectively), steroids (50.5%) and belatacept (6.8%). We observed significant correlations between age of the patients and cfPWV ($r = 0.56$, $p < 0.00001$) and baPWV ($r = 0.52$, $p < 0.00001$). Additionally, there were significant correlations between duration of RRT and cfPWV ($r = 0.3558$, $p = 0.00139$), baPWV ($r = 0.3227$, $p = 0.00396$) and eGFR ($r = -0.2315$, $p = 0.073$). There were significant difference in PWV in groups within the different BMI categories (<18.5, 18.5–25, 25–30, >30; $p < 0.005$).
Conclusion: We observed significant associations between PWV in different BMI and age categories. Duration of RRT, eGFR and immunosuppression also impacts on PWV which might indicate elevated cardiac risk in certain groups of RTR.

P041B RENAL ARTERY ANASTOMOSIS TO A REMNANT RENAL GRAFT ARTERY FOR RE-TRANSPLANTATION WITH LIFE DONOR KIDNEY IN A PATIENT WITH III° CALCIFICATION OF THE AORTO-ILIAC AXIS

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Introduction: Arterial sclerosis is common in patients on dialysis for end-stage renal disease. Arterial anastomosis is challenging or not even feasible in these patients.
Case report: The 68 year old male patient reported here underwent simultaneous renal-pancreas transplantation 17 years ago. He received dialysis for kidney graft failure with the indication for re-transplantation for 7 months until a life donor was available. The recipient presented with III° arteriosclerosis of the aorto-iliac axis without possibility for an arterial anastomosis. Preoperative ultrasound showed a patent renal artery of the 1st kidney graft. He underwent exploration before life organ retrieval. The arterial flow of his 1st graft was confirmed intraoperatively before its removal maintaining the graft"s artery in situ. The remnant of the renal graft"s artery was assessed for anastomosis and an endarterectomy was performed to optimize its patency prior to completion of the end-to-end anastomosis with the artery of the graft.
Results: The final arterial flow in the renal graft artery was 360 ml/min. The postoperative standard duplex confirmed an excellent perfusion of the kidney graft with a good function. The hospital stay was uneventful, the patient was discharged at day 16 after transplantation with serum creatinine levels of 1.35 mg/dL and an eGFR of 53.5 mL/min. Now, at four months after transplantation, the kidney graft function is stable (creatinine 1.35 mg/dL, eGFR 53.36 mL/min).
Discussion: In recipients with calcification of the aorto-iliac axis an exploration can be necessary to ensure the transplantability. Remnant renal vessels of a failed graft can be an option for anastomosis during re-transplantation. This case shows the importance of an extensive preoperative evaluation.

P043B ANTI-THYMOCYTE GLOBULIN VERSUS RITUXIMAB INDUCTION FOR KIDNEY TRANSPLANT RECIPIENTS AT HIGH IMMUNOLOGICAL RISK – A SINGLE CENTER RETROSPECTIVE ANALYSIS

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Objective: Induction therapy is routine for kidney transplant recipients at high immunological risk to prevent acute allograft rejection. But much uncertainty remains regarding the choice of antibody. Here we report retrospectively clinical outcome of actual Thymoglobulin (period 2) or former Rituximab (period 1) induction regime of our center.
Method: In total we could identify 161 adult recipients at high immunological risk, of which we analysed 40 matched patients. Our propensity score model included significant variables such as recipient's age, gender, number of previous transplantations, donor source and human leukocyte antigen (HLA) mismatches. In the ATG group, the drug was delivered at a dose of <5 mg/kg. Patients in the Rituximab group received a single intravenous dose of 500 mg at the time of transplantation. Relevant clinical data were collected, including rejection episodes, delayed graft function (DGF), graft survival, blood and urine routine laboratory tests, anti-HLA antibodies (de novo, either donor specific or non-donor specific), rate of infections and adverse events until 1 year post treatment.
Results: There was no significant difference between the 2 groups regarding our clinical parameters. 8 patients (40%) in each group developed DGF. There was a tendency of less early rejection in the ATG group with 2 patients (10%) versus 7 patients (35%) in the Rituximab group ($p = 0.052$). Late graft rejection did not occure in any group. In total 6 patients lost their graft during our analysed 12 months period, of which 2 were in the Rituximab group.
Conclusion: We show that the use of Thymoglobin and Rituximab in adult kidney transplant recipients at high immunological risk is equally effective and safe during the first year after treatment.

P045B THE RISK OF RENAL RE-TRANSPLANTATION

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Background: Renal re-transplantation (Tx2) may have a higher risk than first transplantation (Tx1); we analyzed the reasons for it.
Methods: Retrospective study by comparing graft and patient survival of all 162 Tx2 patients transplanted 2000 to 2009 (study group) with 162 Tx1 patients matched for age (±10 years), gender, date of transplantation (±18 months), and the kind of donation (control group).
Results: Graft and patient survival of TX2 was inferior to that of TX1 patients ($p = 0.001$ resp $p = 0.048$). Group TX2 had a longer dialysis treatment than TX1 (113.0 ± 52.5 vs. 65.6 ± 33.9 months; $p < 0.001$); more often HLA MM (2.54 ± 1.75 vs. 2.08 ± 1.65, $p = 0.013$) and PRA >30% (15.4% vs. 1.9%, $p < 0.001$); and more often induction therapy by ATG instead of IL-2R antibody (59.9% vs. 1.9%, $p < 0.001$). Patients with rejection (39.57% vs. 36.4%) rejections per patient (0.58 ± 0.92 vs. 0.56 ± 0.87) were not different; however, graft failure by rejection was more frequent in the Tx2 group (32.22% vs. 21.21%, $p = 0.014$). Testing several variables by Kaplan-Meier curves, Tx2 patients show an inferior graft survival than Tx1 patients with a higher number of HLA-MM (logrank $p = 0.014$), with humoral rejection (logrank $p = 0.004$), and have a higher mortality with several concomitant diseases, (logrank $p < 0.001$) especially with cardiovascular disease (logrank $p < 0.0001$), and severe infection (logrank $p < 0.001$).
Conclusion: Tx2 patients have several reasons for an inferior graft and patient survival compared to Tx1 patients: a) Immunologic reasons (more often HLA-MM and high PRA, more often graft failure by rejection); b) higher mortality by concomitant diseases, especially cardiovascular disease and infection; and c) less capacity to adapt to immunologic and infectious problems and failure to cope with them.

P047B KIDNEY TRANSPLANT RECIPIENTS WITH BLOOD GROUP A HAVE SIGNIFICANT HIGHER RISK FOR POST-TRANSPLANT DIABETES MELLITUS THAN RECIPIENT WITH BLOOD GROUP 0

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Post-transplant diabetes mellitus (PTDM) is a common complication after kidney transplantation (KT) which is associated with significantly higher rates of mortality, graft losses and treatment costs. In the retrospective study of 221 living kidney transplant recipients transplanted at the University Hospital of Freiburg between April 1st, 2004 and September 3rd, 2014 we calculated PTDM cumulative incidence rate of 30% in 3 years. Using Cox regression we found a significant higher risk for PTDM in KT-recipients with blood group A compared to blood group 0 but no significant difference in risk for ABO incompatible (ABOi)-KT compared to ABO compatible (ABOc)-KT. Other significant risk factors for PTDM were age above 40 years, obesity, smoking and HDL < 40 mg/dl before KT. Our study could not identify polycystic kidney disease (PKD) and sex to be significant risk factors for PTDM. Seven years after KT the values for fasting blood glucose, HbA1c and body mass index (BMI) were still significantly higher compared to baseline values. Of the 73 KT-recipients with PTDM only 35 received anti-diabetic medication which was stopped over time in 13 cases. We assume PTDM to be a potentially reversible disease.

P048B PRESENTATION OF A PROSPECTIVE STUDY DESIGN FOR THE EVALUATION OF THE ANTIVIRAL IMMUNE RESPONSE AS AN INDICATOR OF THE INTENSITY OF IMMUNOSUPPRESSION AND OUTCOME AFTER KIDNEY TRANSPLANTATION

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Prognosis after kidney transplantation is decisively determined by the occurrence of rejection. In order to reduce the risk of rejection, recipients are treated with immunosuppressive medication which significantly increases the risk of opportunistic infections. Among viral pathogens, CMV and BKPyV are a major cause of infectious complications post-Tx. Both viruses can reduce graft and patient survival. Besides the quantification of viral DNA, increasing attention is paid to the development of tools to gauge the virus-specific immune response.

This is of special interest since it is not only predictive of viral infection but may be a useful future surrogate parameter of the degree of immunosuppression.

Here, we present a prospective study design enrolling patients undergoing kidney transplantation as well as – in the case of living donation – their donors. Enrolment started successfully in January 2018 with 36 patients having been enrolled by the end of May 2018 and is currently extended to additional centers in Germany.

Blood samples are – in addition to standard exams such as donor-specific antibodies, CMV serology and CMV/BKV titers - examined for BKPyV serology, CMV Interferon Gamma Release Assays and TTV DNAemia at the following timepoints: before transplantation, 3 weeks and 6 months after transplantation. The donors are tested for BKPyV serology only. The results of these analyses are then examined regarding a combined composite endpoint of immunological and infectious events.

With our study design we aim at evaluating whether a viro-immunological monitoring could predict the risk to develop post-Tx complications in kidney transplant recipients with the final aim to optimize risk assessment, tailor immunosuppression and individualize treatment strategies.

LIVER TRANSPLANTATION

P052A INTERVENTION FOR SPLENORENAL SHUNT MAY DECREASE THE INCIDENCE OF POST-LIVER TRANSPLANT ACUTE KIDNEY INJURY

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Objectives: It remains controversial if intervention for splenorenal shunt (SRS) peri-liver transplantation (LT) leads to outcome benefit. We aimed to compare the post-LT outcome between the patients with SRS who received peri-transplant intervention versus those who did not.
Materials and Methods: A retrospective chart review of patients who received LT at a tertiary center between 2012 and 2017.
Results: 45 out of 268 (18.6%) LT patients were found to have large SRS before transplant. Nine out of 45 (20%) patients received intervention for SRS including pre-transplant BRTO ($n = 5$), intraoperative ligation of the left renal vein ($n = 3$) and intraoperative direct shunt ligation ($n = 1$). There was no difference in age, gender, MELD score or the etiology of the end stage liver disease between the intervention and the non-intervention group. There was no difference in transfusion requirements, hospital length of stay, 3-month platelet count and creatinine level, portal vein thrombosis, 1-year graft and patient survival between the two groups. Compared to the non-intervention group, the rate of post-operative acute kidney injury was significantly lower in patients in the intervention group (0 cases vs. 12 cases; Odd ratios 0.73; 95% CI: 0.59–0.90). Patients with no intervention ($n = 36$) were followed after LT. 27 of them had post-transplant imaging and SRS completely resolved in 4 patients (15%), and persisted in the rest.
Conclusions: The large majority of SRS persisted post LT. Peri-transplant intervention for SRS did not affect the post-transplant clinical outcomes except for the reduction of post-transplant acute kidney injury.

P053A OUTCOME AFTER LIVER TRANSPLANTATION IN 25 PATIENTS WITH ISCHEMIC-LIKE CHOLANGIOPATHY WITH SECONDARY SCLEROSING CHOLANGITIS

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Background: Sclerosing cholangitis in critically ill patients (SC-CIP) with sepsis is a rare cholestatic liver disease with a rapid progression to liver cirrhosis. It is defined by an ischemic injury of the biliary tree with the formation of biliary casts and subsequent ongoing biliary infection due to multiresistent bacteria inflammation. Little is known about the outcome of liver transplantation (LT) in patients (pts) with SC-CIP.
Patients: From 2005 to 2015 twenty-five pat. (49 + 11 years; 23 m, mean MELD score: 30 + 4) with SC-CIP underwent LT in our transplant center. All pts. developed a SC-CIP due to sepsis and ARDS caused by: polytrauma with multiple bone fractures ($n = 13$), aortic dissection ($n = 2$), coronary artery bypass operation ($n = 2$), aneursym of the artery communicans anterior ($n = 1$), internal medicine diseases ($n = 7$) or HELLP syndrome ($n = 1$). SC-CIP was diagnosed by ERCP and confirmed in the explanted liver.
Results: Mean ± SD follow-up was 55 ± 50 months. One pts. had a re-LT (after 19 days) due to initial non-function. The 1-, 3- and 5-year survival rates were 64%, 60% and 56%, respectively. Until now 13/25 (52%) pts. had died, 9/25 (36%) pts. within the first 8 months after LT. Seven of these 9 pts. had died because of sepsis, 2 died because of other causes: hemorrhagic shock by rupture of an aneurysm of the hepatic artery ($n = 1$; 2 months post-LT) and hyperacute rejection with a fulminant central pontine myelinolysis ($n = 1$; 2 days post-LT). Four pts. died between 33 to 84 months after LT due to sepsis ($n = 2$) and heart failure ($n = 2$). All alive pts. (12/25) have a good quality of life.
Conclusion: Pts. transplanted for SC-CIP have an increased mortality risk due to sepsis, but LT is the only chance for long-term survival of these pts.

P056A EVALUATION OF HISTOLOGICAL DYNAMICS, KIDNEY FUNCTION AND DIABETES IN LIVER TRANSPLANT PATIENTS AFTER ANTIVIRAL TREATMENT WITH DIRECT ACTING ANTIVIRALS

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Background: Direct acting antiviral drugs allow an efficient and safe treatment of hepatitis C (HCV) before and after liver transplantation (LT). This analysis should adress open questions on the impact of especially sofosbuvir (SOF) based treatment regimens on histopathological changes of the graft as primary place of HCV, diabetes as part of the extrahepatic manifestation and kidney function.
Patients and Methods: From 2014 to 4/2015, 100 patients with HCV-recurrence after LT were successfully treated with direct acting antivirals. 98 received a SOF-based antiviral treatment (AVT). The indication for AVT was based on viral genotype, transplant fibrosis stage and urgency. Biopsies were evaluated before and after AVT. Renal function and diabetes (daily insulin dose) were assessed before, during and after AVT.
Results: All patients achieved sustained virological response. A significant improvement of the inflammation grade ($p = 0.001$) and fibrosis stage ($p = 0.031$) were observed after AVT after a mean follow-up of 20.4 months. The entire mean follow-up time comprised 30.6 months. Significantly less insulin was required in 32 patients ($p < 0.001$) with diabetes to keep the unchanged Hb1Ac after AVT. There was no significant change in kidney function assessed by GFR during and 12 weeks after the treatment ($p = 0.136$) and 48 weeks after AVT in females ($p = 0.446$). Stages of renal insufficiency were comparable before and after AVT.
Conclusion: Successful SOF-based AVT leads to a whole variety of positive development in LT-patients including a significant improvement of inflammation, fat content and fibrosis based on liver histology, a significant decrease of daily insulin dose required to control diabetes and no significant impairment of kidney function.

P057A IMPACT OF ELEVEN PROGNOSTIC SCORES ON INTRA- AND EXTRAHEPATIC RECURRENCE OF HEPATOCELLULAR CARCINOMA AFTER LIVER TRANSPLANTATION

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Introduction: Tumor recurrence is the most frequent cause of death after liver transplantation for hepatocellular carcinoma. We selected ten other prognostic classifications to evaluate their potential to predict the risk of recurrence after LT for HCC as compared to the Milan classification. All of the other scores have not been compared one with another in a single cohort.
Methods: Data of 147 consecutive patients transplanted at our department between 1996 and 2014 were analyzed and staged for morphological and functional scores of underlying liver disease. For long-term follow up, we analyzed separately intrahepatic (within the liver ± distant metastases) and extrahepatic (distant metastases only) recurrence.
Results and Conclusions: The median survival time for all patients was 106 months. The 5- and 10-year observed survival rates were 61% and 43%, respectively. The observed cumulative 5- and 10-year recurrence rates were 37% and 39%, respectively, 10-year intrahepatic and extrahepatic recurrence rates were 12% and 27%, respectively. Median survival time after diagnosis of first recurrence was 7.5 (0–120) months; 2 months and 18 months for all, intra- and extrahepatic recurrence, respectively.

UCSF-, Up to seven-, Shanghai Fudan- or Duvoux-classifications can identify patients with a cumulative 10 year recurrence rate below 20%. The pretherapeutic AFP level should be considered in addition to the geometry of the intrahepatic lesions.

P058A

TUMOR NECROSIS AS A RESULT TO PRE-TRANSPLANT BRIDGING TREATMENT FOR HEPATOCELLULAR CARCINOMA (HCC) AND ITS EFFECT ON POST-TRANSPLANT OUTCOME

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Objective of our study was to evaluate the rate of complete pathologic response in patients undergoing locoregional bridging treatment prior to liver transplantation (LT), analyze its effect on post-transplant recurrence, and identify factors that predict the ability to achieve complete pathologic response.

We performed a retrospective review of all adult patients undergoing LT for HCC between 2007 and 2017 at our transplant center. Locoregional bridging therapies included radiofrequency ablation, chemoembolization, radioembolization or a combination of the above. Complete pathologic tumor necrosis was achieved in 35.4% of patients while in 64.6% partial or no tumor necrosis was detected. There were no differences regarding age, gender, liver disease, MELD score and Milan criteria between both groups. Patients with treatment response had significantly smaller (28 [12–175] vs. 36 [12–225] mm, p 0.0023) and less tumor nodules (>3 nodules in 20.7% vs. 37.4%, p 0.0278). Pre-treatment AFP was lower in the complete response group (14.1 [1.1–43611.0] vs. 28.0 [1.1–538184.0] IU/ml, p 0.0760). On explant specimen, poor differentiation (1.6% vs. 21.7%, p 0.0003) and microvascular invasion (0.0% vs. 20.0%, p 0.0001) was significantly less frequent in the complete response group. Patients with complete treatment response developed significantly less frequently tumor recurrence (3.2% vs. 23.5%, p 0.0005). Multivariate analysis detected tumor size and numbers as well as poor differentiation being individually associated with decreased odds of treatment response.

In conclusion, successful bridging treatment leading to complete necrosis may facilitate successful LT in HCC patients. Treatment response is less likely achieved in tumors of large numbers or size and poor differentiation.

P062A

IN VIVO DECELLULARIZATION OF LIVER LOBE USING SINGLE LIVER LOBE PERFUSION TECHNIQUE

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Background: *In vivo* decellularization has become an interesting model to study *in vivo* repopulation of *a* liver scaffold. Pan was the first one to present *in vivo* single liver lobe decellularization (Pan, IntJbiochem&cellbio 2016). Up to date, no survival after *in vivo* liver lobe decellularization has been reported.
Objective: To establish *in vivo* single liver lobe decellularization based on our previous liver lobe perfusion model.
Methods: We created an *in vivo* circuit to perfuse only the left lateral liver lobe in the living rat. All cells were chemically removed by flushing the lobe with detergents. The quality of the decellularized scaffolds ($n = 5$) were analyzed. After *in vivo* blood reperfusion of the scaffold, the rats ($n = 7$) were allowed to recover from anesthesia for survival analysis.
Results: In H&E staining, no cellular components but only collagen was observed in the decellularized scaffolds. Immunohistochemical staining for elastin demonstrated that elastic components remained in the scaffold. The three-dimensional vasculature was preserved as confirmed by silicon rubber staining. Surprisingly, all rats survived the first 3 h postoperatively, but died within 48 h.
Conclusions: For the first time, we achieved successful establishment of *in vivo* single liver lobe decellularization with short -term survival in rats. The further challenge is to prevent blood clotting and hemolysis after physiological blood reperfusion of the scaffold to allow long term survival. Once achieved, *this model will* provide the foundation for further investigating the process of *in vivo* repopulation in-depth resulting in *in-vivo* partial liver engineering.

P065B

PERIOPERATIVE CHEST DRAIN IN LIVER TRANSPLANTATION – AN UNCONVENTIONAL WAY TO REDUCE MORBIDITY

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Introduction: Liver transplant recipients are frequently affected by pleural effusions in the immediate postoperative phase and often chest drain (CD) placement is needed. The purpose of this study was to investigate the prevalence of drainage requiring pleural effusions after liver transplantation (LT) and post-interventional complications.
Methods: Adult LT recipients between 2009 and 2016 were analyzed retrospectively for pleural effusion formation and its therapy. The observation period ended at postoperative day 10.
Results: Overall, 597 patients were included in the study. Of these, 361 (60.5%) had at least one CD placed within the first 10 days after LT. Patients with a Model for End-Stage Liver Disease (MELD) score >25 were affected more often (75.7% vs. 56.0%, $p < 0.001$). Typically, CDs were placed at the intensive care unit (ICU) (68.3%) or in the operating room (14.0% during LT, 11.0% during reoperations). In total, 97.0% of the patients received a CD on the right side, presumably caused by local irritations. Due to poor liver function pre-interventional optimization of coagulation was necessary in one third of interventions performed at the ICU. Out of 361 patients receiving an CD 14 (3.7%) suffered from post-interventional hemorrhage and 6 (1.4%) from pneumothorax requiring further medical treatment. Comparing the setting of the placement, less complications were observed when performed in the operating room as compared to placement at ICU (1/116 (0.9%) vs. 20/316 (6.3%); $p = 0.019$).
Conclusion: Pleural effusion, more frequent in patients with higher MELD, is a common complication after LT requiring intervention in most cases. Routinely placed intraoperative CD may reduce complications, avoid unnecessary coagulation products and may prevent pneumonia.

P067B

HIGH EXPRESSION OF THE MAJOR HISTOCOMPATIBILITY CLASS I-RELATED CHAIN MOLECULE A (MICA) IN ZERO-HOUR BIOPSIES PREDICTS IMPROVED GRAFT SURVIVAL AFTER LIVER TRANSPLANTATION

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Background: In search for novel biomarkers to assess graft quality, we investigated whether defined candidate genes are predictive for outcome after liver transplantation (LT).
Methods: Zero-hour liver biopsies were obtained from 88 LT patients. Gene expression was analysed and correlated with clinical parameters, including the Eurotransplant Donor-Risk-Index (ET-DRI) as well as short and long-term outcomes.
Results: Among the markers studied (MICA, NKG2D, CCL19, DNAM1, HLADRB, Leptin), the mRNA expression of the cytotoxicity receptor NKG2D significantly correlated with a body mass index >30. However, its ligand MICA was significantly upregulated in patients at advanced age of >55 years. Whereas both the calculated ET-DRI and donor BMI had either a poor or no predictive value concerning serum levels indicative for liver function (ALT, AST, bilirubin, GGT) after 6 months, chronological donor age was only predictive for serum bilirubin (AUC = 0.67). In contrast, MICA demonstrated a high predictive value for serum liver function parameters including ALT (0.8), AST (0.78) as well as bilirubin (0.63) and GGT (0.66) after 6 months post LT. Likewise, after 24 months, MICA still showed a high AUC for ALT (0.71), AST (0.73) and GGT (0.75) but not for serum bilirubin (0.5). Importantly, high expression of MICA was detected to be significantly associated with prolonged graft survival ($p = 0.024$; log rank test) after 10 years of observation.
Conclusion: Cold as well as warm liver preservation systems now allow a longer time frame for the simultaneous evaluation of biomarkers to diagnose graft quality. Given the observed correlation with short and long-term graft function, we suggest MICA as a biomarker for zero-hour biopsy assessment.

P068B

HIGHER MORTALITY WITHIN ONE YEAR AFTER LIVER TRANSPLANTATION IN CIRRHOTIC PATIENTS WITH SPONTANEOUS BACTERIAL PERITONITIS OCCURRING WITHIN ONE YEAR PRIOR TO TRANSPLANTATION

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Background and Aims: It is controversial whether Spontaneous bacterial peritonitis (SBP) influence posttransplant outcome. Our aim is to evaluate the

impact of SBP within one year prior to Orthotopic liver transplantation (OLT) on mortality within one year after OLT
Method: A retrospective analysis of all liver transplants for cirrhotic patients at a German University Center since introduction of MELD-based allocation. The association between SBP during one year before OLT and mortality within one year after OLT was analyzed
Results: 147 patients (107 (72.8%) male, mean age 57 ± 9 years) were included. Child-Pugh-class was A in 15 (17.0%), B in 57 (38.8%) and C in 65 (44.2%). Laboratory MELD was 18 (13–24). Ten patients had laboratory MELD scores >35, 49 (33.3%) patients had exceptional MELD scores, mostly ($n = 40$ (27.3%)) for HCC within Milan criteria. 26 patients had at least one episode of SBP one year prior to OLT. The most recent episode of SBP was culture-positive in 10 (38.5%) patients yielding gram-positive cocci in 5 and gram-negative rods in another 5. Mortality one year after OLT was 25.2%. Mortality of patients with ($n = 26$) or without ($n = 121$) SBP one year before OLT was 61.5% and 17.4%, respectively ($p < 0.001$). In univariable analysis, mortality after OLT was associated with Age (OR 1.067; 95% confidence interval (CI) 1.014–1.122; $p = 0.012$), MELD (OR 1.046; 95% CI 1.009–1.084; $p = 0.014$) and SBP (OR 7.619; 95% CI 3.038–19.110; $p < 0.001$). In multivariable analysis including MELD, SBP and age, only age (OR 1.104; 95% CI 1.040–1.172; $p = 0.001$) and SBP (OR 9.354; 95% CI 3.049–28.718; $p < 0.001$) were independently associated with mortality
Conclusion: SBP defines a subset of patients with a higher mortality after OLT.

P069B FIRST INTESTINAL TRANSPLANTS IN THE GULF COUNTRY COUNCIL – NEWS FROM THE 15TH CENTURY

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Background: Intestinal transplantation (ITX) until recently was not available within the Gulf Country Council. Patients suffering of short bowel syndrome with complications on total parenteral nutrition necessitating ITX so far required costly evaluation and transplantation abroad.
Methods: This is a retrospective single centre cohort analysis presenting the first experience and outcome of intestinal transplantation of King Faisal Specialist Hospital and Research Center (KFSH&RC).
Results: Five patients (3 male: 2 female) with a median age of 21 years (range 16–26) underwent isolated intestinal transplant. Lymphodepleting induction (thymoglobulin $n = 2$ and alemtuzumab $n = 3$) was used. The mean follow-up is only 6 months. Weekly protocol biopsies revealed 3 rejection episodes in 2 patients necessitating anti-rejection therapy resulting in patient and graft survival of 100%. All patients underwent elective ileostomy closure and are successfully weaned off steroids and TPN. Immunosuppressive maitenance is low dose sirolimus and tacrolimus for all patients.
Conclusions: KFSH&RC now offers intestinal and multi-visceral transplantation within Saudi Arabia. The novel immunosupressive protocol so far revealed excellent result with the scope of reducing long-term complications.

P070B THE PARASPINAL MUSCLE INDEX IS SUPERIOR TO OTHER CT DERIVED SKELETAL MUSCLE PARAMETERS IN PREDICTING COMPLICATIONS AND DEATH IN PATIENTS WITH CIRRHOSIS

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Background: The loss of skeletal muscle mass is known as a consequence of end-stage liver diseases which is associated with the occurrence of death and complications in cirrhosis. Uncertainty exists about the predictive accuracy of different CT derived muscle parameters.
Methods: In a cohort of 795 patients with cirrhosis listed for liver transplantation between 2001 and 2014 the area of abdominal wall muscles (AWMI), paraspinal muscles (PSMI) and its combination (SMI) was measured on CT scans at level L3/L4 normalized to the height at the time of evaluation. Data were compared to a control group of 109 patients without liver disease with CT scan after polytrauma.
Results and Conclusion: The mean age of the cohort was 53.7 years, 70.6% were male and the mean MELD score was 15.8. In comparison to controls the PSMI and SMI, but not the AWMI, were decreased in patients with high MELD, advanced Child stages and the history of cirrhosis associated complications (ascites, spontaneous bacterial peritonitis, hepatorenal syndrome and hepatic encephalopathy). A low PSMI and a low SMI (underneath the mean) were both associated with a shorter time to cirrhosis associated complications but not its frequency, whilst patients with low AWMI were not different in this regard. After multivariate analysis adjusted for age, gender, BMI and MELD the PSMI, nor AWMI or SMI, was an independent predictor for the occurrence of complications and 1-year-survival.
This analysis shows, that the predictive accuracy for death or complications in cirrhosis varies significantly among different muscle parameters. Recent data evaluating skeletal muscle loss as part of prognostic scores should be re-validated as the SMI is considered inadequate to predict complications and death in cirrhosis.

P071B SODIUM THIOSULFATE DID NOT ENHANCE THE SURVIVAL RATE DURING LTX WITH LONG TIME ISCHEMIC LIVER GRAFT IN RATS

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Background: Ischemia-Reperfusion Injury (IRI) is an important issue in clinical liver transplantation (LTx). Mitochondria dysfunction, followed by activation of reactive oxygen species (ROS), plays important role during IRI. Sodium Thiosulfate has been reported, as a hepatoprotective drug, to reduce the IRI in warm ischemic liver by attenuation of mitochondria dysfunction. We investigated if Sodium thiosulfate can increase the survival rate after LTx with long time ischemic liver graft in rats.
Methods: Firstly, we have established a stable LTx model with 25 min anhepatic time. Subsequently, 50 rats were subjected to LTx with 6 h cold ischemia time. Before portal reperfusion a substance (sodium thiosulfate or saline solution) was injected. Daily body weight loss during the observation time of 7 days, survival rate, liver enzymes and histological assessment of liver by harvest were obtained.
Results: 5 of 25 recipient rats were excluded because of technique problem. There was no difference in body weight loss. Five of ten rats survived for 7 days in group of treatment with sodium thiosulfate, whereas three of ten rats survived in group of treatment with saline (50% vs. 30%, $p = 0.459$). No differences were observed in ALT, AST and LDH, as well in histological examination.
Conclusion: Sodium Thiosulfate did not enhance the survival rate/reduce the cold IRI during LTx with long time ischemic liver graft in rats. Further investigation of IRI in the liver graft will be performed to understand the mechnism and improve the application of sodium thiosulfate.

P073B BIAS OF META-ANALYSES: INFLUENCE ON TREATMENT RECOMMENDATIONS FOR SMALL HEPATOCELLULAR CARCINOMA

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Background and Aim: Beside hepatic resection (HR) and transplantation, radiofrequency ablation (RFA) has evolved from a palliative tool to a curative treatment modality for small hepatocellular carcinoma (HCC). Two Cochrane reviews compare outcome after HR versus RFA for small HCC (Weis et al., 2013 and Majumdar et al., 2017). Both authors conclude that there was no evidence of a difference in all-cause mortality at maximal follow up between surgery and RFA. By including only low risk of bias trials HR seemed more effective than RFA regarding overall survival (HR 0.56, 95% CI [0.40; 0.78]) in the meta-analysis of Weis et al. Aim of this article was to assess the validity of the randomized controlled trials (RCT) included in both Cochrane reviews.
Methods: The validity of the RCT included in both Cochrane reviews was analyzed using the CONSORT checklist.
Results: The meta-analysis of Weis et al. 2013 included a total of 3 studies. One of them (Feng et al.) was not included in the meta-analysis of Majumdar et al. 2017, which included a total of 4 studies. One of them (Lee et al.) was available only as abstract. Four studies (Chen, Huang, Feng, Fang) could be further assessed for validity and revealed several inconsistencies. Unclear or not adequate randomization, missing blinded setup, conflict of interest and lacking intention-to-treat analysis were the most common findings.
Conclusion: The validity of included studies is a prerequisite for the validity of the meta-analysis. Guidelines are often based on Cochrane reviews and the authoritative value of guidelines is generally recognized. We suggest an improved critical appraisal of the validity of single studies and meta-analyses.

P074B

SUCCESSFUL COMBINED PANCREAS-KIDNEY-TRANSPLANTATION AFTER PRE-TRANSPLANT BACK-TABLE THROMBECTOMY OF THE SPLENIC VEIN

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Background: Pancreas transplantation shows a high rate of complications, wherefore an accurate selection of donor organs is required. Due to decreasing organ offers in Germany even marginal organs might be selected. Patients undergoing splenectomy have an increased risk of splenic vein thrombosis.
Case: For combined pancreas kidney transplantation organs of a 22-years old female deceased donor were provided. She had died due to a traumatic brain injury after a road accident. She also had a thorax trauma with severe lung contusion and abdominal contusion with a spleen rupture. Because of the spleen lesion she underwent splenectomy five days before the organ removal. The harvesting surgeon classified the pancreas perfusion and organ quality as "good". During the back-table preparation in our center the pancreas showed a Grad 3 lesion because of a subtotal thrombosis of the splenic vein. There were no other lesions and the back-table perfusion was performed without difficulty. Therefore, we performed a thrombectomy of the splenic vein. The pancreas graft was transplanted without complications. The recipient presented with normoglycemia. Therapeutic anticoagulation using intravenous heparin followed by Apixaban was administered. The postoperative course was completely uneventful.
Conclusion: This single case experience demonstrate that a precise organ selection can help to maintain more options for recipients, considering the decreasing organ offers. Our decision to perform the transplantation was based on the young age of the donor as well as the good parenchyma perfusion before and after thrombectomy, even though graft thrombosis is one of the main reasons for graft loss after pancreas transplantation. Pancreas removal after donor splenectomy requires particular care.

THORACIC ORGAN TRANSPLANTATION

P075A

USE OF MODIFIED CUSTODIOL-N AS PERFUSION SOLUTION IN *EX VIVO* LUNG PERFUSION (EVLP)

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Background: Ex vivo Lung Perfusion is a promising tool for evaluation and reconditioning of extended donor lungs. Custodiol-N solution was originally designed for organ preservation during cold static preservation (CSP) but was successfully used for machine perfusion in kidneys already. It was the aim of this study to investigate the suitability of Custodiol-N as perfusion solution for normothermic EVLP and the effect of albumin addition for the first time.
Methods: Porcine lungs were harvested after cardiac arrest and 30 min of no-touch warm ischemia before nine hours of storage in cold low potassium dextran (LPD) solution. Subsequently, lungs were either perfused with Custodiol-N + 50 g/l dextran 40 (CN-D, $n = 8$) or with Custodiol-N + dextran 40 + 7 g/l albumin (CN-DA, $n = 8$) for 4 h. Pulmonary gas exchanges and perfusate lactate dehydrogenase (LDH) and alkaline phosphatase (AP) activities were recorded hourly.
Results: In all measured lung functional data and extracellular activities of LDH and AP the addition of 7 g/l albumin did not have a significant effect. During 4 h of EVLP the Δ pO2 was meanly 402.79 ± 30.33 mm Hg (CN-D) and 414.96 ± 9.77 mm Hg (CN-DA) and showed a trend to higher values from the third hour in the CN-DA group. Wet-Dry-Ratio tended to be lower in the CN-DA group.
Conclusion: In a porcine DCD model of 9 h CSP followed by EVPL the use of CN-D as perfusion solution was feasible with stable pulmonary function. The addition of low dose albumin affected the wet-dry ratio and appeared to further stabilize pulmonary function.

P076A

RESULTS OF BILATERAL LUNG TRANSPLANTATION AFTER GRAFT SIZE ADJUSTMENT

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Background: 5-year survival rates are 50–60% with inferior results in recipients with reduced chest size. Lungs too large for the chest cavity require surgical size reduction. However how to determine the optimal donor-recipient size match remains controversial. We aimed to quantify the influence of optimized graft size matching for LuTx.
Methods: Data of 53 consecutive LuTx recipients, transplanted for pulmonary fibrosis between 2010 and 2016, were analyzed retrospectively. 4 patients were excluded for preLuTx ECMO. Group I was transplanted without graft volume reduction (GVR), group 2 with GVR by middle lobe, lingula and more atypical resections when required. Patients were stratified by indication and graft volume reduction. Predicted D/R total lung capacity (pTLC) ratio and survival was analyzed using Kaplan-Meier model.
Results: Over all 5-year-survival was 57% ($n = 49$). pTLC ratio in group 1 ($n = 18$) was 0.83 ± 0.17 and 5-year-survival 87% compared to 0.95 ± 0.11; $p < 0.04$ and 41% in group 2 ($n = 31$); $p < 0.05$. In the multivariate Cox analysis ECMO application for postoperative graft dysfunction was higher in recipients after GVR.
Conclusion: Our results underline the importance of optimized donor-recipient size match especially under consideration of reduced chest cavities in fibrotic patients. GVR appears as risk factor in this single center analysis. The exact extent of GVR leading to increased risk has to be determined further.

P078A

IGM-ENRICHED HUMAN INTRAVENOUS IMMUNOGLOBULIN (IGGAM) FOR TREATMENT OF EARLY ANTIBODY MEDIATED REJECTION (AMR) AFTER HEART TRANSPLANTATION (HTX)

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Background: Early AMR is a risk factor for decreased survival after HTx. Here we describe our first results on treatment of early post-HTx AMR with IgGAM monotherapy.
Case Reports: Prior HTx, our first patient (38 years) suffered from giant cell myocarditis, and our second patient (44 years) had left ventricular assist device therapy for 3.5 years. Initial course of HTx was uneventful besides a successful therapy of cytomegaly virus infection in the older patient. In the 3-week surveillance endomyocardial biopsies (EMBs) showed a pAMR2 without acute cellular rejection (ACR, 0R) in both patients. Interestingly, both patients developed non-DSA against HLA class II. However, echocardiography showed a normal graft function, and, therefore, we treated each patient only with a cumulative dose of 30 g of IgGAM. At month 3 post-HTx EMBs showed no AMR or ACR in both patients. In general, treatment strategies for AMR are directed at inhibiting the humoral response at various levels by targeting removal and blockade of circulating antibodies, depletion of B cells and plasma cells, suppression of T cells-dependent antibody responses, and inhibition of the complement cascade. Intravenous immunoglobulins containing solely IgG cover many of these strategies. However, compared to the IgG immunoglobulins, IgGAM has the advantage that the content of IgM is 10x stronger in complement inhibition. Moreover, research studies show the importance of a normal IgM serum level in the induction of B cell tolerance.
Conclusion: Our two cases indicate that patients with early AMR and non-DSA against HLA class II but normal graft dysfunction may profit from early intervention with IgGAM. Further studies need to confirm the role of IgGAM in the treatment strategy of AMR.

P079A

CLINICAL OUTCOME IN HEART TRANSPLANT RECIPIENTS (HTX) RECEIVING SIROLIMUS (SRL) COMBINED WITH TACROLIMUS OR CYCLOSPORIN A IN COMPARISON TO A CALCINEURIN INHIBITOR FREE THERAPY WITH SIROLIMUS

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Objectives: It is currently not known whether the combination of the m-TOR inhibitor SRL combined with calcineurin inhibitors (dosage reduction) is superior to the calcineurin inhibitor free therapy with sirolimus (sirolimus, MMF, prednisolone).
Methods: We compared 2-year clinical outcomes in 25 patients receiving CNI free immunosuppressive therapy with sirolimus +/- MMF/ +/-prednisolone from 27.05.2002–10.05.12 (CNIF-group) with 25 patients receiving sirolimus

combined with cyclosporine or tacrolimus from 05.02.2002–13.02.2013 (CNI-group). The primary endpoint was development of the renal function between the two groups. Secondary endpoints were two year-survival, and laboratory-parameters such as liver values, cholesterol values, triglycerides and blood count (erythrocytes, thrombocytes, leucocytes).
Results: Groups were comparable regarding baseline characteristics such as age, primary diagnosis, body mass index (BMI), creatinine values and GFR. Compared to the CNI group, kidney function improved in the CNIF group over time ($p < 0.05$). GFR improved from 33.1 ml/min at baseline to 43.9 ml/min after 24 months in the CNIF group versus the decrease from 38.7 ml/min to 34.0 ml/min in the CNI – group ($p < 0.05$). Creatinine value decreased from 2.3 mg/dl at baseline to 1.8 mg/dl after 24 months in the CNIF – group and increased from 2.2 mg/dl to 2.9 mg/dl in the CNI – group ($p < 0.05$). Two-year survival did not differ significantly between the groups ($p > 0.05$). The laboratory parameters did not differ significantly ($p > 0.05$).
Conclusions: We conclude that CNI free therapy with SRL could be an option in patients with progressive renal failure, due to CNI – nephrotoxicity.

P080A DO CHILDREN AND ADULTS DEVELOP DIFFERENT PATTERN OF CARDIAC ALLOGRAFT VASCULOPATHY AFTER HEART TRANSPLANTATION?

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Aim: To evaluate cardiac allograft vasculopathy (CAV) in children compared to adults in routine optical coherence tomography (OCT) at corresponding time points after heart transplantation (HTx) by assessing intima and media thickness.
Background: CAV is still a main limiting factor of survival and graft function in adults and pediatric patients after successful HTx. Histopathological studies in adults have shown that both thickening of intima and media occur after HTx. So far, due to limitations in intracoronary imaging, this aspect has not yet been evaluated *in vivo* in adults and the incidence of media thickening as part of CAV in children is unknown.
Methods: Retrospective analysis of routinely performed OCT of 24 pediatric patients (mean age at HTx 7.92 ± 5.92 years) and 13 adults patients (mean age at HTx 47.90 ± 10.56 years). Patients were compared according to the interval between HTx and OCT (<5 years and 5–10 years). Every 5 mm, the media thickness (MT) and the corresponding intima thickness (IT) were measured centripetally in each quadrant. Quadrants with fibrotic plaques were excluded.
Results: Adults and children transplanted <5 years showed no significant differences between IT (0.136 mm ± 0.094 vs. 0.139 mm ± 0.144, $p = 0.425$) and MT (0.069 mm ± 0.024 vs. 0.104 mm ± 0.066, $p = 0.126$). In adults transplanted for 5–10 years, both IT (0.249 mm ± 0.139 vs. 0.096 mm, ±0.048, $p = 0.007$) and MT (0.179 mm ± 0.152 vs. 0.052 mm ± 0.018, $p = 0.000$) were significantly higher.
Conclusion: Within the first 5 years after HTx, intima and media thickness were comparable in children and adults. After 5–10 years, different wall changes were seen in OCT, suggesting that adults and children develop different patterns of CAV. Their impact on survival needs further investigation.

P081A EFFECT OF DRUG FORMULATION ON THE EXTENT OF THE PHARMACOKINETIC INTERACTION BETWEEN VORICONAZOLE AND TACROLIMUS

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Purpose: To compare tacrolimus pharmacokinetics during cytochrome P450 3A (CYP3A) inhibition with voriconazole (VCZ) after administration of an immediate-release formulation (Prograf) and a prolonged-release formulation (Envarsus), liberating the drug throughout the gastrointestinal tract. To explore whether individual factors (CYP3A activity (estimated with a midazolam microdose), genetic polymorphisms, VCZ exposure) correlate with the pharmacokinetic changes.
Methods: In a randomized, fixed-sequence, cross-over phase I clinical trial, 18 healthy male volunteers received a single oral tacrolimus dose (Prograf or Envarsus, 3 mg each) alone or with VCZ. Concentrations were quantified using UPLC/MS/MS-methods. Pharmacokinetics were analysed by non-compartmental methods.
Results: The increase in tacrolimus exposure due to VCZ was 6.02-fold (90% CI 4.65–7.79) and was highly variable (1.8 to 19-fold) after Prograf. The increase after administration of Envarsus was significantly less pronounced (2.62-fold, 90% CI 2.33–2.94, $P < 0.01$) with less variability (1.6–4.8-fold). P-glycoprotein (3435TT/CC or 2677TT/GG) polymorphisms were associated with the extent of the interaction with Prograf but not with Envarsus, whereas VCZ exposure was not associated with the extent of the interaction with both preparations.
Conclusions: Drug formulations affecting the site of absorption in the gastrointestinal tract can significantly affect the extent of drug-drug interactions. Prolonged-release tacrolimus appears to be less susceptible to drug-drug interactions with CYP3A inhibitors. Because of the lower variability, dose recommendation for Envarsus while taking a strong CYP3A inhibitor, such as VCZ, might be feasible, but therapeutic drug monitoring will still be required.

IMMUNOLOGY

P082A CLINICAL VALIDATION OF A NOVEL ELISPOT-BASED *IN VITRO* DIAGNOSTIC ASSAY TO MONITOR CMV-SPECIFIC CELL-MEDIATED IMMUNITY IN KIDNEY TRANSPLANT RECIPIENTS

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Introduction: Impaired cytomegalovirus (CMV)-specific cell-mediated immunity (CMV-CMI) is a major cause of CMV reactivation and associated complications in solid-organ transplantation. Reliably assessing CMV-CMI is desirable to individually adjust antiviral and immunosuppressive therapy.
Objectives: This study aimed to evaluate the suitability of a novel IFN-γ ELISpot assay (CE-IVD, T-Track® CMV), based on the stimulation of peripheral blood mononuclear cells (PBMC) with pp65 and IE-1 CMV proteins, to monitor CMV-CMI following kidney transplantation.
Methods: A prospective, longitudinal, observational, multicenter study was conducted in 86 intermediate risk renal transplant recipients (D-/R+, D+/R+). Patients underwent pre-emptive antiviral therapy. CMV-CMI, CMV viral load and clinical complications were monitored over six months post-transplantation.
Results: 95% and 88–92% of IFN-γ ELISpot test results were positive pre- and post-transplantation, respectively, demonstrating the sensitivity of the assay in immunocompromised patients. CMV-specific response was reduced following immunosuppressive treatment and increased in patients with graft rejection, indicating the ability of the ELISpot assay to monitor the patients" immunosuppressive state. Interestingly, median pp65-specific response was 9-fold higher in patients with self-clearing viral load compared to antivirally-treated patients prior to first viral load detection (MWU; $p < 0.001$), suggesting that reactivity to pp65 represents a potential immunocompetence marker.
Conclusion: Altogether, the T-Track® CMV ELISpot assay is a highly sensitive immune-monitoring tool, suitable for the follow-up of renal transplant recipients, and with a potential use for the risk assessment of CMV-related clinical complications.

P083A NO INDUCTION OF DONOR-SPECIFIC HLA ANTIBODIES IN KIDNEY TRANSPLANT RECIPIENTS AFTER VACCINATION WITH A PNEUMOCOCCAL CONJUGATE VACCINE

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Vaccination is considered as most effective to prevent infection. However, it is still debated if vaccination triggers alloresponses in transplant recipients. In contrast, an increased rejection rate after reactivation of the cytomegalovirus is

well established. We previously showed that Pneumovax, that induces T cell independent pneumococcal immunity, did not induce HLA antibodies. The current study addresses the question if Prevenar, a pneumococcal vaccine conjugated to a nontoxic mutant form of diphtheria toxin (PCV13, Pfizer, New York, USA) that acts T cell dependently, leads to an increase of HLA antibodies. Forty-seven kidney transplant recipients were vaccinated once with Prevenar. Pneumococcal antibodies were determined in all patients by ELISA (Vacczyme, The Binding Site, Schwetzingen, Germany) and HLA class I and II and major histocompatibility class I-related chain A (MICA) antibodies by Luminex technology (LABScreen Mixed beads, One Lambda/Thermo Fisher, Canoga Park, USA) prior to vaccination and at month 1 and 12 thereafter. Pneumococcal IgG antibodies showed a significant, 1.9-fold increase at month 1 ($p < 0.0001$) and 1.5-fold at month 12 ($p = 0.003$) as compared to baseline. Positive Luminex reactions were present in 27%, 20% and 31% (HLA class I), 35%, 35% and 49% (HLA class II) and 37%, 33% and 37% (MICA) pre-vaccination, at month 1 and 12, respectively. In seven patients without HLA antibodies prior to vaccination who turned positive at month 1 after vaccination, the Luminex Single Antigen Bead assay (One Lambda/Thermo Fisher) was performed. None of these patients displayed donor-specific HLA antibodies (DSA) after vaccination. In conclusion, after vaccination with Prevenar no DSA could be detected, arguing against a triggering of alloresponses.

P084A EARLY PROLONGED APPLICATION OF MTOR INHIBITORS REDUCES ENDOTHELIAL INFLAMMATION AFTER ISCHEMIA

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Purpose: mTOR inhibitors are immunosuppressive agents used in maintenance immunosuppression. Everolimus and Sirolimus reduce the transmigration of immune cells after ischemia/reperfusion injury (I/R). The aim of our study was to investigate the underlying mechanisms by which Everolimus and Sirolimus are able to reduce I/R.
Methods: An I/R model with human microvascular EC and human circulating immune cells (PBMC) was designed to evaluate reactive oxygen species (ROS) expression of EC and Endothelin-1 secretion of EC. For the analysis, ECs were either in naïve condition or activated with IFN-γ /TNF-α for 24 h. After cell activation EC were placed under hypoxic conditions (<2% O_2) for 2 h and were further treated before re-oxygenation with Everolimus (10 ng/ml) or Sirolimus (10 ng/ml) for 2 and 24 h. Untreated cells served as control and hypoxic cells served as positive control.
Results: The exposure of EC to I/R caused a significant increase of ROS levels, especially in activated ECs. Treatment of naïve EC with Everolimus and Sirolimus for 2 h could prevent the upregulation of ROS production. Prolonged Everolimus and Sirolimus treatment significantly reduced endothelin-1 secretion of activated EC (act-EC/act-PBMC Everolimus: 2 h 26.0 $\pm$ 1.0 pg/ml vs. 24 h 16.2 $\pm$ 0.6 pg/ml; act-EC/act-PBMC Sirolimus: 2 h 25.9 $\pm$ 0.8 pg/ml vs. 24 h 16.0 $\pm$ 1.2 pg/ml; act-EC/naive-PBMC Everolimus: 2 h 22.2 $\pm$ 0.4 pg/ml vs. 24 h 11.7 $\pm$ 0.8 pg/ml; act-EC/naive-PBMC Sirolimus: 2 h 24.5 $\pm$ 0.6 pg/ml vs. 24 h 13.7 $\pm$ 0.4 pg/ml).
Conclusion: mTOR inhibitors are able to reduce ROS and Endothelin-1 production. Early prolonged treatment after ischemia with both Everolimus and Sirolimus can positively affect Endothelin-1 levels, preventing endothelial inflammation.

P085A LONG-TERM OUTCOME AFTER LIVING KIDNEY DONATION – IMPACT ON QUALITY OF LIFE

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Background: The clinical outcome and health-related quality of life (HRQoL) of living kidney donors is mostly safe, but some donors experience impairment after donation. Age- and gender-specific long-term outcome of living kidney donors was assessed.
Methods: Clinical outcome and HRQoL was determined by self-reporting validated test systems [Multidimensional Fatigue Inventory (MFI-20), Short Form 36 (SF-36), Patient Health Questionnaire (PHQ-9)].
Results: Two hundred and eleven (211) living renal donors (response rate 80.8 %) were evaluated (female 62.2 %). HRQoL was comparable in female and male donors, except for mental HRQoL, which was reduced in 51- to 60-year-old female donors, compared to age-matched male donors and to the female general population. Female donors aged 40–59 years demonstrated more fatigue than the age-matched general population. A low mental HRQoL (MCS; SF-36) was associated with higher values for fatigue (General Fatigue Score; MFI-20) in female as well as in male donors. Multiple regression analysis detected the General Fatigue (MFI-20) and depression (PHQ-9) as independent variables predicting MCS of the SF-36 in both genders. Lower age at time of donation contributed to a lower MCS in female donors.
Conclusions: Overall, HRQoL in kidney donors exceeds that of the general population. Inferior mental health status and fatigue seem to be a problem, especially in middle-aged female donors, but not in all female donors. Psychological evaluation pre-donation and psychological support post donation are required.

LIVING DONATION

P087A TECHNICAL CHALLENGES IN LIVING DONOR KIDNEY TRANSPLANTATION – DIAGNOSIS AND SOLUTIONS

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Introduction: Due to organ scarcity living kidney donation is becoming a major organ source for transplantation. Besides medical contraindications, anatomy of the kidneys may be a challenge for the surgeon. Multiple arteries and veins, short right renal vein and ureter duplex may be considered as a contraindication for living donation. We herein describe all recent living donor kidney transplantations (LDKTs) carried out at our institution with a focus on technical challenges, acceptance algorithm and side preference.
Material and Methods: Retrospective analysis of all LDKTs from October 2014-October 2017. Donor imaging has been carried out by multislice computed tomography with 3D reconstruction. Side selection has been based on an algorithm including 3MAG scintigraphy and anatomy. Endpoints were donor exclusion for anatomical reasons and vascular complications in the recipients.
Results: 100 LDKT were performed. No single donor has been excluded for anatomical reasons. Side preference was mainly based on lower 3MAG creatinine clearance (86%). In 14% the slightly better kidney was chosen due to anatomical reasons (multiple arteries $n = 10$, short renal vein $n = 2$, multiple renal veins $n = 2$). In 23 cases vessels were reconstructed backtable (multiple arteries $n = 15$, early branching $n = 7$, multiple veins $n = 1$) and in 2 cases a pole artery was anastomosed to the epigastric inferior artery. Ureter duplex was found unexpectedly in one case intraoperatively. One recipient underwent surgical revision due to kinking of the renal artery with favorable outcome. No kidney was lost due to surgical reasons.
Conclusion: Anatomical variations should not be a contraindication for LDKT. Microsurgical reconstruction and optimal choice of the side are crucial for favorable outcome.

P088A RIGHT HAND ASSISTED RETROPERITONEOSCOPIC DONOR NEPHRECTOMY

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Background: A variety of minimal invasive techniques for donor nephrectomy have been described and practiced. Hand-Assisted Retroperitoneoscopic Surgery (HARS) for left donor nephrectomy has been studied in the literature, however right HARS has little mention.
Methods: Retrospective, single center matched pair analysis to assess safety and feasibility of right HARS donor nephrectomy. The test group the first consecutive 25 cases of right HARS were compared to a matched cohort of left HARS donors. Matching included age, gender, number of arteries and donor surgeon within the same time period. Primary end point was complication rate based on the Calvien-Dindo Classification (CDC) and Comprehensive Complication Index (CCI). Secondary end-points were operative time, body mass index, warm ischemia time, kidney size, number of working ports, peritoneal injury, conversion rate, estimated blood loss, blood transfusions, renal function at 3 and 90 days post-donation, and length of hospital stay. Corresponding recipient graft function and surgical complications within 30 days of transplantation were analyzed as well.
Results: Intention to treat was 100% without a single conversion for neither right or left HARS. No difference in the perioperative complication rare was observed. Mean operative time was the only significant factor being shorter in the right than the left HARS group (124 vs. 154 min). All donors and recipients showed adequate and comparable renal function at 3 and 90 days.
Conclusions: HARS techniques for right donor nephrectomy is safe and applicable within the scope of kidney donation.

P089A

INFLUENCE OF HAND-ASSISTED RETROPERITONEOSCOPIC DONOR NEPHRECTOMY (HARP) ON HEALTH-RELATED QUALITY OF LIFE AFTER LIVING DONATION – FIRST RESULTS OF THE QOLID-STUDY

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Introduction: Living kidney donation (LKD) is essential for the future of transplantation in Germany. Therefore, LKD should be optimized continuously. Health-related quality of live (HRQoL) and different psycho-social aspects are important for the donor. There, the influence of surgical technique on it is still not clear. Data on longtime outcome regarding the HARP-technique are scarce. To increase knowledge on HRQoL the QoLid-study (Quality Of live in Living kidney Donors) was implemented. Aim of the initial part of the study was to evaluate (i) a status-quo on HRQoL and psycho-social aspects in living kidney donors and (ii) the influence of the HARP-technique during the long-time follow-up.
Methods: Single-center cross-sectional study.
Results: 100 living donors were included with complete analysis in 96 cases. 28 donors were operated with open anterior approach (AA), 68 with HARP donor nephrectomy. Follow-up time was 33.3 ± 20.6 months (AA 58.7 ± 13.9 vs. HARP 22.6 ± 11.7, $p < 0.005$). Age was 54.9 ± 8.9 (HARP) vs. 59.2 ± 9.9 (AA, p = ns). Post-operative eGFR was 61.5 ± 13.5 ml/min (HARP) vs. 63.8 ± 12.2 ml/min (AA, p = ns). Length of the scar was 10.8 ± 2.2 cm (HARP) vs.19.4 ± 4.1 cm (AA, $p > 0.005$). There were no major surgical complications (≥3a° Clavien-Dindo). HRQoL (SF-36) was significantly higher in the HARP group (physical health sum score, HARP vs. AA: 53.9 ± 7.6 vs. 48.6 ± 8.5, p = 0.006). There was no difference in the mental health sum score (HARP vs. AA: 45.8 ± 12.3 vs. 50.4 ± 7.6, p = 0.85), neither in the multidimensional fatigue inventory (MFI-20) nor in hospital anxiety and depression scale (HADS).
Discussion: Hand-assisted retroperitoneoscopic donor nephrectomy (HARP) improves physical health of living kidney donors in the long-time follow-up compared to open AA donor nephrectomy.

P090A

INTACT MTORC1 IS INSTRUMENTAL FOR SEX DIFFERENCES IN PODOCYTE HOMEOSTASIS

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Aim: mTOR inhibitors are increasingly used in transplantation yet may induce proteinuria in some patients. High interindividual variability in proteinuric response implicates possible cell specific sex differences. We set-up an experimental design to determine molecular determinants of sex differences by cell type-specific analysis.
Methods: Pure podocytes were isolated from male and female ROSAmT/mG-NHPS2(podocin)Cre mice after 3 weeks of low dose rapamycin or vehicle treatment and used for RNA sequencing and proteomics. qRT-PCR, immunhistology and westernblots served for validation.
Results: Renal function remained normal. No proteinuria/microalbuminuria occured in rapamycin or vehicle treated animals of both sexes. However, RNASeq revealed clear separate clustering of male and female genes with more than 600 mRNA transcripts significantly differently expressed at baseline. Rapamycin shifted male podocyte transcriptome towards female vehicle pattern while females only minimally reacted to rapamycin. Proteomics showed concordant differences in baseline expression of proteins of mitochondrial respiratory chain and structural components of podocytes, with higher levels in females, such as synaptopodin and WT-1, transcription factor regulating nephrin, podocalyxin, ACTN4 and E-cadherin.
Conclusion: We are the first to identify sex specific transcriptional and translational regulation of key factors for podocyte homeostasis already after short-term rapamycin exposure. These changes may potentially account for significant sex differences in glomerular disease susceptibilities and progression. From the clinical perspective, molecular changes in response to mTOR inhibition suggest that males, but not females may benefit from pharmacological mTORC1 inhibition.

BASIC SCIENCE

P092A

SERPINA1 MODULATION IN TRANSTHYRETIN AMYLOIDOSIS

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Background: Liver transplantation has been widely used to treat patients with transthyretin-related hereditary amyloidosis (ATTR). Emerging therapies based on novel knowledge in pathophysiology are currently substituting liver transplantation as standard therapy. Chaperones are currently explored for their potential in TTR protein quality control. The aim of the study was to further explore the role of the Serpin peptidase inhibitor clade A member 1 (SerpinA1) as a relevant chaperone in ATTR using hepatocyte-like cells (HLCs).

Urine from ATTR patients ($n = 4$) and healthy individuals ($n = 4$) was processed for isolation of renal epithelial cells, followed by reprogramming into induced pluripotent stem cells (iPSCs) and differentiation toward HLCs. qPCR was used to analyze gene expression of TTR and SERPINA1. Protein expression was determined by western blot and ELISA. Cell culture supernatants were derived from HLCs and subjected to co-immunoprecipitation. Human TTR was subjected to *in vitro* formation of high molecular forms of TTR (HMFs) by acidic denaturation.

HLCs secreted high levels of SerpinA1 and TTR. SERPINA1 mRNA was differently expressed (FC > ±5) in three of four ATTR-HLCs as compared to healthy individuals. A high correlation between SERPINA1 and TTR mRNA expression was observed ($r > 0.9$). Knockdown of TTR resulted in SerpinA1 induction. A yet unknown interaction of TTR and SerpinA1 could be observed in co-immunoprecipitation experiments. Of note, recombinant SerpinA1 was able to interfere with TTR HMFs formation.

Our data indicate (i) an inverse correlation of TTR and SERPINA1, (ii) a novel interaction of TTR and SerpinA1, and suggest that SerpinA1 might have a novel role in ATTR pathogenesis, possibly by inhibition of the conversion of soluble TTR to insoluble aggregates.

P093A

A NOVEL HISTIDINE-TRYPTOPHAN-KETOGLUTARATE (HTK-N) FORMULATION AMELIORATES ISCHEMIA-REPERFUSION INJURY IN INTESTINAL GRAFTS

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Aim: To evaluate protective effects of a novel histidine-tryptophan-ketoglutarate (HTK-N) solution and to investigate the impact of additional luminal preservation to ameliorate ischemia-reperfusion injury (IRI) in rat small bowel grafts.
Methods: Male Lewis rats were utilized as donors for small bowel grafts. Following procurement, a vascular or vascular plus luminal preservation with HTK or HTK-N was conducted. Grafts were stored at 4 °C for 8 h and then *ex vivo* re-perfused with warm oxygenated Krebs-Henseleit buffer for 30 min. Oxygen partial pressure in vascular influent and portal venous effluent was measured for oxygen consumption. Portal venous effluent was collected to evaluate tissue lactate dehydrogenase (LDH) release and graft carbohydrate absorption function. Tissue samples were collected for examination of wet-to-dry ratio, ATP content, histological score (Park/Chiu), apoptosis, goblet cell abundance and evaluation with electron microscopy.
Results: The comparison of vascular HTK-N with or without luminal HTK-N preservation revealed a significant higher preservation of goblet cells in the HTK-N vascular plus luminal preservation group ($p < 0.01$) indicating a positive impact of additional luminal preservation with HTK-N. Compared to HTK, HTK-N preservation showed superior protection on graft structure (wet-to-dry ratio, LDH release and ultrastructure) and function (apoptosis, carbohydrate absorption and oxygen consumption), but no significant difference was found in this model with a short, cell-free reperfusion.
Conclusion: HTK-N showed potential to protect intestinal grafts from IRI. Additional, luminal preservation presented superior protection especially on goblet cell abundance, leading to a promising route of intestinal preservation.

PSYCHOSOMATICS, ETHICS

P099B

OBJECTIFYING OF SUFFERING IN LIVER TRANSPLANT RECIPIENTS AND IN PATIENTS WITH LIVER CIRRHOSIS

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Introduction and Background: Based on clinical measured illness severity only, physicians may underestimate patients' grade of suffering. Pictorial Representation of Illness and Self Measure (PRISM) is a simple visual tool that is able to precisely quantify patients' suffering in both liver transplant (LT) recipients and patients with liver cirrhosis (LC).
Methods: We performed a clinical observational study including patients who were followed up at our centre between 10/2016 and 4/2017. Patients were asked to complete PRISM and the resulting Self-Illness-Separation (SIS) as a measure of burden of suffering was evaluated. Additionally, health-related quality of life (HRQoL) was explored using short form 36 (SF-36).
Results and Conclusions: Altogether, 201 patients were included. SIS of LT recipients was 13.5 cm (0.2/25.6) whereas that of patients with LC was 6.3 cm (0.1/25.6) ($p < 0.001$) with longer SIS indicating a lower grade of suffering. Median Mental Component Summary (MCS) as measure of mental HRQoL was 50.7 (12.5/66.2) in LT recipients, thus comparable with that of the general German population. Patients with LC had a significantly reduced MCS 44.0 (22.3/64.5) ($p = 0.007$). Median Physical Component Summary (PCS, measure of physical HRQoL) in LT recipients was lower than that of the general population, but significantly higher than in patients with LC (42.8 (12.3/59.7) vs. 38.9 (17.5/61.1); $p = 0.046$). The burden of suffering measured with PRISM correlated significantly with the grade of impairment of the HRQoL.

In summary, PRISM is a reliable and simple tool for measuring patients' suffering in both LT recipients as well as in patients with LC. Using this tool, subjects at a higher risk for depression and psychological distress could be earlier identified.

P105B

ADHERENCE AND MENTAL HEALTH AFTER RENAL AND HEART TRANSPLANTATION – A STUDY PROTOCOL

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Background: Non-Adherence after transplantation is a common phenomenon, whilst its consequences are grave. In order to develop efficient interventions, precise measurement methods of non-adherence as well as a thorough determination of its risk factors are crucial. Measurement methods for non-adherence are diverse and vary highly in accuracy, acceptance and conduction. Risk factors of non-adherence also show great heterogeneity. Thus, aim of our study is to survey non-adherence in renal and heart transplant recipients with an electronic pillbox in combination with other measurement methods ("triangulation") as well as to analyze and to compare potential risk factors in both populations.
Design/Methods: Individuals older than 18 years of age, who are at least 6 months post-transplant (heart and kidney), taking tacrolimus as immunosuppressive medication are eligible to participate. In the beginning of the trial, certain risk factors will be examined using psychometric questionnaires. During a period of 3 months, adherence is being measured prospectively using an electronic pillbox. Each participant is handed a diary to increase reliability of electronic monitoring. During the 3 months study period, phone calls are taking place every two weeks, where a self-report instrument will be applied, to ensure six points of measurement of self-reported adherence. External assessment by the treating physician, as well as sub therapeutic IS trough levels will be included in the analysis.
Preliminary Results/Discussion: The recruitment started in March 2018. Currently only renal transplant recipients were approached during recruitment. So far 26 patients, 17 men and 9 women, are participating. The response rate is 40.09%. Further results will be presented.

P106B

PSYCHOLOGICAL BURDEN ON TRANSPLANT PATIENTS' RELATIVES – A SURVEY AMONG ORGAN TRANSPLANT PATIENTS AND THEIR RELATIVES

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Transplant patients are affected by stress due to their illness, long-term medical treatment and lifestyle changes. The psychological burden on family members and partners is so far little studied. The aim of this study is to investigate the psychological burden on transplant patients and their relatives and how the relationship affects the perception of the disease.

The questionnaire was sent to 600 BDO e.V. (a transplant patients support group) members and their relatives and published as an online survey on their website and their facebook account. Standardized scales were used to examine the somatic symptoms, depression, anxiety and adjustment disorders, PTSD, stress levels and partnership satisfaction. These scales were supplemented with qualitative questions about experiencing the transplantation period.

155 patients and 130 relatives completed the questionnaire by the end of June. Further 53 persons completed the online survey (15 relatives, 38 patients).

A pre-evaluation of the online survey shows that 11 (73%) relatives wish psychological help if it is needed. 10 (66%) relatives ask for a support group for relatives. Six (40%) relatives and 10 (26%) transplant patients wish to have a supportive couple and family talk. Online chat/assistance is desired by six (40%) relatives and 18 (47%) patients. Five (33%) relatives said that their support for the patients was affecting their own health in a negative way. Six (40%) relatives said that their life satisfaction had suffered as a result of supporting the transplant patients.

The results of the total sample will be presented at the congress. The initial findings suggest that relatives of transplant patients have a significant need for support and consider both special group offerings as well as couple and familly talks and online services as helpful.

P107B

ABUSE OF BRAIN DEATH CONCEPT IN ORGAN PROCUREMENT IN CHINA

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China has no brain death legislation, and circulatory death is the legal standard. Despite these facts, organ donation after brain death has been practiced in China since 2003. Similar to international standards, China's brain death diagnostic criteria include coma, absence of brainstem reflexes, and the lack of spontaneous respiration. The Chinese criteria require that the lack of spontaneous respiration must be verified with an apnea test by disconnecting the ventilator for 8 min to provoke spontaneous respiration. However, we have found publications in Chinese medical journals, in which the donors were declared to be brain dead, yet without an apnea test. The organ procurement procedures started with "intratracheal intubation for mechanical ventilation after brain death". Because an apnea test can only be done in intubated, mechanically ventilated patients, the description of organ procurement in these publications indicates that a brain death diagnosis was not performed. The purpose of the intubation was not to resuscitate the patient but rather directly related to facilitating the explantation of organs. Moreover, it was unmistakably stated in two of these publications that the cardiac arrest was induced in these after-brain-death-intubated patients by cold St. Thomas cardioplegic solution or a cold myocardial protection solution. This means that the so-called "donors" were neither brain dead, nor did they meet cardiac death criteria. In other words, the "donor organs" were procured in these cases from living human beings, and the "donors" were killed by the medical professionals through organ explantation. Thus, a systematic investigation is needed to clarify the situation of organ donation after brain death in China.