BRIEF ORAL

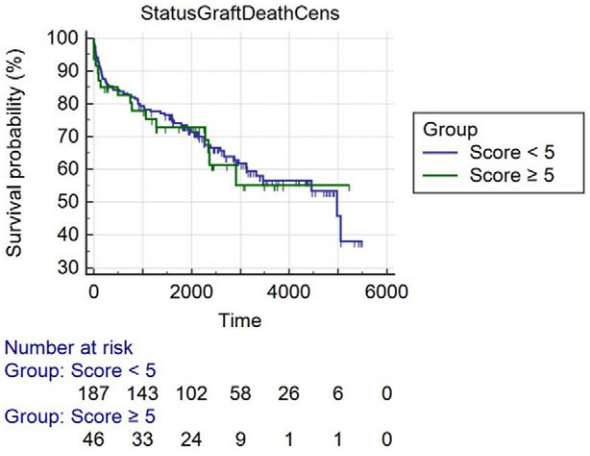
BOS01 – PROGNOSTIC ASPECTS IN KIDNEY DONATION AND TRANSPLANTATION

BOS001 RENAL TRANSPLANTS USING KIDNEYS WITH BIOPTIC SCORE ≥ 5 (KARPINSKI) AS SINGLE GRAFTS HAVE ACCEPTABLE LONG-TERM FUNCTION

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Background: The Karpinski scoring system used to allocate kidneys as single (? 4) or double transplants (5 or 6) has been considered overprotective, excluding potentially suitable organs. It has been proven that double kidney transplants who lost 1 of the 2 grafts maintained acceptable renal function as long as 10 years in 70% of cases. This observation suggested extending the histological allocation criteria for single grafts.
Methods/Materials: Among 235 patients who received a single graft from either Standard Criteria Donors (SCD) or Expanded Criteria Donors (ECD) in our renal transplantation program from 2004 and 2014, we analyzed the graft survival, delayed graft function (DGF) and acute rejection rate between a group (48 patients) with histologic Karpinski score? 5 (score 6 in 3 cases) and a control group (187 patients) with score < 5.
Results: The mean age of donors were comparable in both groups (67.3 vs 65.2 years) as well as the patient's age at transplant (58.3 vs 56 years). We recorded a delayed graft function in 27 cases (56.2%) in the high score rate group vs 102 (54.5%) in the control. The actuarial death censored graft survival rate (Kaplan-Meyer) at 5 years was 72.8% in the study group vs 73.5% in the control, while at 10 years was 55.2% vs 56.5%. No differences were recorded in terms of acute rejections 18 patients (37.5%) in the study group vs 75 (40.1%), either clinical or biopsy proven.
Conclusion: We found no differences in death censored graft survival rate, suggesting the utilization of score 5 kidneys as single grafts (instead of double transplants) can safely lead to an acceptable long-term renal function, expanding accordingly the donor pool.



BOS002 MACROSCOPIC ASSESSMENT OF THE QUALITY OF PERFUSION OF KIDNEYS DURING DECEASED-DONOR KIDNEY TRANSPLANTATION: A UK POPULATION COHORT STUDY

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Background: Macroscopic assessment of the quality of perfusion remains a fundamental, yet poorly evaluated, aspect of donor kidney appraisal. We aimed to evaluate its association with organ utilization and graft outcomes and the consistency of grading at two different time points in the pre-transplant period.
Methods: A retrospective analysis of all deceased-donor kidney transplants from 2000–2016 was performed using the UK Transplant Registry database. The quality of perfusion of each retrieved kidney is routinely graded by the retrieval and implanting surgeon: 1 = good, 2 = fair, 3 = poor, 4 = patchy. Multivariable analyses were performed to determine whether grade of perfusion is an independent predictor for several outcomes including discard rates, primary non-function (PNF) rates and long-term graft survival.
Results: Analysis included 31,167 kidneys from 15,750 donors, of which 2,556 (8.2%) were discarded. Grade of perfusion at retrieval was independently associated with discard rates ($p < 0.001$), which increased from 6.5% at grade 1, to 41.8% at grade 3 [OR: 7.52 (95% CI: 6.16–9.19)], before falling to 27.1% at grade 4. It was also associated with PNF rates (6.6% vs. 2.8% for grade 3 vs. 1), but not graft survival ($p = 0.454$). However, grade at implanting was significantly associated with both outcomes. PNF rates increased progressively with the perfusion grade at implanting ($p < 0.001$). Graft survival declined significantly only between grades 1 and 3 ($p = 0.002$), with grade 1 and 4 organs having similar outcomes (HR: 1.03, $p = 0.764$). In transplanted organs (n = 28,611), consistency of grading at retrieval vs. implanting centre was poor (Kappa = 0.179), with only 17.2% of grade 4 organs retaining the same grade.
Conclusions: This study represents the largest review of this aspect of viability assessment. Despite discrepancy between the two gradings, perfusion grade has affected organ utilisation and is associated with outcomes, suggesting the need for further evaluation.

BOS003 UTILITY OF NEWCASTLE SCORE IN DETERMINING PROLONG LENGTH OF STAY IMMEDIATELY FOLLOWING KIDNEY TRANSPLANTATION

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Background: The optimum length of stay following kidney transplantation is 5–7 days. Recent recommendations by the GIRFT (Getting It Right First Time) programme advises discharge within 7 days. In the work up to transplantation, scoring systems can be used to identify suitable candidates for kidney transplantation. In this work, we looked at the association between the Newcastle Score and the length of stay in patients immediately after transplantation.
Methods: We looked at data from 01/09/16 to 01/09/18 for all transplant recipients. Out of 367 patients, a Newcastle score was available for 197 recipients in our database. We extracted data on recipient & donor demographics, focusing on length of hospital stay. Logistic regression was used to investigate which variables were associated with prolonged stay. We used two models, one using variables at baseline (at the time of transplantation) and one using variables post-transplantation (using MATLAB statistical software).

We categorised the Newcastle score into two categories based on a cut off of 9.
Results: Our results are demonstrated in Table 1.Using univariate analysis, a Newcastle score greater than 9 was significant when considering length of stay. On multivariate analysis (for both baseline and post-transplant models), Newcastle score did not demonstrate a statistically significant correlation.
Conclusion: Our findings suggest a Newcastle score greater than 9 had a trend towards significance; statistically this was not significant when considering length of stay post kidney transplantation. The total number of patients in our analysis is small and it is possible that a correlation would be seen in a larger cohort of patients. Therefore, further investigation is required to clarify the role of Newcastle score and recovery following kidney transplantation.

BOS004

		Univariate				Baseline Model (NC >9)				Post-Transplant Model (NC >9)			
		odds ratio	95% CI		p-value	odds ratio	95% CI		p-value	odds ratio	95% CI		p-value
Age		1.02	1.00	1.03	**0.01**	-	-	-	-		-	-	-
Gender (male)		1.98	1.29	3.05	**0.00**	**2.98**	1.39	6.38	**0.00**	**2.39**	1.05	5.48	**0.04**
Ethnicity (white)	Other	1.70	0.73	3.96	0.22	1.02	0.24	4.42	0.98	0.99	0.17	5.82	0.99
	South Asian	1.76	0.99	3.11	0.05	1.28	0.49	3.34	0.61	1.46	0.52	4.10	0.47
Transplant type (DBD)	DCD	2.25	1.35	3.76	**0.00**	**2.41**	1.04	5.61	**0.04**	-	-	-	-
	Live	0.34	0.19	0.59	**0.00**	0.34	0.10	1.22	0.10	-	-	-	-
BMI		1.06	1.02	1.11	**0.01**	-	-	-	-	-	-	-	-
CIT		1.09	1.05	1.14	**0.00**	1.02	0.92	1.12	0.73	**1.09**	1.01	1.17	**0.03**
Induction agent		1.67	1.01	2.76	**0.05**	1.75	0.74	4.13	0.20	1.96	0.77	5.02	0.16
Previous RRT		2.95	1.75	4.96	**0.00**	**3.25**	1.39	7.62	**0.01**	2.23	0.87	5.71	0.09
Newcastle Score (>9)		13.34	1.72	103.15	**0.01**	8.10	0.93	70.89	0.06	7.84	0.86	71.59	0.07
Surgical complications		6.17	2.11	18.05	**0.00**	-	-	-	-	**7.27**	1.27	41.60	**0.02**
Sepsis		2.38	1.11	5.06	**0.02**	-	-	-	-	1.89	0.43	8.32	0.39
Delayed Graft Function		28.31	11.12	72.09	**0.00**	-	-	-	-	**22.53**	4.98	102.01	**0.00**

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OUTCOMES OF DUAL KIDNEY TRANSPLANTATION: COMPARISON TO SINGLE KIDNEY TRANSPLANTATION FROM STANDARD AND EXPANDED CRITERIA DONORS

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Purpose: Nowadays, kidney transplantation (KT) is accepted as the treatment of choice for patients with end-stage renal disease (ESRD). However, due to a severe donor shortage, many ESRD patients are still on the waiting list and are suffering from the disease, even though use of kidney from expanded criteria donor (ECD) is increasing. Dual kidney transplantation (DKT) can be the way to use more kidneys from ECDs. We are trying to compare the outcomes of Dual kidney transplantation with those of single kidney transplantation from standard criteria donors (SCDs) and ECDs.
Methods: In 2014, we started dual kidney transplantation using kidneys from donors of over 70 years with one of the risk factor including serum creatinine (sCr) level is over 3.0 mg/dl, or estimated glomerulus filtration rate (eGFR) is under 30 ml/min. By 2017, we performed 15 cases of DKT. We compared the outcomes of these 15 recipients with 124 patients who got kidney transplant from SCDs and 80 patients who got kidney transplant from ECDs.
Results: Donors of DKT were older, more diabetic, and had higher sCr levels than ECDs and SCDs. Recipients of DKT was also older and diabetic than recipients of ECD and SCDs. Recipients of DKT showed less slow graft function(SGF) and lower nadir sCr than recipients of ECDs. Time to nadir sCr was shorter in DKT than in ECD KT. Graft survival rates and patient survival rates were not significantly different among three groups. Risk factor analysis for graft failure revealed that donor group was not the risk but recipient age and nadir sCr.
Conclusion: The graft survival rates of DKT were compatible with those of ECD KT and SCD KT. Some outcomes such as the incidence of SGF, nadir sCr level, and time to nadir sCr were even more favorable in DKT than in ECD KT. Therefore, DKT should be considered as an option to expand donor pool.

BOS006 HIV-POSITIVE DONORS TO HIV-POSITIVE TRANSPLANT RECIPIENTS: THE ITALIAN EXPERIENCE

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In order to expand the availability of organs for HIV-positive patients, successful transplantation of kidneys and livers from HIV-positive donors into selected HIV-positive recipients was recently reported. We describe the first Italian transplant experience from HIV-positive donors to HIV-positive recipients. In May 2017 the Italian National Centre for Transplantation (CNT) has allowed organ transplantation between HIV-positive deceased donors and recipients and has designed a national protocol. Donor eligibility criteria required: a known history of HIV infection and prior antiretroviral therapy (cART); no evidence of AIDS-defining illness; pre-implant organ donor organ biopsy.

From May 2017 to July 2018 a total of 5 HIV positive potential brain-dead donors were referred to CNT. All 5 donors [75% males; median age 50 years (range 40–54); cause of death, spontaneous brain haemmorage n = 4, ischemic stroke n = 1] met the eligibility criteria: were on cART and followed by a specialized center for HIV treatment. A total of 9 HIV-positive recipients underwent organ transplantation (7 kidneys and 2 livers), after a median time on the waiting list of 20 months (range 2–52). At 3 and 6 months after transplantation HIV-RNA was undetectable in all patients and remained undetectable in the 5 recipients with 12 months of follow-up.

One episode of biopsy-proven acute cellular rejection occurred in a kidney recipient, successfully treated with IV methylprednisolone boluses. BK virus nephropathy was diagnosed in 2 kidney recipients at 199 and 48 days post-transplantation, respectively. All recipients are currently alive with functioning grafts.

Despite the limited number of patients and the shortness of the follow-up, our study confirms excellent short-term results of kidney and liver transplantation from HIV-positive donors.

BOS007 RENAL TRANSPLANTATION FROM SEROPOSITIVE HEPATITIS C VIRUS DONORS TO SERONEGATIVE RECIPIENTS. A EUROPEAN CHALLENGE

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We designed a protocol based on the immediate identification of HCV-Anibodies(HCV-Ab)positive donor as viremic, HCV nucleic acid testing(HCV-NAT)positive with high risk of transmission, or non-viremic(HCV-NAT) negative with a low risk of transmission, to start an early treatment with glecaprevir and pibrentasvir (DAA)to prevent the transmission.

This is a prospective, observational, multicenter study conducted in 3 renal transplant (KT) units between February and September 2018

Donors:HCV-Ab positive donors, aged less than 60 years except those admitted in the penitentiary system or with active addiction to parenteral drugs

Test performed:An immediate HCV-NAT test(Xpert® HCV Viral Load assay, Cepheid, CA, USA) to detect HCV RNA and classify the donor as infective or non- infective.HIV was also discarded.

Recipients:patients with low chance to receive KT, no clinical history of liver disease and a signed informed consent

Action taken: Action1 (recipient from HCV-NAT-positive donors): treatment with DAA from 6 hours before KT until 8 weeks later.

Action2 (recipient from HCV-NAT-negative donors): No antiviral treatment. Regular monitoring of HCV-NAT to start DAA was planned.

We enrolled 25 recipients from 15 deceased donors,5 of them were HCV-NAT positive and 10 negative(7 previously treated).

Action taken 1:8 recipients.

Action Taken2:17 recipients.

None of our recipients showed HCV-NAT during a follow-up of 6 months.

Six of 8 recipients from infected donors and 4 of 17 from non-infected donors showed HCV seroconversion during the follow up period, but modification of liver enzymes was not registered.None adverse event associated with DAA was recorded.

One recipient from a HCV-NAT negative donor died of acute necrotizing pancreatitis after KT.The remaining 24 patients had a stable functioning graft at 6 months, CKD-EPI between 35 and 65 ml/mn

Our data suggest that KT from HCV-Ab positive donors to HCV-Ab negative recipients treating only recipients from HCV-NAT positive donors is safe.

BOS008 LONG-TERM RISK FOR HYPERTENSION IN KIDNEY DONORS

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Previous studies have indicated increased risk of developing hypertension among kidney donors, although results differ between studies. In this cross sectional study we have assessed long term risk for hypertension in kidney donors compared to a control group potentially eligible to be donors.

Cross sectional data were obtained from previous living kidney donors. A healthy control group was selected. Hypertension was defined as blood pressure > 140/90, use of blood pressure medication, or a diagnosis of hypertension. After multiple imputation, logistic regression stratified by time periods was used to estimate risk of hypertension, adjusted for age at follow up, systolic blood pressure at baseline, time since donation, gender, and smoking at baseline and BMI at baseline.

Mean age among donors at time of follow up was 58 years, with mean 12 years since donation. A total of 528 donors (40%) had hypertension, and 352 of these (27%) were using blood pressure medication. In adjusted stratified logistic regression analyses, odds Ratio (OR) for hypertension was significantly increased (OR 1.15, 1.04–1.26 p = 0.005) in donors compared with controls.

Thus, kidney donors could be at increased long-term risk for hypertension compared with healthy controls. This finding justifies regular follow up of blood pressure in previous kidney donors.

BOS010 FACTORS RELATED TO DGF IN ARGENTINA BETWEEN 2013 AND 2017

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Introduction: Delay graft function (DGF) is a complication which consequences on graft´s survival produces more rejections and increases costs. There is controversy if it decreases patient's survival
Objective: To describe factors related to DGF and their consequences on patient´s and graft's survival.

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Materials and methods: Patients (P) transplanted with deceased donor (DD) in the 2013–2017 period were analyzed through the INCUCAI database (Sintra). DGF was defined as the need for dialysis in the first week after transplant. Variables analyzed were DGF, cold ischemia time (CIT), cause death from DD, age and sex of DD and recipient (R), multiorganic or monorganic donation , time on dialysis, creatinine (Cr) of the DD. In the R we analyzed immunosuppression (IS), incidence of rejections, infections and survival of P and graft (G) In addition costs were compared with and without DGF.
Results: We analyzed 1935 R, 942 (48.7%) had DGF. Results are showing at table 1

In 75 D lung was retrieval and in these the R had lower DGF, 22 (29%) P = 0.0007.

Main Donor's cause of death	DGF NO	DGF YES	P
CVA	416	520 (56%)	P < 0.0001
TRAUMA	481	334(41%)	
Procurement Type			
MULTIORGANIC	703	577(45%)	
MONORGANIC	290	365(56%)	P < 0.0001
Median Donor's creatinine	1.0	1.1	P < 0.0001
Delta Creatinine	-0.05	-0.1	P = 0.0001
Median Donor's Age	37.44	47.27	P < 0.0001
CI 95%	35.9 to 40.0	45.4 to 48.7	
Median Recipient's Age	46.34	50.15	P < 0.0001
CI 95%	44.8 a 48.2	48.4 to 51.7	

Death patients have more DGF 118 (54%) than alive patients 824 (48%) p=N/S. Patients with DGF have higher graft lost, 261 (67%) P < 0.0001, infections 266 (28%) (P = 0.0202) and Acute Rejection 38 (4%) P < 0.0001.

Age of D > 42 years, age of R > 50 years, cause of death CVA and the CIT > 19 hs were predictors of DGF (p < 0.0001), evaluated with a logistic regression.

The variable costs of the R with DGF were 1400 dollars more than the R without DGF.
Conclusions: In our country, DGF is higher than literature had described and this undermines good patient and graft survival rates

The impact of hemodynamic treatment on DD is relevant

Multiorganic retrieval is presented as a protective factor for DGF, unlike what is classically observed.

BOS011 MODELING PATIENTS AS DYNAMICAL SYSTEMS: EVALUATING THE EFFICIENCY OF KIDNEY TRANSPLANTATION THROUGH MULTI-STAGE DATA ENVELOPMENT ANALYSIS

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Kidney graft loss is determined by a large set of variables interacting across the different stages of the transplantation process. This dynamic structure can be analyzed as a multidimensional network setting encompassing the behavior of these variables at every stage of transplant. The resulting model should allow us to classify the patients based on their evolution through the process, identify the main variables leading to a potential graft loss on a per patient basis and generate clusters.
Methods: We implement a decision-engineering approach and model kidney transplant patients as dynamical network systems. As such, patients undergo three stages (pre-transplant, at-transplant, and posttransplant) determining the potential causes for the graft loss. We design a slacks-based three-stage Data Envelopment Analysis (DEA) model with parallel transformations to evaluate the resulting multi-stage dynamical system.
Results: 486 LDKT patients (2006–2015) with an average follow-up time of 44.64 ± 30.9 months. The resulting evaluation matrix: 486 rows-patients, and 38 columns-variables (24-three main stages of the transplantation; 12-graft function; 2-graft loss). The results displayed in this matrix allow us to identify and categorize clusters of patients based on the effects of different subsets of variables on their evolution through the transplantation process and the potential grat loss. The non-parametric quality of DEA allows to identify – on a per patient basis – each and every characteristic where an inefficiency arises relative to the reference benchmark defined by the whole set of data across all variables.
Conclusions: The efficiency matrix derived from the dynamic network DEA model implemented in the current study provides fertile ground on which to perform further analyses, ranging from standard correlation tests across specific variables to the use of neural networks so as to cluster the patients according to any subset of characteristics highlighted by the model

BOS012 RISK FACTORS FOR PROLONGED HOSPITAL STAY IMMEDIATELY FOLLOWING KIDNEY TRANSPLANTATION

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Background: Prolonged stay results in poor experience of patient, increased risk of hospital acquired infections and morbidities. Recent recommendations by the GIRFT (Getting It Right First Time) programme advises discharge within 7 days of transplantation. The answer to why length of stay exceeds this is likely to be multifactorial in nature. In this work, we looked at factors associated with prolonged in-patient stay (over seven days) after kidney transplantation and intend to use our findings to inform future practice.
Methods: We interrogated the renal unit database between 01/09/16 and 01/09/18, and extracted data on recipient & donor demographics, focusing on length of hospital stay. Logistic regression was used to investigate which variables were associated with prolonged stay. We used two models, one using variables at baseline (at the time of transplantation) and one using variables post-transplantation (using MATLAB statistical software).
Results: Of the 367 patients who received kidney transplantation, 200 cases had prolonged hospital stay. Univariate analysis demonstrated a significant correlation amongst many of the variables that we had considered as shown in Table 1. In multivariate analysis (baseline model) transplantation from donation after cardiac death (DCD) kidney donor, having previous renal replacement therapy (RRT) and induction with Basilixumab were independently associated with prolonged length of stay. The post-transplantation model revealed surgical complications and delayed graft function (DGF) were additional independent factors resulting in prolonged hospital stay.
Conclusion: Using this data, we have identified several risk factors for prolonged hospital stay in this cohort of patients. This has stimulated work on enhanced recovery and ambulatory care pathways, including for managing patients with DGF.

BOS013 BACTERIAL ENDOCARDITIS IN DECEASED SOLID ORGAN DONORS: NO INFLUENCE ON LONG-TERM ALLOGRAFT SURVIVAL

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Background: International guidelines advise caution regarding the use of organs from deceased donors with bloodstream infections. Bacterial endocarditis may increase the risk of infection transmission or impact long-term allograft function. Evidence is lacking in this area. We aimed to assess whether donor endocarditis was associated with inferior deceased donor kidney and liver allograft survival in the United Kingdom (UK).
Methods: We performed a cohort study using the UK transplant registry. We identified all deceased donors with endocarditis that donated at least one solid organ between 1st January 2001 and 31st December 2017. We then assessed whether donor endocarditis was associated with all-cause allograft loss up to five years after transplantation in kidney and liver transplant recipients, using log-rank tests.
Results: 40 (0.2%) of 16,525 solid organ donors in the study period died from endocarditis. These resulted in 90 transplants (46 kidney, 36 liver, 5 pancreas, 3 lung). Table 1 shows the clinical characteristics of donors with endocarditis. There was no association between donor endocarditis and all-cause allograft loss up to five years, among either kidney (p = 0.37) or liver (p = 0.53) transplant recipients (Figure 1 and 2). Analysis of all-cause mortality and death-censored graft loss showed similar results.
Conclusion: Donor endocarditis does not appear to affect long-term deceased donor kidney and liver allograft survival in the UK. We could not exclude immediate post-operative complications.

Characteristic	n	%
Valve(s) affected		
Left-sided	35	87.5
Right-sided	1	2.5
Not reported	4	10.0
Type of valve affected		
Native	27	67.5
Replacement*	13	32.5
Causative organism		
Streptococcus	12	30.0
Staphylococcus	19	47.5
Enterococcus	2	5.0
Other / not reported	7	17.5

*including ventricular assist device (n = 1)

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BOS014 CARDIOVASCULAR RISK ASSESSMENT PRIOR TO KIDNEY TRANSPLANTATION – RETROSPECTIVE ANALYSIS

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Cardiovascular diseases (CVD) are the most frequent cause of death in dialysed patients. Patients in the risk group of CVD examined prior to kidney transplantation (KTx) are indicated for coronarography (SCG). The aim of our analysis was to identify risk factors (RF) for positive finding of patients undergoing SCG before KTx.

Our analysis consisted of 55 dialysed patients (46 males, 9 females, $P < 0.0001$), undergoing SCG before inclusion on waiting list (WL). We identified patient's information (age in the time of SCG, gender, ethiology of kidney failure, comorbidities – arterial hypertension, ischemic heart disease / IHD/, diabetes mellitus /DM/), biochemical parameters in the time of SCG (serum level of lipids, haemoglobin, calcium-phosphate metabolism). We divided patients according to SCG results (negative finding; n = 40 v.s positive finding; n = 15).

Patients without percutaneous coronary intervention (PCI) (negative finding) we confirmed significantly lower incidence of diabetic nephropathy ($P = 0.0484$) IHD ($P = 0.0174$) and coronary artery disease ($P = 0.0001$). We confirmed, haemodynamically significant coronary stenosis correlate with the occurrence of stroke or transient ischemic attack in patient's history ($P = 0.0104$). Consequently, we identified predictors for realization PCI (positive result): type 2 DM [OR 2,3492 ($P = 0.0472$)], HDL ? 1.03 mmol/l [OR 4.3276 ($P = 0.0359$)], total calcium level ? 2 mmol/l [OR 2.4935 ($P = 0.0309$)], phosphate level ? 1.45 mmol/l [OR 0.2034 ($P = 0.0351$)]. In our analysis, patients non-listed on WL had significantly higher incidence of type 2 DM ($P = 0.0087$), smoking ($P = 0.0079$) and were treated more often with statins ($P = 0.0025$).

In our analysis, patients with DM and poorly managed chronic kidney disease – mineral bone disease are the riskiest group in the group of patients with CVD with positive SCG finding. Patients with high cardiovascular risk, without DM or other RF can profit from non-invasive imaging methods following faster listing on WL.

PCI	Odds ratio	95 % CI	P value
Age in time of SCG ≥ 60 years	1,1244	0,3337 - 3,7879	0,8500
Gender (males)	2,0264	0,3056 - 13,4391	0,4644
BMI in time of SCG ≥ 30 kg/m²	1,4966	0,3692 - 6,0661	0,5723
Smoking	2,5048	0,5049 - 12,4267	0,2612
Duration of haemodialysis ≥ 60 months	0,5870	0,1202 - 2,8675	0,5104
Diabetic nephropathy	5,2276	0,4684 - 58,3489	0,1790
Arterial hypertension in anamnesis	0,1277	0,0093 - 1,7490	0,1232
Diabetes mellitus in anamnesis	2,3492	1,0105 - 5,4615	**0,0472**
Stroke in anamnesis	0,3456	0,01684 - 7,0948	0,4908
Ischemic heart disease in anamnesis	13,5965	0,7529 - 24,5386	0,0771
Chronic heart failure in anamnesis	0,4968	0,02253 - 10,9519	0,6575
Peripheral artery disease in anamnesis	1,1234	0,1349 - 9,3582	0,9143
Cholesterol in time of SCG ≥ 5,17 mmol/l	2,6385	0,6589 - 10,5666	0,1705
HDL in time of SCG ≤ 1,03 mmol/l	4,3276	1,1009 - 17,0123	**0,0359**
LDL in time of SCG ≥ 3,3 mmol/l	2,2197	0,4771 - 10,3270	0,3094
TAG in time of SCG ≥ 1,7 mmol/l	1,1556	0,3499 - 3,8163	0,8125
Haemoglobin in time of SCG < 110 g/l	2,1725	0,5679 - 8,3114	0,2571
PTH in time of SCG > 300 ng/l	0,4130	0,1016 - 1,6785	0,2164
Ca in time of SCG ≤ 2 mmol/l	2,4935	1,0926 - 5,6905	**0,0309**
P in time of SCG ≥ 1,45 mmol/l	0,2034	0,0462 - 0,8946	**0,0351**
Ejection fraction of left ventricle < 50 %	0,8630	0,1645 - 4,5281	0,8617
IVS > 12 mm	1,4562	0,3653 - 5,8041	0,5942

PCI - percutaneous coronary intervention; SCG – selective coronarography; BMI – body mass index; HDL – high density lipoprotein; LDL - low density lipoprotein; TAG - triacylglycerides; PTH - parathormone; Ca - calcium; P - phosphate; IVS – intraventricular septum;

Tab 1 Logistic regression

BOS02 – LIVER DONATION, ALLOCATION AND ISCHEMIA-REPERFUSION

BOS017 EARLY PARAMETER OF LIVER INJURY AFTER PEDIATRIC LIVER TRANSPLANTATION: LONG -- TERM OUTCOME OF A SINGLE CENTRE

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Introduction: In this retrospective single-center study we aim to assess the long-term patient and graft survival of 124 pediatric liver transplantations (LT) and analyze factors influencing the outcome. The primary endpoints of our study were patient and graft long-term survival at 10 and 20 years. Early parameters of liver injury and function were employed to develop for prediction of the outcome.
Statistics: Kaplan-Meier analysis was used to compute overall graft and patient survival. Cox proportional hazard models were employed for uni- and multivariate analyses of demographics and risk factors. ROC (receiver operating characteristic) curve analysis to assess the area under the curve (AUC) was performed to calculate the cut-off values, sensitivity, specificity of blood values at different time points.
Results: A total of 62 deceased donor liver transplantations (DDLT), 17 split liver transplantation from deceased donors (SLT) and 45 living related liver transplantation (LRLT) performed in children between 3 months and 17 years were included in this study. The 20-year patient and graft survival in the early stage (1984–1994) was 45.0% and 37.5% and increased to 88.6% and 76.5% at 20 years for transplants between 1995–2004. Patient and graft survival (10 years) in the late stage (2005–2016) increased to 92.4%/69.1% ($p = 0.000$; $p = 0.005$). Fifteen-year patient and graft survival after LRLT (1997–2016) reached 93.3%/83.3%. The area under the curve revealed > 0.84 forLDH at day 30 after LT and > 0.83 for bilirubin at day 14 afterLT.
Conclusion: Excellent lont-term results were achieved with pediatric LT during the last 30 years.This study emphasizes the predictive value of postoperative markers helping us to evaluate the recipients' course superiorly and therefore the prognosis for long-term survival. Postoperative risk assessment for graft survival by use of LDH and bilirubin may allow timely detection of graft dysfunction.

BOS018 MACHINE PERFUSION FOR ABDOMINAL ORGAN PRESERVATION: A SYSTEMATIC REVIEW OF KIDNEY, LIVER AND PANCREAS HUMAN GRAFTS

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Background: Machine preservation (MP) techniques have been increasingly used in abdominal organ transplantation, namely kidney, liver and pancreas. Variants in temperature during MP, in a hypothermic (HMP) 0–4°C or normothermic (NMP) 34–37°C setting have been analysed in relation to human grafts.
Methods: A systematic search in databases (Embase, Medline, Cochrane Library, Transplant Library) generated 10585 studies, with 102 clinical studies included.
Results: Analyses of 25 papers on incidence of delayed graft function (DGF) in kidney grafts showed HMP was protective against DGF compared to cold storage (CS) (HMP vs CS: OR = 0.650, 95% CI = 0.576 to 0.735, ($p < 0.001$)) (Fig 1a). Analysis of 3 papers showed HMP was significantly less likely to be associated with DGF compared to CS also for liver (HMP vs CS: OR = 0.368, 95% CI = 0.173 to 0.782, ($p = 0.009$)) (Fig 1b).Furthermore, in relation to liver, HMP appeared to be associated with superior 1 year graft survival ((HMP vs CS: OR = 6.171, 95% CI = 1.561 to 24.400, ($p = 0.009$)). The associations between MP and levels of liver enzymes (AST) was assessed in 3 NMP vs CS studies showing a reduction in favour of NMP ($p < 0001$). Regarding the pancreas, there is instead heterogeneity for outcome parameters of ischaemic-reperfusion injury and functional assessment, focusing mainly on absence of oedema, amylase and insulin peak in preclinical studies. Possible underlying mechanisms suggested in pre-clinical 6 liver studies are: reduction in (2/102) mRNA or gene expression of pro-inflammatory cytokines (e.g., ICAM-1, TNF-α, IL-8/17); (3/102) increase in ATP production; (1/102) increase in regulatory T-Cells.
Conclusion: MP preservation techniques appear to improve DGF rates for kidney and liver. More clinical quantitative studies are needed for verification with homogeneous parameters to measure the outcomes.

BOS019 OUTCOME OF LIVER TRANSPLANT PATIENTS WITH HIGH URGENT PRIORITY. ARE WE DOING THE RIGHT THING? FOR THE EUROTRANSPLANT LIVER AND INTESTINE ADVISORY COMMITTEE (ELIAC)

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Background: Emergency liver transplantation on HU status accouts for approximately 15% of all LT in the ET region. The assignment of an HU status is essentially based of urgency; outcome has been disregarded.
Methods: Wait-list and post-LT outcomes of patients listed for LT on HU status from 01.01.2007 up to 31.12.2015 in ET were compared to a reference group of patients that reached a labMELD score ≥ 40 (MELD 40 +)
Results: In the study period, 2,299 HU patients and 1580 patients with MELD 40 + were listed for liver transplantation. The overall transplantation rate for HU patients was significantly higher (75% vs. 51%, $p < 0.001$) and waiting list

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mortality was significantly lower (18% vs. 48%, $p < 0.001$) as compared to patients in the MELD 40 + group. Of all HU transplantations, 967 (56%) were first time transplantations (ALF) while 651 (38%), 84 (5%) and 17 (0.1%) transplantations were performed in patients with one, two or three and more previous LTs, respectively. Patient survival at 3 years decreased from 69% for first time transplanted HU patients, to 40–41% for HU patients with two or more previous LTs. HU patients -without a previous liver transplantation- showed better patient survival at 3 years (69%) as compared to patients in the MELD 40 + group (n = 694, 57%). MELD score was also associated with outcome in HU transplantations; 3-year patient survival was 46% if labMELD ≥ 45 in first time transplanted patients and 42% for re-transplantations with a labMELD ≥ 35.
Conclusions: With the current scarcity of livers in mind, it should be discussed whether potential recipients for a second or even third re-transplantation should still receive absolute priority, with a HU-status, over other recipients with an expected, substantially better prognosis after transplantation.

BOS020 DONOR HEPATECTOMY TIME AND IMPLANTATION TIME INCREASE THE RISK OF NON-ANASTOMOTIC BILIARY STRICTURES AND ALLOGRAFT DYSFUNCTION AFTER LIVER TRANSPLANTATION

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Background: During static cold storage, livers are preserved at 4–6°C, but this temperature is not reached during donor hepatectomy time (time needed to remove the liver from the donor body). Additionally, abrupt rewarming of the liver occurs in the recipient while performing the anastomoses (implantation time). We hypothesized that these two surgical times trigger complications such as Early Allograft Dysfunction (EAD) and Non-anastomotic biliary Strictures (NAS).
Methods: All deceased liver transplants performed between 1/2000–12/2016 were considered. The effect of donor hepatectomy and implantation time on the risk of EAD/NAS was investigated in multivariable logistic and Cox regression, respectively. An interaction analysis assessed if the effect of these surgical times varies when Donation after Circulatory Death (DCD) or Donation after Brain Death (DBD) grafts are transplanted. Median (IQR) or numbers (%) are given.
Results: Out of 917 liver transplants, 247 (27%) developed EAD and 106 (12%) NAS. Donor hepatectomy time was 35 minute (26–46), implantation time was 80 minute (69–95). Implantation time was a predictor of EAD (adjusted OR:1.15, 95%CI:1.07–1.23, $p < 0.0001$), while hepatectomy time was non-influent. Both portal vein anastomosis time (adjusted OR:1.26, 95%CI:1.12–1.42, $p = 0.0001$) and hepatic artery anastomosis time (adjusted OR:1.13, 95% CI:1.04–1.22, $p = 0.005$) were risk factors of EAD. DCDs were not more vulnerable to implantation time. Donor hepatectomy time was a risk factor for NAS (adjusted HR:1.19, 95%CI:1.04–1.35, $p = 0.01$), while implantation, vena porta, and hepatic artery anastomosis time were not. DCDs had a four-fold increased risk of NAS but were equally vulnerable to hepatectomy time.
Conclusions: During procurement, efforts should be made to shorten donor hepatectomy time and optimize organ cooling. During implantation, graft should be quickly reperfused and abrupt rewarming prevented.

BOS021 PREOPERATIVE ASSESSMENT OF MUSCLE MASS USING COMPUTERIZED TOMOGRAPHY SCANS TO PREDICT OUTCOMES FOLLOWING ORTHOTOPIC LIVER TRANSPLANTATION

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Background: Sarcopenia is an established risk factor predicting survival in chronically ill and trauma patients. We herein examine the assessment and clinical implication of sarcopenia in liver transplantation (LT).
Methods: Computerized tomography (CT) scans from 172 patients waitlisted for LT were analysed applying six morphometric muscle scores, including two density indices [Psoas Density (PD), Skeletal Muscle Density (SMD)] and four scores based on muscle area [total psoas area (TPA), psoas muscle index (PMI), skeletal muscle area (SMA), skeletal muscle index (SMI)].
Results: The prevalence of sarcopenia in our cohort ranged from 7.0% to 37.8%, depending on the score applied. Only sarcopenia as defined by the density indices PD and SMD (but not TPA, PMI, SMA, SMI) revealed clinical relevance since it correlates significantly with postoperative complications (Grade III, Clavien-Dindo classification) and sepsis. Furthermore, sarcopenia predicted inferior patient and graft survival, with low muscle density (PD: <38.5 HU; or SMD: <30 HU) representing an independent risk factor in a multivariate regression model ($p < 0.05$). Importantly, the widely used Eurotransplant donor risk index (ET-DRI) had a predictive value in non-sarcopenic patients but failed to predict graft survival in patients with sarcopenia.
Conclusions: Sarcopenia revealed by low muscle density correlates with major complications following LT and acts as an independent predictor for patient and graft survival. Therefore, the application of a simple CT-morphologic index can refine an individual recipient's risk estimate in a personalized approach to transplantation.

BOS022 SAFETY AND EFFICACY OF NOVEL CELL-FREE AND CONCENTRATED ASCITES REINFUSION THERAPY (KM-CART) FOR REFRACTORY ASCITES IN LIVER TRANSPLANT CANDIDATES

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Purpose: Refractory ascites at perioperative period in liver transplantation (LT) is associated with the increased morbidity and mortality. The aim of this study is to investigate the efficacy and safety of novel cell-free and concentrated ascites reinfusion therapy (KM-CART) for the treatment of refractory ascites in LT candidates.
Method: Total 45 times of KM-CART were performed for the 9 LT candidates at our hospital between September 2017 and January 2019. We investigated the safety and effectiveness of KM-CART regarding the processed ascites, the adverse events, the lab data, and the use of blood products.
Result: By using KM-CART, 11.0 L (2.6 L – 26.1 L) of ascites were filtrated and concentrated to 0.5 L (0.1 L – 1.6 L) in 52.0 min (8 min – 187 min). Final products contained 22.2 g (2.5 g – 65.5 g) of albumin and 17.8 g (1.5 g – 61.8 g) of globulin. No endotoxin contamination was detected in the ascites. Although the incidence of adverse event was 35.5% (including fever, hypotension, bleeding, leg cramps, and nausea), all of these could be treated conservatively. KM-CART resulted in a significantly reduction in patient body weight (81.3 kg vs 71.1 kg; $p = 0.0005$). KM-CART also significantly increased meal intake especially because of the larger amount of ascites (before, 45% vs after, 63%; $p = 0.025$). Furthermore, the use of fresh frozen plasma for the LT recipients with KM-CART was significantly lower than that for patients without KM-CART. In addition, no patients lost their opportunity for LT because of adverse events by KM-CART.
Conclusion: M-CART was effective and safe procedure for the treatment of refractory ascites in LT candidates. This study would provide the foundation for further large-scale prospective studies.

BOS023 VOLUMETRIC-CT ASSESSMENT OF SARCOPENIA IN LIVER TRANSPLANT RECIPIENTS

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Background: Sarcopenia is widely considered as a factor influencing the prognosis in liver transplant.Among the various available methods, the analysis of muscle mass on a single CT slice at L3 level is currently considered the gold standard for the diagnosis while other methods are currently a matter of investigation.
Aim of the study: Our aim was to evaluate the prognostic role of sarcopenia assessed through the analysis of muscle mass of the whole abdomen by means of a volumetric-CT analysis.
Material and methods: We evaluated 101 pre-transplant CT scans of adult patients with cirrhosis who underwent LT between 01/01/2016 and 31/10/2018. We measured the muscle volume of the abdomen, using a 3D method, from the iliac crests to the base of the heart. Images were analyzed with Volume Viewer software (GE Medical Systems). Abdominal muscle volume was indexed by height squared (cm3/m2). The lower quartile of indexed muscle volume in the analyzed population was set as a cut-off for significantly reduced muscle mass. A Cox proportional regression-model was used for post-LT survival analysis.
Results: 80 subjects were male (79.2%).The mean age was 54.8 ± 10.3 years. Major etiologies were alcoholic cirrhosis (31.7%), HCV (21.8%), cholestatic disease (11.9%) and HBV (10.9%). The mean MELD score was 16.8 ± 7.4. Volumetric cut-offs for lower quartile of indexed abdominal muscle volume were 583.7 cm3/m2 for women and 629.9 cm3/m2 for men. A statistically significant difference in post-LT survival was found using these cut-offs in the study population as an indicator of significant sarcopenia (HR 7; 95% CI 2.3–21.6, $p = 0.001$).
Conclusions: Muscle mass estimate assessed by volumetric analysis appear to be a reliable predictor of post-LT mortality. 3D analysis evaluate a

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wider portion of the body so providing a more reliable estimate of whole-body muscle mass. This method should be further investigated in larger cohorts to confirm its diagnostic performance.

BOS024 HOPE REDUCES THE ISCHEMIC DAMAGE OF THE EXTENDED CRITERIA DBD LIVER GRAFTS

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Methods: Not suitable for transplantation livers from ECD donors were stored with static cold storage (SCS) for the period of transportation. During the back-table procedure complete separation of the liver parenchyma along the Cantle line was performed. After randomization, one part was stored with SCS at 4°C (control group, n = 10), and the second part underwent HOPE through the portal vein with 2 liters of Belzer UW MPS at 7.3 [6.8; 8.1] °C, perfusion pressure of 3 mm Hg, flow rate 100 ± 15 ml / min, 100% O2 – with flow 1 l / min, pO2 = 768 [593; 800] mm Hg within 4 hours (study group, n = 10). The sampling of effluent and parenchyma for biochemical and morphological assessment was performed at the beginning, 2 and 4 hours after the start in both groups.
Results and discussion: Study showed that after 4 hours, lower AST ($p = 0.085$) and ALT ($p = 0.23$) were determined in the HOPE group compared to the SCS group, significantly lower levels of LDH ($p = 0.005$) and glutamate dehydrogenase (GLDG) ($p = 0.0009$), as well as AP ($p = 0.02$) and GGTP ($p = 0.01$). As a result of the study, a significantly lower level of vWF was observed in the HOPE group compared with the group where SCC was conducted($p = 0.002$). It was found that HOPE compared with SCS leads to a significant decrease of TNF-α ($p = 0.01$) As a result of the study, the ROS levels in the HOPE group were significantly lower ($p = 0.03$) in comparison with the SCS group, which indicates on stabilization of metabolism and homeostasis in hepatocytes. As a result of a morphometric study, the level of HIF-1 was lower in the HOPE group compared to the SCS group ($p = 0.15$), which indicates on less tissue hypoxia.
Conclusions: The use of hypothermic oxygenated machine perfusion reduces the degree ischemic damage of hepatocytes and endothelial cells of sinusoid, reduces the expression of cytokines and production of ROS and thus reduces the degree of ischemic damage to liver grafts.

BOS025 VALIDATING TRANSIENT ELASTOGRAPHY (FIBROSCAN) WITH CONTROLLED ATTENUATION PARAMETER (CAP) IN ASSESSMENT OF HEPATIC STEATOSIS IN LIVING LIVER DONORS

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Background: Hepatic steatosis assessment is essential for donor workup in living donor liver transplantation (LDLT). Liver biopsy is the gold standard and despite its invasiveness, there is no consensus on alternative modalities. The Controlled Attenuation Parameter (CAP) quantifies hepatic steatosis and cumulative data are promising though little is known on its utility in LDLT donor workup.
Objective: To assess CAP in quantifying steatosis in donors undergoing workup for LDLT.
Methods: A prospective study conducted in King Faisal Specialist hospital (January 2018 – September 2018). All consecutive potential living donors had Fibroscan/CAP measurements and liver biopsy. The CAP cut-off values range is 180–350 dB/m and graded as S0 (≤218), S1 (218–250), S2 (250–305) and S3 (> 305 dB/m). Steatosis score by liver biopsy was S0 < 5%, S1 (5%–33%), S2 (33%–66%) and S3 > 66%.
Results: A 100 liver donors were included and their scores were S0 (39 donors), S1 (20), S2 (26) and S3 (15). The liver biopsy score was S0 (72 donors), S1 (16), S2 (6) and S3 (6). CAP exhibited a significant ability to differentiate moderate to severe steatosis (AUC = 0.817, 95%CI: 0.727 to 0.887, $p < .001$). A score of ≥ 2 is selected as the best cut-off value using Youden index. The sensitivity and specificity were 91.7% (95% CI: 61.7% to 99.8) and 65.9% (95% CI: 55.0% to 75.7%). While a score of ≤ 1 strongly excludes the presence of moderate-severe steatosis (NPV = 98.3%, 95%CI: 89.8% to 99.7%), a score of ≥ 2 was poor in confirming the presence of moderate-severe steatosis (PPV = 65.9%; 95%CI: 55.0 to 75.7%).
Conclusion: CAP reliably identifies donors with no or mild steatosis. It is however not a good predictive test for moderate to severe steatosis. LDLT donors with a score > S1 should be considered for liver biopsy

BOS026 DOES THE POLICY ON CARDIAC DEATH DECLARATION AFFECT THE OUTCOMES OF DCD LIVER GRAFTS?

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Introduction: The use grafts coming from donation after circulatory death (DCD) is growing in popularity in Italy despite the regulation on cardiac death declaration that requires a no-touch period of twenty minutes. We report our initial experience analyzing the outcomes of DCD grafts for liver transplantation.
Methods: Among 16 potential DCD donors offered between August 2017 and January 2019, 10 grafts were successfully transplanted at the Hepato-Pancreato-Biliary Surgery and Liver Transplant Unit of University of Modena and Reggio Emilia. All donors underwent NRP after death declaration and, after the procurement, all the suitable grafts underwent ex-situ hypothermic perfusion prior to transplantation.
Results: Mean post-operative hospital stay after transplant was 12.7 days (range 5–26), and in 5 cases we placed a biliary drainage (Kehr tube) during surgery. No PNF after LT occurred in this cohort, while we registered one case of biliary anastomosis stricture that was managed endoscopically by ERCP. All patients are alive and none required retransplantation.
Conclusions: In our experience with controlled DCD donors the demonstration of a negative trend of lactate during NRP, AST and ALT lower than 2000 mU/dl, and less than one hour of fWIT, along with no signs of micro- or macroscopic ischemia of the grafts, are related to positive outcomes in the first year after transplant. The policy on cardiac death declaration does not affect the outcomes although a meticulous organ evaluation and optimal donor-recipient match must be guaranteed.

BOS027 ASSOCIATIONS BETWEEN GRAFT INTERSTITIAL GLUCOSE METABOLISM AND IMMEDIATE OUTCOMES OF THE LIVER TRANSPLANTATION

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Background: The standard blood biochemistry and coagulation tests have relatively low sensitivity and specificity as well as significant delay in early liver allograft dysfunction (EAD) diagnosis. Since the initial poor graft function is the leading cause (up to 50%) of early post-transplant mortality, a simple and objective method for graft viability and function assessement is still required.
Object: To identify the association between graft interstitial glucose (iGLU), lactate (iLAC), pyruvate (iPYR) concentrations, initial graft function and clinical outcomes during the first week after LT.
Materials and Methods: Hepatic microdialysis catheter was inserted in parenchyma immediatly after graft arterial reperfusion. The samples of interstitial fluid were collected continuously during the first post-transplant week and iGLU, iLAC, iPYR concentrations were measured every 2–3 hours and iLAC:iPYR and iLAC:iGLU ratios were calculated. Initial graft function (IGF) was assessed on day 7. EAD and primary non-function graft (PNF) were diagnosed with K. Olthoff and UNOS criteria, respectively. 8 cases were included in the study. Only full liver grafts from standard criteria brain-dead donors were used for transplantation.
Results: Normal IGF was in 5 cases, EAD – in 2, PNF – in 1. One graft with initially normal function was lost due to hepatic artery thrombosis that developed on day 2. Initial iGLU, iLAC, iPYR concentrations, as well as, iLAC:iPYR, iLAC:iGLU ratios and their dynamics during the first 24 h differed significantly depending on the graft function. With the development of thrombosis, iLAC:iPYR, iLAC:iGLU ratios increased 70 -120 times within 6 hours.

Recipient, Age / Gender / MELD-Na	Donor Age / Gender / Cold Ishemia Time (h)	Initial graft function/7 d Graft status	iLAC : iPYR after 6 h – 12 h – 24 h after LT	iLAC : iGLU after 6 h – 12 h – 24 h after LT
K.V., 51 / M / 13	39 / M / 8	Normal / Func	38 – 13 – 13	0.4 – 0.5 – 0.2
Y.O., 39 / F / 27	34 / F / 10	Normal / Func	18 – 8 – 7	0.2 – 0.1 – 0.1
B.I., 48 / F / 8	44 / M / 12	Normal / Func	15 – 11 – 11	0.6 – 0.3 – 0.2
K.C. 38 / M / 17	32 / M / 6	Normal / Func	37 – 29 – 14	0.3 – 0.2 – 0.1
	25 / M / 11	EAD / Func	89 – 20 – 15	0.5 – 0.4 – 0.3

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Continued

Recipient, Age / Gender / MELD-Na	Donor Age / Gender / Cold Ishemia Time (h)	Initial graft function/7 d Graft status	iLAC : iPYR after 6 h – 12 h – 24 h after LT	iLAC : iGLU after 6 h – 12 h – 24 h after LT
F.N., 64 / F / 19				
M.M., 66 / M / 12	40 / M / 9	EAD / Func	85 – 37 – 19	1.6 – 1.7 – 0.8
G.A., 41 / M / 17	61 / M / 11	PNF / Loss	322 – 984 – 2087	6 – 385 – 622
I.V., 45 / M / 16	42 / M / 9	Normal (before HAT) / -	26 – 21 – 18	0.7 – 0.6 – 0.5
I.V.	-	- / Loss – HAT on day 2	36 (44 h) – 579 (48 h) – 2492 (51 h)	3 (44 h) – 11 (49 h) – 362 (51 h)

Conclusion: Monitoring of intragraft glucose and its metabolites concentrations is a powerful method for IGF assessment and vascular complications diagnosis early after LT. For the development of accurate microdialysis-based IGF criteria more cases are needed.

BOS028 THE SYNTHESIS OF COAGULATION FACTORS DURING NORMOTHERMIC MACHINE PERFUSION OF LIVERS IS IMPAIRED BY ISCHEMIA IN PIGS AND MIGHT PREDICT GRAFT VIABILITY

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KU Leuven

Background: Normothemic Machine Perfusion (NMP) allows liver viability assessment. Coagulation Factors (F) are synthetized by the liver and are candidate markers of function of hepatocytes (FV, FVII, FIX, FX) and sinusoidal endothelial cells (FVIII). We investigated if coagulation factors discriminate functioning and injured livers during NMP.
Methods: Porcine livers underwent 6 h NMP after no (WI0, n = 5) or 60 min Warm Ischemia (WI60, n = 5). FV, FVII, FVIII, FIX, FX, aspartate transferase (AST), bile production lactate (Lac), Hyaluronic Acid (HAc), Vena Portae (VP) and Hepatic Artery (HA) resistance were measured during NMP. The synthesis of coagulation factors was investigated within-groups with repeated measures ANOVA, between-groups with Student's T test, and correlated with markers of injury/function of hepatocytes (AST, bile production, Lac) and sinusoidal endothelial cells (HAc, VP, and HA resistance) with Kendall-tau.
Results: Coagulation factors concentration increased during NMP in both groups ($p < 0.05$); however, WI60 synthetized less factors than WI0 ($p < 0.05$). FV, FVII, FIX, and FX correlated inversely with AST ($p < 0.0001$), positively with bile production ($p < 0.05$), and negatively with Lac ($p \leq 0.0001$). FVIII was inversely correlated with HAc ($p = 0.008$), VP ($p = 0.002$) and HA resistance ($p = 0.13$). Notably, FV and FVIII discriminated functioning and injured grafts within 1 h NMP. Grafts producing the highest amount of FV at 1 h NMP released the lowest quantity of AST (τ:-0.93, $p = 0.001$) and had the lowest Lac concentration (τ:-0.51; $p = 0.04$). Similarly, livers producing the highest amount of FVIII at 1 h released the least quantity of HAc (τ:-0.58, $p = 0.02$).
Conclusions: The synthesis of coagulation factors during NMP is reduced by ischemic injuries in pigs. Coagulation factors are promising markers of function of hepatocytes and sinusoidal cells discriminating between functioning and injured grafts early during NMP and should be further investigated in human studies.

BOS029 A SINGLE CENTER EXPERIENCE WITH 157 CONTROLED DCD-LIVER TRANSPLANTATIONS

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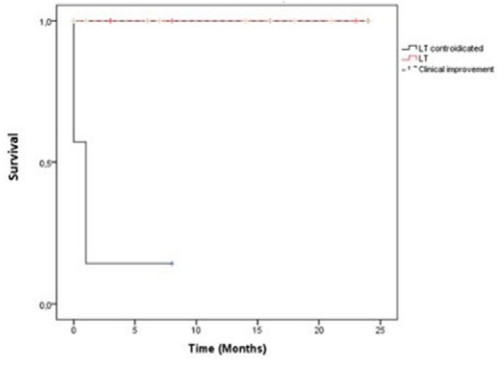
Introduction: Donation after circulatory death (DCD) have been proposed to partially overcome the organ donor shortage. DCD-LT remains controversial, with reported increased risk of graft loss and retransplantation. The authors retrospectively reviewed a single centre experience with controlled DCD-LT in a 15-year period.
Patients and Methods: 157 DCD-LT were consecutively performed between 2003 and 2017. All donation and procurement procedures were performed as controlled DCD in the operating theatre. Data are presented as median (ranges). Median donor age was 57 years (16–83). Median DRI was 2.242 (1.322–3.554). Allocation was centre-based. Median recipient MELD score at LT was 15 (6–40). Mean follow-up was 37 months. No patient was lost to follow-up.
Results: Median total DCD warm ischemia was 19 min (7–39). Median total ischemia was 313 min (181–586). Patient survivals were 89.8%, 75.5% and 73.1% at 1,3 and 5 years, respectively. Graft survivals were 89%, 73.8% and 69.8% at 1,3 and 5 years, respectively. Biliary complications included mainly anastomotic strictures, that were managed either by endoscopy or hepatico-jejunostomy. Two patients were retransplanted due to intrahepatic ischemic lesions.
Conclusion: In this series, DCD LT provides results similar to classical LT. Short cold ischemia and recipient selection with low MELD score may be the keys to good results in DCD LT, in terms of graft survival and avoidance of ischemic cholangiopathy.

BOS030 EXPANDING CRITERIA FOR EARLY LIVER TRANSPLANTATION IN SEVERE ALCOHOLIC HEPATITIS

Debora Angrisani, Panariello Adelaide, Chiara Mazzarelli, Paola Prandoni, Raffaella Vigano', Giovanni Perricone, Stella De Nicola, Marcello Vangeli, Aldo Airoldi, Rosa Stigliano, Anna Mariani, Mauro Percudani, Luciano De Carlis, Saverio Belli Luca

Niguarda Hospital

Background: In 2011 Mathurin et al showed that early liver transplant(eLT) dramatically improves survival in highly selected patients with severe alcoholic hepatitis(SAH). Recently, a real life US multicenter study demonstrated that eLT can be successfully performed also in patients fulfilling less stringent selection criteria. Where the limits of expanded criteria should be set and how much the percentage of patients with SAH eligible for LT could be increased is unknown.
Methods: In January 2016 a program of eLT for SAH was started at the Niguarda Hospital of Milan. Corticosteroids(CS) were not used in case of infection, malnutrition or bleeding. A dedicated team performed an accurate psycho-social evaluation and monitoring pre and post-LT.
Results: Twenty-eight consecutive cirrhotic patients at first episode of SAH were identified. Twelve patients with median baseline Maddrey score(MS) 73 and MELD-Na 26(43%) improved with or without CS. MELD-Na decreased to 19 after 1 month. None died after a median follow up of 13(1–32) months. The remaining 16 patients(57%) were evaluated for eLT. Seven patients with median baseline MS 91 and MELD-Na 33 were excluded from eLT: 2 for uncontrolled psychiatric disease, 1 due to cardiologic contraindication and 4 because 'too sick for transplant'. All but 1 died. Finally, 9 patients underwent LT, 3 after unsuccessful CS therapy(median Lille score 0.9). Their median MF and MELD-Na at admission were 104 and 32 respectively. Median time between admission and listing was 19 days; LT occurred on average days 8 after listing in all but 1 case who waited 94 days. Median MELD-Na at LT was 30. All patients undergoing LT are alive after a median follow up of 16(3–29) months. To date none relapsed alcohol use.
Conclusions: eLT was feasible and effective in almost 50% patients with SAH not responding to medical therapy, with a 1-year survival of 100%.Stringent psycho-logical support pre and post LT was crucial to avoid alcohol recidivism.



LT controindicated	7	1	0	0	0	0
LT	9	7	5	5	4	3
Clinical improvement	12	9	7	5	3	2

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BOS031 THE EFFECT OF GENDER MISMATCH ON THE OUTCOME IN PEDIATRIC LIVING DONOR LIVER TRANSPLANTATION

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Kyushu University

Background: Gender mismatch, especially male recipients transplanted from female donor is a well-known risk factor of graft loss. On the other hand, some reports have suggested that mother cell microchimerism in children was recognized. We hypothesized female donor is rather acceptable in pediatric population. In this study, we aimed to analyze the effect of gender mismatching on the outcome in pediatric living donor liver transplantation (LDLT).
Methods: Ninety-four pediatric patients who underwent LDLT at our center were retrospectively reviewed in this study. These patients were categorized into four groups according to the gender combinations of donor and recipient as follows; Male to Female (M/F: donor/recipient, N = 26), Female to Female (F/F, N = 35), Male to Male (M/M, N = 14), and Female to Male (F/M, N = 19) groups.
Results: The age at LDLT of total of 94 recipients were 4.1 ± 3.8 years old and biliary atresia (N = 67) was the most number of cases as a primary disease. The patients characteristics of gender matched groups (gM group; F/F and M/M, N = 49) was not significantly different from those of gender mismatched groups (gMis group; F/M and M/F, N = 45) regarding age at LDLT, donor age, ABO-blood type compatibility, and graft type. The graft survival of gMis group was lower than that of gM group (80.0% vs 89.8%), but it was not statistically significant ($p = 0.183$). In addition, M/F group was the worst and F/F group was the best gender combination in graft survival, but it was not also significant. Although the occurrence of acute cellular rejection (ACR) was not different between gM and gMis groups($p = 0.950$), that was significantly low in F/M group compared to M/F group in gMis group ($p = 0.012$).
Conclusion: The gender combination of donor and recipient had an effect on ACR occurrence, but not significant on the graft survival. Interestingly, female graft was the most protective from ACR, which was different from the literature reported in adults.

BOS032 PREDICTORS OF SUCESSFUL DELISTING OF LTX PATIENTS

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Background: Due to chronic organ shortage, waiting list management becomes a challenge. This also includes patients who are rated as "too good" to be taken off the waiting list again. Although this is common practice in all TX-centers, there is little data as the basis of such a decision.
Methods: In a retrospective analysis of all patients delisted between 2006 and 2016 because of "too good", the decision was evaluated on the basis of the clinical outcome. The delisting was categorized as "correct" status if the patient was "alive without LTX", any other status (Relisting, LTX, Deceased) as "wrong".
Patients with ACHF, pediatric-LTX, multi-organ transplantation and re-transplantations were excluded.
Results: 129 patients were included (f:m 41:88). Indications were ALCI n = 55 (42.6%), PHCB/C n = 30 (23.3%), HCCA n = 18 (14%), CYCI n = 7 (5.4%), CHOL n = 6 (4.7%), AUCI n = 5 (3.9%) and OTHE n = 8 (6.2%). In 53.5% the decision was "correct". While age had no effect, women were more likely to be falsely delisted than men (56.1% vs 42.0% n.s.). In the indications, autoimmune and viral cirrhosis were critical with 20% and 33% correct decisions. Other indications showed better results with a 66–80% hit rate (p = 0.057). However, delta-MELD was significantly higher in the group of successfully delisted patients than in the negative outcome (-3.96 vs -1.63 p = 0.002).
Conclusions: The analysis shows that age and gender have little impact for the delisting. The indication shows more influence, with "historical" data on the PHCC being questionably relevant. Highly significant influence, however, has the delta-MELD. This parameter appears best for selecting patients who are suitable for delisting.

BOS03 – INFECTIONS

BOS033 KIDNEY RECIPIENTS FROM UNCONTROLLED DONATION AFTER CIRCULATORY DEATH DO NOT SHOW GREATER RISK FOR INFECTION

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Hospital Universitario 12 de Octubre

Introduction: Delayed graft function is a known risk factor for infection and so is receiving antithymocite therapy for viral infection, but it is not completely assessed in those recipients who share these two characteristics as in cases of uncontrolled donation after circulatory death (uDCD).
Objective: To evaluate possible greater risk of infection of uDCD recipients in comparison with donation after brain death (DBD) recipients.
Material and methods: - Unicentric retrospective study of case and controls, comparing 237 uDCD recipients with 237 DBD recipients. All uDCD recipients received Thymoglobulin as induction therapy and delayed introduction of calcineurin inhibitor (CIN), with CMV prophylaxis with valgancyclovir for 3–6 months. Some DBD recipients received induction therapy with basiliximab in some selected cases.
- We systematically collected data of infectious events which required hospitalization, fungal infections and viral infections detected in outpatient clinic.
Results:

	uDCD	DBD	p-value
Urinary tract infection (%)	77 (32.5)	69 (29.1)	0.426
Surgical site infection (%)	36 (15.2)	26 (11)	0.173
Pneumonia (%)	22 (9.3)	20 (8.4)	0.746
Bacteremia (%)	15 (4.6)	15 (4.6)	1
C. difficile (%)	14 (5.9)	13 (5.5)	0.843
Herpes (%)	25 (10.5)	24 (10.1)	0.88
CMV infection (%)	28 (11.8)	49 (20.7)	0.09
BK virus nephropathy (%)	10 (4.2)	17 (7.2)	0.226
Fungal infection (%)	4 (1.7)	3 (1.3)	0.703

Conclusions: uDCD recipients did not show increased risks for infectious events provided that they receive adequate prophylaxis therapy, despite greater delayed graft function and induction therapay with thymoglobulin. Incidence of CMV infection is lower in uDCD recipients than DBD recipients, which is attributable to CMV prophylaxis.

BOS035 LATE-ONSET PNEUMONOCYSTIS JIROVECI IN KIDNEY TRANSPLANT RECIPIENTS. A SINGLE CENTER EXPERIENCE

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Background: *Pneumonocystis carinii (jiroveci)* pneumonia (PCP) is a potentially life-threatening pulmonary infection after kidney transplantation (KTx). Its onset in the current era of immunosuppression and the routine use of PCP prophylaxis is different from previous decades.
Methods: We retrospectively studied kidney transplant recipients in our center who had underwent bronchoscopy and bronchoalveolar lavage (BAL) from 2009 to 2018. All cases of confirmed PCP, at any time point later than one year after KTx, were analyzed.
Results: From 60 patients who had undergone BAL, 12 PCP cases were identified. At diagnosis, patient's mean age was 59 years. PCP appeared late, at 11.3 years [median 1.5–20] post-KTx, while all patients were receiving stable, low-dose immunosuppression. Most of them (8/12, 67%) had received 3–6-months PCP prophylaxis after KTx. In none of them immunosuppression was increased at the time before PCP onset. Besides, in our center, we reintroduce PCP prophylaxis in any case of anti-rejection treatment. It is noteworthy that 5 out of the 12 patients (42%) had also CMV reactivation at the time of PCP infection. Clinical presentation was mild, with fever, slight dyspnea and decrease in O2 saturation after fatigue. Treatment was initiated immediately, consisting of high-dose iv co-trimoxazole and steroids, while other immunosuppressants were temporarily discontinued. Concomitant CMV infection was treated with ganciclovir. Outcome was generally positive. PCP as well

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as CMV resolved in all patients. No one developed respiratory insufficiency with need for mechanical ventilation. One patient died of sepsis, while 3 with pre-existing CKD stage IV subsequently progressed to ESRD.
Conclusion: Renal transplant recipients are at risk of late-onset PCP, even at steady state and late after KTx. Due to the subtle clinical presentation high suspicion is warranted. Early identification along with proper management are essential for successful outcome.

BOS036 BK POLYOMAVIRUS INFECTION AFTER KIDNEY TRANSPLANTATION: 5-YEAR RESULTS OF A SINGLE-CENTRE OBSERVATIONAL STUDY

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Background: Polyomavirus nephropathy (PVAN) is a leading cause of kidney transplant (KTx) failure. We investigated incidence, risk factors and outcome of BK-virus (BKV) infection after KTx.
Methods: This single-centre prospective study with a median follow up of 5 years comprises 629 patients transplanted from 2007 to 2013. Recipients were screened for BKV by plasma qPCR. In case of viral load ≥ 1000 copies/mL they were diagnosed BK-viremia and underwent histological assessment. Immunosuppression was minimized according to a prespecified protocol.
Results: BK-viremia and PVAN were diagnosed in 9.5% and 6.5% recipients, respectively. Patients with high initial viral load (≥10000 copies/mL) were more likely to experience PVAN (92.5% *vs* 15%, $P < 0.00001$) and BK-related graft loss (27.5% *vs* 0%, $P = 0.0108$) than those with low initial viral load (<10000 copies/mL). Viremic recipients showed higher 5-year crude cumulative (22.5% *vs* 12.2%, $P = 0.0270$) and 30-day-event-censored (22.5% *vs* 7.1%, $P = 0.001$) incidences of graft failure than those without viremia. The viremic group also showed higher proportions of recipients with 5-year eGFR < 30 mL/min than the group without viremia: 45% *vs* 27% ($P = 0.0064$). Response to treatment was complete in 55%, partial in 26.7%, and absent in 18.3% patients. The PVAN group showed higher 5-year crude cumulative and 30-day-event-censored incidences of graft failure than control: 29.1% *vs* 12.1% ($P = 0.008$) and 29.1% *vs* 7.2% ($P < 0.001$), respectively. Our multivariable model demonstrated that Afro-Caribbean ethnicity, PRA > 50%, HLA mismatch > 4, and rejection were independent risk factors for BK-viremia whereas whereas CMV prophylaxis was protective.
Conclusions: Current treatment of BKV infection offers sub-optimal results. Initial viremia ≥ 10000 copies/mL is a valuable parameter to detect patients developing PVAN. Recipients with multiple risk factors for BKV infection may benefit of more aggressive prophylactic, screening, and treatment strategies.

BOS037 COST DRIVERS OF FOLLOW-UP CARE IN THE FIRST YEAR POST KIDNEY TRANSPLANTATION

Fiona Javelosa Glennis[1], Benita Padilla[1], Concesa Casasola[1], Irwin Panelo Carlo[2], Irina Rey[1]
[1]National Kidney and Transplant Institute; [2]University of the Philippines

The incidence of end stage renal disease in the Philippines is increasing and with it, the need for kidney transplantation. However, the cost of transplant surgery is nearly four times the average annual family income. A transplant benefit package from PhilHealth, the government health insurance system, was introduced recently but follow-up care is not covered. The high cost of care likely contributes to the low transplantation rate and calls for change in reimbursement policy.
Methods: To determine the cost drivers for follow-up care in the first year after kidney transplantation, records of 129 adult Filipinos who received a kidney transplant recipient over a 2-year period in a government specialty center were reviewed to estimate costs of hospitalization, diagnostics, medications, supplies, and professional fees. Univariate and multivariate analyses were done to determine the association of baseline characteristics, comorbidities, and complications after transplantation with cost.
Results: Direct costs were significantly higher among patients who: 1) were > 40 years of age (p = 0.009), 2) had diabetic kidney disease as primary renal disease (p=<0.0001), and 3) had a high Charlson comorbidity index (p = 0.001). Multivariate regression analysis showed that patients who had diabetes mellitus and those hospitalized for any infection spent an additional PHP 310,018 (USD 5,887) and PHP 176,423 (USD 3,350), respectively, compared to those who did not. Also, there was a very low incidence of diabetes among the lower-income patients who had a kidney transplant, likely due to the limited capacity to access services.
Conclusion: Age, presence of comorbidities, especially diabetes mellitus, and hospitalization for any infection significantly increased the cost of follow-up care. Expanding coverage and support value of the transplant benefit package will need to take these factors into consideration.

BOS039 CMV IMMUNOGLOBULINS IN LUNG TRANSPLANT RECIPIENTS

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Introduction: Intravenous ganciclovir (GCV) and oral valganciclovir (valGCV) are the mainstay of both prophylaxis and treatment for CMV disease in lung transplant (LuTx) recipients, but, under certain circumstances, CMV immunoglobulins (CMVIG) can be considered an appropriate addition or alternative. CMVIG preparations have the potential to exert immunomodulatory effects as well as providing passive immunisation.
The purpose of this case series is to highlight the use of CMVIG in LuTx patients at our institution.
Methods: We conducted a retrospective review of the clinical data on all the adult lung transplant recipients who were administered a course of CMVIG either as prophylaxis (50 UI/Kg) or treatment (200 UI/Kg) at our centre.
Virological surveillance by PCR was performed at least once a week for all the patients. Evaluation of CMV-specific T-cell response was performed at least once per month both with QuantiFERON-CMV (CD8 +) and ELISPOT (CD4 + and CD8 +).
Results: Five patients received CMVIG as prophylaxis instead of oral valGCV because of leukopenia:
- in the first patient, CMVIG were initiated 2 months after LuTx and discontinued after 6 months
- 1 patient received CMVIG after multimodality antibody directed treatment for antibody mediated rejection (pulse steroids, plasmapheresis and rituximab)
- 3 patients received a short course of CMVIG after pulse steroids for acute rejection.

None of them experienced CMV reactivation or disease in the subsequent 6 months.
Details on the use of CMVIG as an adjunctive treatment for CMV disease can be found in table 1.

PATIENT (sex, indication, age at LuTx)	CMV status; CMV specific T-cell response; prophylaxis	Graft history	Episode	Last follow up, outcome
1, Female, Cystic Fibrosis, 42 years	- R+	Excellent graft function; bronchial stenosis	9 months after LuTx, hospital admission for acute respiratory failure and fever	15 months after LuTx.
	- High responder		>> pneumonia due to CMV and P.aeruginosa >> Ganciclovir + CMVIG (200 UI/Kg)	Excellent graft function (BOS 0).
	- Standard prophylaxis with oral	Oral		valganciclovir, discontinued after 6 months valganciclovir was discontinued 3 months after hospitalization; CMVIG still ongoing (every 3 weeks)
2, Male, Cystic Fibrosis, 53 years	- R-	Excellent graft function	6 months after LuTx, hospital admission for CMV-induced	pancytopenia. CMV was proved to be ganciclovir resistant.
13 months after LuTx, HHV8 related visceral Kaposi	diagnosed.			

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Continued

PATIENT (sex, indication, age at LuTx)	CMV status; CMV specific T-cell response; prophylaxis	Graft history	Episode	Last follow up, outcome
sarcoma was				
	- Non responder		>> Long term course of high dose foscarnet + CMVIG (200 UI/Kg)	18 months after LuTx, death due to Microascus fungal pneumonia after chemotherapy for Kaposi sarcoma valganciclovir
	- Standard prophylaxis with oral			
	Both these drugs were not discontinued at hospital discharge.	(Of note, he never showed any sign of CMV specific T cell response at IGRA).		
3, Male, Cystic Fibrosis, 39 years	- R+	Acceptable graft function	5 months after LuTx, hospital admission for CMV pneumonia and severe pancytopenia	12 months after LuTx
	- High responder		>> Ganciclovir + CMVIG (200 UI/kg)	Good graft function (BOS 0)
	- Standard prophylaxis with oral			valganciclovir was early discontinued after 4 months because of leukopenia
		Still receiving both oral		valganciclovir (dose adjusted based on glomerular filtration rate) and CMVIG every three weeks

Conclusion: Our results suggest that CMVIG prophylaxis monotherapy can be a useful tool in preventing CMV infection in patients with leukopenia but they may also serve in combination with systemic antiviral agents in serious or complicated cases.

Further studies are required to better understand the ideal combination of therapeutic interventions to deliver effective management of CMV infection.

BOS040 A SINGLE CENTER RETROSPECTIVE STUDY OF BACTERIAL AND FUNGAL INFECTIONS IN THE IMMEDIATE POSTOPERATIVE PERIOD AFTER LIVER TRANSPLANTATION. INCIDENCE, RISK FACTORS AND ETIOLOGIC AGENTS

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Hospital Ramón y Cajal

Background: Infections are one of the main causes of mortality after liver transplantation (LT). The aim of this study was to identify risk factors for infections during the first month after LT.
Material and Methods: All patients transplanted from deceased donors (Jan 2003-Dec 2016) were analyzed to asses differences between the group with infection and the group without (pneumonia, bacteriemia, surgical site infection [SSI], cholangitis and urinary tract infection [UTI]). Multivariate logistic regression analysis was used to identify risk factors on 500 LT performed on 487 patients.
Results: 230 (47.2%) developed at least one infection. 103 cholangitis (21.1%), 94 pneumonia (19.3%), 73 UTI (15%), 73 bacteremia (15%) and 24 SSI (4,9%). Risk factors for any infection were time to extubation (OR 1.01, 95%CI 1.00–1.02, p = 0.045), renal replacement therapy (RRT) after surgery (OR 4.21, 95%CI 2.38–7.42, p < 0.001), graft rejection (OR 1.77, 95%CI 1.13–2.76, p = 0.012) and the type of preoperative care (Intensive Care Unit compared to outpatient care, OR 3.45; hospital ward, compared to ambulatory care, OR 2.00). Hepatitis C virus infection appeared to be a protective factor (OR 0.63, 95%CI 0.42–0.95, p = 0.026). Risk factors for UTI were MELD (OR 1.04, 95%CI 1.01–1.07), length of surgery (OR 1.00, 95%CI 1.00–1.01) and female gender (OR 3.6, 95%CI 2.1–6.18). Time to extubation (OR 1.01; IC95% 1.00–1.01), reintubation (OR 3.45; IC95% 1.9–6.25), diabetes (OR 2.57; IC95% 1.41–4.69) and RRT after surgery (OR 2.83; IC95% 1.57–5.08) were related to pneumonia. For cholangitis, RRT (OR 2.78; IC95% 1.75–4.43), female gender (OR 1.74; IC95% 1.06–2.86) and graft rejection (OR 1.92; IC95% 1.62–3.74). New surgical procedure was a risk factor for SSI (OR 4.09; IC95% 1.77–9.47). 682 samples showed positive results (23.6% GNB, 63.9% GPC and 7.6% fungi).
Conclusion: RRT after surgery, severity of hepatic disease, time to extubation and graft rejection were risk factors for infection after LT.

BOS042 INFECTIOUS COMPLICATIONS FOLLOWING KIDNEY TRANSPLANTATION

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Kidney transplantation (KT) has become a widely used and successful treatment for end-stage renal disease. Microbial infections, however, are a frequent life-threatening complication of transplantation. Aim: Is to study the incidence of infections in 342 adult renal transplant (RT) patients operated between May 1997 and December 2017 in our transplant unit with a follow-up of 1 year.
Material and Methods: All the patients received anti-infectious prophylaxis regimen after KT. Induction therapy was given to 230 patients (67.2%) and maintenance immunosuppression consisted mainly in a Calcineurin inhibitor associated to an antimetabolite and Prednisone (Pred). All demographic, epidemiological, medical, and surgical data in this retrospective study were compiled and analyzed by SPSS 13.0.
Results: 145 out 342 patients (42.4%) developed a total of 232 infections up to 1 year after KT. Among them, 112 infections occurred in 92 patients during their post-operative hospital stay. Bacterial infections were the most frequent (94.6%) mainly urinary followed by vascular catheter infections and pulmonary infections. The most frequently isolated bacteria were E.coli followed by Klebsiella, Acinetobacter and Pseudomonas. No viral infections were diagnosed in this period. After the hospital discharge up to 1 year, 120 infections were observed in 80 patients. Among these, 69.1% were bacterial, mainly urinary tract infections mostly due to E.coli in addition to 23 cases of Cytomegalovirus (CMV) infections, 7 herpes infections and 3 others of BK virus infections. In the infection group patients, the need for PRBC transfusions, acute rejection severity, hospital stay duration, mortality rate and the surgical complications rate were significantly higher when compared to the no infection group.
Conclusions: Good patient preparation before transplantation and appropriate infection prophylaxis are as needed as effective immunosuppression.

BOS043 RISK FACTORS FOR PULMONARY COMPLICATIONS IN ADULT RENAL RECIPIENTS AFTER TRANSPLANTATION

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Background: Renal transplantation (RT) is the most common type of solid organ transplantation worldwide. Pulmonary complications are one of the major causes of morbidity and mortality after renal transplantation. The aim of the study is to define the risk factors for infectious and noninfectious pulmonary complications in adult kidney transplant patients.
Materials and Methods: From November 1975 to November 2018, we performed 2928 RT procedures at two different centers by the same transplantation team. Medical records were reviewed retrospectively for 282 patients. Data pertinent to pulmonary complications were obtained including patient demographics and findings of chest radiography and pulmonary function testing. The kidney recipients were followed-up for the development of pulmonary complications during the first year after RT.
Results: The risk factors associated with the development of pulmonary complications were diabetes mellitus (P = .001), arterial hypertension (P = .015), body mass index ≥ 32 (P = .004) and therapy for acute graft rejection (P = .038. The only factor associated with the lower risk of complications was a positive serology test for Cytomegalovirus of the recipient before transplantation (P = .001).

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Conclusion: The risk factors can be used to identify patients at increased risk for posttransplant lung diseases. Monitoring of higher-risk patients allows timely diagnosis and early adequate treatment and can reduce the morbidity and mortality after renal transplantation.

BOS044 CLINICAL SIGNIFICANCE OF SCREENING FOR VIRIURIA OF HUMAN POLYOMAVIRUSES AFTER RENAL TRANSPLANTATION – THE RELATIONSHIP BETWEEN INFECTION AND REPLICATION

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Human polyomavirus (PV), such as BK virus (BKV) and JC virus (JCV) is very common cause of infection after kidney transplantation. This infections are often underrate although they can lead to kidney failure by polyomavirus-associated nephropathy.

155 kidney transplant recipients (KTR) were enrolled to the study. The morning urine sample was examined for the occurrence of PV (BKV and JCV) DNA by Quantitative Real-time PCR. PV replication (rPV) was defined as viruria with PV more than 10^7copies/ml.

PV viruria has been found in 43.87% (68) of KTR. BKV was the cause in 31 cases (45%), JCV in 37 (54%) cases; and in 2 KTR we found co-infection (both PV). rPV was presented in 24 KTR: rBKV 14, rJCV 9 and 1 case with co-infection.

rBKV was associated with a significantly worse function of kidney graft. In this group, the serum creatinine concentration (sCr) was significantly higher (2.02 vs 1.67 mg/dL in non-rBKV, $p = 0.024$) with a significantly lower eGFR (38.57 vs 49.66 ml/min/1.73 m2, $p = 0.025$). In addition, a rise of sCr (more than 25% in 6 months) was observed statistically more frequently in this group (28.13% vs 10.44%, $p = 0.0018$).

Analyzing the influence of the immunosuppression regimen on the presence of viruria it was found that the type of calcineurin inhibitors and antiproliferative drugs had no significant influence. However, it was found that rPV was more frequently observed in KTR receiving tacrolimus ($p = 0.0017$) as compare to patients on cyclosporin; rBKV ($p = 0.01$) but not rJCV ($p = 0.07$) was significantly more frequent.

rPV and rBKV were associated with a significantly higher serum concentration of mycophenolic acid (MPA) with a comparable daily dose of mycophenolate mofetil (MPA 3.53 mg/L in rBKV vs 2.29 in non-rBKV, $p = 0.0079$; rPV vs non-rPV $p = 0.039$).

Conclusion: PV infections are common in KTR, however, the strength of immunosuppressive therapy seems to be the most important in the transition to the replication phase.

BKV infection is of greater clinical significance.

BOS046 INTERACTIONS BETWEEN IMMUNOSUPPRESSIVE THERAPY AND DIRECT ACTING ANTIVIRAL IN KIDNEY TRANSPLANT RECIPIENTS WITH HCV INFECTION

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Introduction: The use of Direct acting antiviral agents (DAA) has changed the treatment of HCV infections. This is particularly true for transplant recipient since interferon and ribavirin based therapy could not be used in this kind of patients for drugs interactions or adverse events.
Methods: We selected from our cohort of kidney transplant patients those 7 who were treated with DAA for HCV infection.Treatment included the use of Daclatasvir 60 mg + Sofosbuvir 400 mg in 3 patients, Sofosbuvir 600 mg + Velpatasvir 100 mg in 2 patients, Lepidasvir 90 mg + Sofosbuvir 400 mg in 2 patients for 12 weeks. We compared renal function, hepatic enzymes, immunosuppressive drug levels before and after the treatmend with DAA.
Results: Blood level of cyclosporin or tacrolimus remained substantially stable in all patients but one in whom was necessary to reduce the dose of Cya of 10 mg. we observed no variations in the parameters that we evaluated except a decrese in the transaminase enzyme and HCV viremia after the treatment.
Discussions: DAA therapy has lead to a clearance of the HCV RNA in all patients without relevant side effect or interaction with the immunosuppressive treatment.

Parameter	Before DAA treatment	After DAA treatment	p value
serum creatinine (mg/dl)		1.21 ± 0.2	1.32 ± 0.23
Alt (U/l)	38 ± 11.189	15.00 ± 8.0	0.02
Ast (U/l)	25 ± 6.5	20 ± 7.8	0.59
Bilirubin (mg/dl)	0.42 ± 0.19	0.41 ± 0.1	0.76
GGT (U/l)	59.40 ± 63.5	39.40 ± 25.5	0.39
PAL (U/l)	105.20 ± 64.5	97.00 ± 43.4	0.6
CyA levels (ng/ml)	96.50 ± 4.9	79.00 ± 2.8	0.19
FK levels (ng/ml)	10.05 ± 1.9	8.85 ± 1.9	only 2 patients (statistacal test not performed)
HCV RNA (Ui/ml)	2258703.23 ± 3458997.0	0	

BOS047 NEBULIZED AMPHOTERICIN B PROPHYLAXIS IN IMMUNOCOMPROMIZED TO PREVENT INVASIVE PULMONARY ASPERGILLOSIS: SYSTEMATIC REVIEW AND META ANALYSIS

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King Abdulaziz Medical City

Background: Invasive pulmonary aspergillosis (IPA) is one of the major contributing factors increasing morbidity and mortality in immunocompromized patients. Nebulized amphotericin B (AMB) had been studied as a mean for prevention of IPA. However, most of published studies lacked a constant conclusion.
Aim: This systematic review was conducted to evaluate the efficacy and safety of prophylactic inhalation of AMB for the prevention of IPA in selected immunocompromized patient (cancer/chemotherapy, solid organ transplant lung/heart).
Method: An Electronic data base search was conducted including published and unpublished papers in MEDLINE and Cochrane data bases together with international conferences proceedings and bibliographies of major article. Randomized control trails and observational studies (comparative/non-comparative) comparing nebulized AMB vs. placebo were included. Two independent reviewers had assessed and extracted the data of included studies.
Result: A total of thirty-seven studies were included in the qualitative synthesis. Seventeen of them were analyzed quantitavely in the meta-analysis. The incidence of IPA and IPA-related mortality were significantly less with the use of prophylaxis nebulized AMB with Risk Ratio (RR) 0.38 (95% confidence interval (CI) 0.28–0.51) $P < 0.00001$ and RR 0.54 (95% CI 0.33–0.91) P 0.02 respectively. The rate of side effects were 25% and 40% in comparative and non-comparative studies. Significant side effects promoting stopping nebulization occurred in 6.6% and 4.8% respectively.
Conclusion: This analysis found a significant protective effect of nebulized AMB in preventing IPA and IPA related mortality in immunocompromized patients.

BOS048 IMPACT OF DENGUE SCREENING PRIOR TO RENAL TRANSPLANT – A SINGLE CENTER EXPERIENCE

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Post graduate institute of medical education and research (PGIMER)

Background: Dengue infection caused by Arbovirus which is transmitted by mosquitoes, Aedes aegypti and Aedes albopticus. India is an endemic country for dengue infection. Renal transplant recipients who live in endemic zones of dengue infection or who travel to endemic zones are at risk of developing this infection. Non vectoral transmission of dengue in the form of organ transplant and blood transfusions were reported in the literature. Despite the high case fatality rate of dengue in early post transplant period, no study described the usefulness of dengue screening prior to transplant in preventing peri operative transmission of dengue.
Method: From June 2107 to November 2017, the prospective renal transplant recipient and live donor pairs were screened for dengue infection using NS-1 antigen and IgM antibody within 1 week prior to transplant. Positive pair is defined as either donor or recipient or both positive for dengue serology. The patients with positive dengue screening were withheld from transplant and repeat dengue serology performed after 6 weeks. All these patients underwent renal transplant surgery 6 weeks following negative NS-1 antigen. Post transplant period these recipients were evaluated for dengue infection for fever, thrombocytopenia and leukopenia within 6 weeks from transplant.
Results: There were 44 donor recipient pairs were screened out of which screening was positive in 8 pairs. After a mean waiting period of 6 weeks, NS-1

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Age in years/ sex	Donor NS-1 antigen	Donor IgM antibody	Recipient NS-1 antigen	recipient IgM antiboody	after 6 weeks repeat screening donor NS-1	after 6 weeks repeat screening donor IgM	after 6 weeks repeat screening recipient NS-1	after 6 weeks repeat screening recipient IgM antibody	post transplant dengue
20/M	negative	negative	positive	positive	negative	negative	negative	negative	negative
24/M	negative	negative	positive	positive	negative	negative	negative	negative	negative
18/M	negative	negative	negative	positive	negative	negative	negative	positive	negative
27/M	positive	positive	negative	negative	negative	positive	negative	negative	positive
11/M	negative	positive	negative	negative	negative	negative	negative	negative	negative
32/M	positive	negative	positive	negative	negative	positive	negative	negative	negative
14/M	negative	positive	negative	negative	negative	negative	negative	negative	negative
24/M	positive	positive	positive	negative	negative	negative	negative	negative	negative

was negative in all pairs while IgM antibody was persisting in two donors and one recipient. Data enclosed in table.

1 Only one of these patients had dengue infection during early post transplant period.

However, out of 36 pairs with negative dengue screening two had dengue in early post transplant period.

Conclusion: Dengue screening is effective in reducing its perioperative transmission and associated morbidity. Transplant surgery can be done after 6 weeks of negative NS-1 antigen test.

BOS04 – BASIC IMMUNOLOGY AND REJECTION

BOS049 PLASMA INHIBITION OF ACTIVATION OF LYMPHOCYTES FROM KIDNEY TRANSPLANTS IS SIGNIFICANTLY MORE SEVERE IN TACROLIMUS BASED REGIMEN: IMPLICATIONS FOR PLASMA EXCHANGE IN ANTI-REJECTION THERAPY

Alain Assounga, Saleha Omarjee
University of KwaZulu-Natal

Background: Reduction of lymphocyte proliferation by human plasma has been previously reported. Reduced activation of lymphocytes of patients on immunosuppressive drugs is well documented. However, trial of association of plasma exchange with anti-rejection therapy in the early cyclosporine era was not successful.

Aim: To compare the effect of transplant recipients' plasma and healthy controls' plasma on lymphocyte activation according to immunosuppressive drugs.

Methods: Peripheral blood mononuclear cells (PBMC) were counted and incubated overnight with and without phytohemagglutinin (PHA) ± plasma. The luciferin-luciferase enzyme reaction that induces bioluminescence and the Turner Biosystem luminometer were used to measure intracellular ATP levels in relative light units (RLU). According to normality test results, parametric or non-parametric tests from Instat 3 program (GraphpadR) were performed to compare various group results. Logistic regression analysis was performed using SPSS version 25 (IBM).

Results: PHA stimulation of PBMC from healthy individuals produced a 47% increase ATP production. The ATP increase is reduced to 14% when normal plasma was added ($p < 0.05$). However, when normal plasma was replaced by patient plasma, the ATP increase was reduced only to 31%. While lymphocyte from all transplants patients were supressed by control plasma, those from patients on tracrolimus were even more supressed (ATP level: 1252.30 ± 64.07 ng/ml) than those on cyclosporine or sirolimus (ATP level: 1915.29 ± 149.94 ng/ml, and 1834.10 ± 151.39 ng/ml respectively) ($p = 0.0388$, ANOVA). Logistic regression analysis revealed that plasma inhibition was greatest in lymphocytes from patients on tacrolimus OR(CI) 1.003(1.000–1.007), ($p = 0.036$).

Conclusion: Resulting from this study, we propose that plasma exchange with selected control plasma with the greatest potency in T cell inhibition, be evaluated as part of anti-rejection treatment, especially in patients on tacrolimus based regimen.

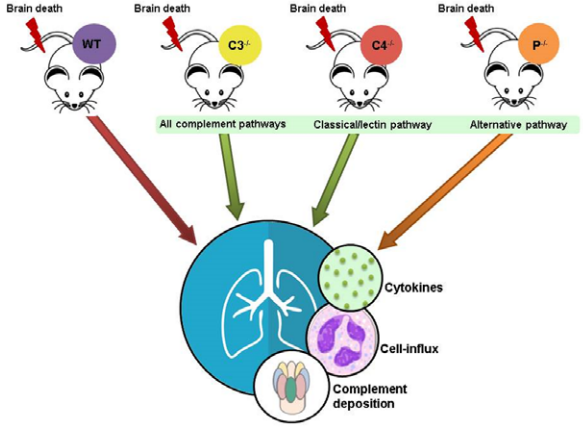
BOS051 COMPLEMENT PROTEIN C4 MEDIATES BRAIN DEATH-INDUCED LUNG INJURY

Judith van Zanden, Tina Jager, Felix Poppelaars, Suzanne Veldhuis, Michiel Erasmus, Henri Leuvenink, Marc Seelen, Judith van Zanden
University Medical Center Groningen

Background: Most donor lungs are derived from brain-dead donors, in which pathophysiological mechanisms lead to pulmonary inflammation. As a result, lung quality is deteriorated and only 20% of the available lungs are procured and transplanted. The complement system plays an important role in the brain death (BD)-induced inflammatory response. However, mechanisms of complement activation in donor lungs procured from brain-dead donors have not been elucidated. In our study we identified which complement activation pathways are involved in BD-induced lung injury.

Materials and Methods: Contribution of different complement activation pathways were investigated by using complement deficient mice strains, which were compared to wildtype (WT) mice. C3-/- mice represent full blockade of all activation pathways, Properdin-/- (P) mice represent the alternative pathway and C4-/- mice represent the classical and lectin pathway. BD was induced by increasing intracranial pressure in the epidural space, sustained for 3 hours. Lungs were ventilated with a frequency of 190/min, tidal volume of 225 μl and a PEEP of 1 cmH2O.

Results: Absence of C3 prevented C9 deposition, improved lung morphology, decreased neutrophil influx and downregulated pro-inflammatory cytokines. These results underline the importance of complement activation in lung grafts derived from brain-dead donors. P-/- mice showed improved morphology and



decreased cytokines, yet neutrophil influx and C9 deposition were not affected. In C4-/- mice, lung morphology, neutrophil influx and cytokines were ameliorated compared to WT mice. In addition, C9 deposition was diminished to a level comparable to sham-operated mice.

Conclusion: We conclude that the complement system is involved in the BD-induced pulmonary inflammatory response. Thereby, this study demonstrates primary involvement of C4 in the BD-induced pulmonary immune response, providing insight for future complement therapeutics in potential donor lungs.

BOS052 NEXT-GENERATION PORCINE LOW IMMUNOGENICITY ANTI-LYMPHOCYTE IMMUNOGLOBULINS EFFICIENTLY DELAY SKIN GRAFT REJECTION IN NON-HUMAN PRIMATE

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Xenothera

Induction therapy, with rabbit or horse anti-lymphocyte globulins (ALG) has become a commonplace in transplantation to prevent acute rejection. However, presence of xenogeneic carbohydrates on these immunoglobulins causes short- and long-term adverse effects in human presenting natural antibodies against these epitopes. Infusions of ALG in humans results in formation of immune complexes, allergic reactions, liver toxicity and serum sickness disease when administrated without any other immunosuppressive drugs. To address these issues, we developed LIS1, a new generation ALG from a1,3GT and CMAH knockout swine immunized with a human T cell line. LIS1 efficiently lysed T lymphocytes and, in contrast to other ALG, spared platelets and neutrophils. The aim of this study was to assess the immunosuppressive abilities of LIS1 in a skin allograft non-human primate model.

Five female Cynomolgus monkeys received two skin grafts from an unrelated congener and an autograft as control on the back skin. LIS1 was

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administrated intravenously over 5 days, starting the day of the graft. Graft were observed every day to establish a grading of graft rejection based on skin necrosis and flexibility. Blood sampling were collected at different time point and histological rejection was assessed on skin biopsies.

Treated animals (n = 3) showed a sharp decrease in circulating T lymphocytes between day 1 and 7, recovering by Day 15, in the absence of cytokine release or thrombocytopenia. Histological analysis on day 3 showed that the necrosis caused by tissue ischemia was reduced in treated animals. Skin graft rejection was delayed to Days 19–29 (vs. Day 11 in controls).

In conclusion, LIS1 showed efficacy to delay skin graft rejection. Use of LIS1 might benefit kidney graft recipients by reducing adverse effects of current ALG associated with anti-xenogeneic carbohydrate reactivitiy.

BOS053 THE ALARMIN IL-33 HAS A KEY-ROLE IN HEPATIC ISCHEMIA-REPERFUSION IN A MOUSE MODEL

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Background: IL-33 plays a role as an alarmin in the initiation of the inflammatory response in renal ischemia/reperfusion (I/R) injury, involving invariant natural killer T (iNKT) cells1–2.

The aim of this study was to establish whether in hepatic I/R IL-33 also acts as an alarmin and to explore the contribution of iNKT cells.

Methods: A model of warm hepatic ischemia with clamping of 70% of the liver was chosen in wild-type mice, IL-33 KO mice and iNKT cell-deficient (Jalpha18 KO) mice with C57BL/6 background. Severity of I/R injury was assessed with serum ALT measurement and histological analysis of clamped liver according to a pre-determined score. iNKT cells were enumerated in spleen and liver by flow cytometry2.

Results: In wild-type mice, IL-33 was constitutively expressed in liver endothelial cells, including the sinusoids, and was released from the ischemia phase and its immediate course into systemic circulation without neo-synthesis. I/R injury was decreased in IL-33 KO mice after 4 h, 8 h and 24 h of reperfusion. Therefore, in the first hours after I/R, IL-33 acts as an alarmin and is at least partly responsible for I/R injury.

I/R injury was also decreased in Jalpha18 KO mice after 4 h while in wild-type mice, iNKT cells were found activated in periphery (spleen) and recruited locally, a phenomenon that is conciliable with an IL-33/iNKT cell axis mediating early inflammation during liver I/R2.

After 4 h of reperfusion, the IL-33 plasmatic concentration decreased and returned to its basal state after 24 h, while a neo-synthesis of IL-33 appeared in hepatocytes. IL-33 acts here as a cytokine whose biological role remains to be unravelled.

Conclusion: Taken together, these results suggest that IL-33 plays an important role as an alarmin. Moreover, as an underlying mechanism, we presume that IL-33 acts by targeting iNKT cells. A delayed role of IL-33 as a cytokine seems to exist, requiring further investigation.

BOS056 NOTCH SIGNALING IN ENDOTHELIAL CELLS SELECTIVELY CONTROLS THE M1/M2 DIFFERENTIATION OF INTRAVASCULAR MACROPHAGES VIA THE NOTCH LIGAND DLL4 AND CONTRIBUTES TO AMR IN CARDIAC TRANSPLANTS

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Background: Antibody-mediated rejection (AMR) of heart transplant is a clinical complication associated with progression to cardiac allograft vasculopathy and poor graft outcome. AMR is primarily caused by the deposition of donor specific alloantibodies on graft endothelial cells (EC), followed by a cascade of events culminating in Microvascular inflammation including inflammatory cytokines secretion, EC activation and intravascular macrophage infiltrate. This study investigated the molecular and signaling mechanisms underlying vascular and inflammatory cell network involved in AMR.

Methods/Materials: Molecular and signaling events were explored in cardiac transplants upon AMR, at endothelial and macrophage levels, using endomyocardial transplant biopsies (EMB), EC cultures from transplant donors and *in vitro* cellular models.

Results: First, based on EMB, we found that cardiac EC from AMR patients display an upregulated expression for VCAM1, ADAM10 and ADAM17 associated with changes in Notch signaling at the endothelium/macrophage interface including loss of endothelial Notch4 and acquisition of the Notch ligand DLL4 by both cell types. We showed that endothelial DLL4 induces circulating monocytes to polarize into a M1-type pro-inflammatory macrophages ($CD40^{high}CD64^{high}CD200R^{low}$ $HLADR^{low}CD11b^{low}$) eliciting the production of IL-6. DLL4 and IL-6 are both required for M1 polarization. Subsequently, we demonstrated that DLL4 also interfere with M2 polarization. We found that DLL4 triggers a specific alteration of the IL-4 induced M2 phenotype through a significant inhibition of M2 markers (CD11b, CD206, CD200R). DLL4 also induces caspase3/7-dependent apoptosis specifically in M2 differentiating macrophages. Fully differentiated M2 macrophages became resistant to DLL4 action.

Conclusion: Graft's EC participate, via the Notch pathway, to macrophage recruitment and differentiation upon AMR and DLL4 and IL-6 are molecular players of vascular inflammation in transplants.

BOS059 MUCOSAL ASSOCIATED INVARIANT T-CELLS IN RENAL TRANSPLANT RECIPIENTS BEFORE- AND 12 MONTHS AFTER TRANSPLANTATION

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Amsterdam UMC, University of Amsterdam

Introduction: Mucosal Associated Invariant T (MAIT) cells are innate-like T-cells involved in the antibacterial response by recognizing riboflavin metabolites produced by these organisms and comprise ~10% of the T-cell population in human blood. Even though bacterial infections are common in renal transplant recipients, it is unclear how MAIT cell numbers, phenotype and functions evolve after renal transplantation.

Methods: We used a fluorescently-labelled MR1-tetramer in conjunction with 14-color flowcytometry to identify and characterize MAIT cells in blood from renal transplant recipients obtained pre-transplantation and 12 months post transplantation (n = 21) and in healthy controls (n = 21).

Results: There was no difference in the percentage of MAIT cells within the T-cell population between the renal transplant recipients (both pre- and post-transplantation) and the controls. Surprisingly there was no difference in several differentiation (CCR7, CD28, CD27), functional (granzyme B, granzyme K, perforin) or proliferation markers (Ki67) between the pre-and post-transplantation samples and the healthy controls.

However, in both the pre- and post-transplant samples the percentage of MAIT cells expressing the chemokine receptor CXCR4 was higher than in the controls (respectively 26.3%, 22.1% vs. 9.5%, $p < 0.05$), whilst the percentage of MAIT cells expression CXCR3 was lower in the pre- and post-transplantation groups than in the control group (36.9%, 32.0% vs. 50.0% $p < 0.05$).

Conclusion: MAIT cells in renal transplant recipients comprise an equal share of the T-cell population compared to healthy controls. MAIT cells in renal transplant recipient both pre- and post- transplantation express a different homing profile. Further research is warranted to determine what the cause and consequence is of this altered expression of chemokine receptors.

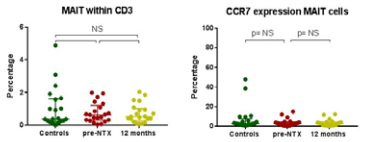


Figure 1. MAIT cells in renal transplant recipients comprise an equal share of the total T- cell population and do not differ in the expression of several differentiation markers. MAIT cells in PBMCs from healty controls (n=21) and renal transplant recipients before- and 12 months after renal transplantation (n=21). Median + Interquartile range.

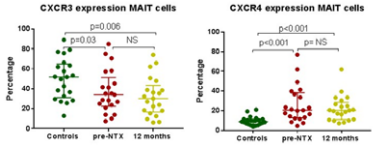


Figure 2. MAIT cells in renal transplant recipients express a different homing profile. Percentage of MAIT cells expressing CXCR3 and CXCR4 in PBMCs from healty controls (n=21) and renal transplant recipients before- and 12 months after renal transplantation (n=21). Median + interquartile range.

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BOS060 BROADLY PROFILING THE ACTIVATION STATUS OF CIRCULATING IMMUNE CELLS IN C-AABMR REVEALS INCREASED CD38 AND CD16 EXPRESSION ON MONOCYTES AND NK CELLS

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Erasmus MC

Background: Chronic-active antibody mediated rejection (c-aABMR) contributes significantly to late renal allograft failure. Non-invasive biomarkers of c-aABMR are currently not available but could be valuable for early detection. In this study the activation profiles of relevant immune cell populations in peripheral blood of patients with c-aABMR were evaluated as potential biomarker.
Methods: The peripheral blood mononuclear cells of the kidney transplant recipients included were used for flow cytometric analysis. A panel of monoclonal antibodies was used designed to characterize both the specific cell type (T and B cells, $\gamma\delta$ T cells , NK cells and monocytes) and their activation status. Cases with biopsy proven c-aABMR (c-aABMRpos, N = 25) were compared to matched controls (c-aABMRneg, N = 25).
Results: No significant differences were found in the total percentage and distribution of NK cells, B cells and T cells. There was however a higher percentage of monocytes present in c-aABMRpos cases (19.5% vs. 14.4%, $p < 0.05$). Additionally, differences were found in activation status of circulating monocytes, NK cells and $\gamma\delta$ T cells. The c-aABMRpos cases had a significantly higher percentage of monocytes expressing the activation marker CD38 ($p = 0.04$) as well as higher expression of CD38 on NK cells ($p = 0.02$). CD16 (Fcγ III receptor) expression on NK cells was significantly higher in c-aABMRpos cases (MFI 56965 vs. 34345, $p < 0.01$) but significantly lower in $\gamma\delta$ T cells (MFI 837 vs. 1277, $p = 0.02$). Although statistically significant, these differences were not sufficient to readily identify patients with c-aABMR.
Conclusion: Cases with c-aABMR express a different CD16 and CD38 expression profile on circulating NK cells, $\gamma\delta$ T cells and monocytes. Increased CD16 expression on circulating NK cells suggest that an interaction with antibodies on renal endothelial cells has taken place.

BOS061 FOLLICULAR T REGULATORY CELL IMPAIRMENT IS A REFLECTION OF ACTIVE B CELL IMMUNITY IN KIDNEY TRANSPLANT RECIPIENTS

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[1]Erasmus MC, University Medical Center Rotterdam; [2]LUMC, Leiden

Background: The presence of de novo donor-specific anti-HLA antibodies (DSA) is associated with antibody-mediated rejection and long-term graft loss. Because follicular regulatory T (Tfr) cells negatively regulate follicular T helper cell dependent B cell functions in germinal centers, these cells could limit excessive antibody production. We questioned whether the numbers of circulating (c) Tfr cells is associated with the development of anti-HLA antibodies, DSA and kidney function.
Methods: We studied 156 kidney transplant recipients at 5–7 years after transplantation. The numbers of total cTfr cells ($CD3^+CD4^+CXCR5^+FoxP3^+$) and activated cTfr cells ($CD3^+CD4^+CXCR5^+FoxP3^+PD\text{-}1^+$), as well as Helios expression, critical to their suppressive function, were studied by flow cytometry. The presence of serum anti-HLA antibodies and DSA were determined by Luminex Single Antigen assay.
Results: At 5–7 years after transplantation in 17% (27/156) of recipients anti-HLA antibodies were detectable, of whom 9 patients (33%) were DSA positive. Patients with anti-HLA antibodies showed significantly lower numbers of total cTfr ($p = 0.02$) and of activated cTfr cells ($p = 0.03$) compared to patients without anti-HLA antibodies. The lower numbers of both total ($p = 0.14$) and activated cTfr ($p = 0.08$) cells also tended to be significant in patients with DSA compared to those without DSA. The percentage of cells expressing Helios was significantly lower in activated cTfr cells than that in total cTfr cells ($p < 0.0001$). Inverse correlations between serum creatinine level and number of total cTfr cells ($p = 0.01$, $r_s = -0.20$) and number of $Helios^+$ cTfr cells ($p = 0.01$, $r_s = -0.22$) were found. This was confirmed also in eGFR.
Conclusion: These results indicate that the reduction of number and activation status of cTfr cells is a reflection of active B cell immunity directed against the allograft in kidney transplant recipients.

BOS064 IS THERE AN IMMUNOLOGICAL EXPLANATION OF THE SUCCESS OF PREEMPTIVE KIDNEY TRANSPLANTATION?

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Background: The inferior outcome of kidney allografts in patients who had experienced longer time on dialysis has been discussed. The explanation of this phenomenon has remained unclear.
Methods: Peripheral donor-specific effector/memory cells and subpopulations of T and B lymphocytes were assessed using BioDRIM study-derived IFN-λ ELISPOT assay (AID, Germany) and the ONE Study flow cytometry panel computing 9-surface marker antigens for monitoring the major leukocyte subsets as well as characteristics of T cells, B cells, and Dendritic cells (DuraClone, Beckman Coulter) in 99 low risk kidney transplant recipients (PRA < 20%, no DSA, no anti-HLA antibodies tested by Luminex) prior to transplantation according to the time spent on dialysis.
Results: Patients who stayed on dialysis for > 12 months had 2.95 times increased risk of positive pretransplant IFN-λ ELISPOT (95% CI: 1.14–7.62; $p = 0.025$) and 4.2 times greater risk of increased absolute numbers of marginal zone B cells (IgDhighCD27high) (95% CI: 1.6–11.2; $p = 0.004$) than patients with shorter dialysis vintage. Patients with longer dialysis span had more marginal zone B cells (IgDhighCD27high) as compared to those who received their kidney grafts preemptively ($p = 0.007$).
Conclusion: Using recent standardized immunological platforms this study showed increased cellular sensitization (both T and B cell one) in patients without anti HLA antibodies but with longer dialysis span.

BOS06 – SURGICAL TECHNIQUE LIVER

BOS065 LIVER BLOOD FLOW AFTER RIGHT LOBE LIVING DONOR LIVER TRANSPLANTATION WITH MIDDLE HEPATIC VEIN

Oleg Kotenko, Artem Minich, Marat Grygorian, Denis Fedorov, Alexander Grinenko, Alexander Korshak, Alexey Popov, Andrey Gusev, Alexander Ostapishen
National Institute of Surgery and Transplantology

Background: The inclusion of the middle hepatic vein (MHV) in the right lobe liver grafts remains controversial. The MHV may be included in right lobe liver graft to optimize hepatic venous outflow. Splanchnic hemodynamics after LDLT still poorly understood.
Aim: The aim of this study was to systematically evaluate the role MHV on hepatic hemodynamic changes.
Materials and Methods: 75 patients undergoing right lobe LDLT between January 2003 and December 2016. We compared hemodynamic changes after right lobe LDLT with MHV (group 1; n = 37) or without MHV (group 2; n = 38). The patients age ranged from 15 to 50 years old and the male-to-female ratio was 41:34. The two groups were compared in portal venous flow volume (Qpv), peak systolic velocity (PSV) and resistance index (RI) on postoperative days (PODs) 1, 3, 5, 7, 30 using colored doppler ultrasonography.
Results: Group I had higher values of Qpv – 687 ± 220 ml/min ;1251 ± 491 ml/min; 1324 ± 372 ml/min; 1231 ± 284 ml/min; 1042 ± 211 ml/min; 1131 ± 301 ml/min compared with group II – 647 ± 230 ml/min; 1128 ± 385 ml/min; 1132 ± 372 ml/min; 1019 ± 263 ml/min; 967 ± 254 ml/min; 935 ± 293 ml/min on PODs 0, 1, 3, 5, 7, 30 respectively. Qpv increased after graft implantation, it was higher in group I – by 564 ml/min on POD 1 (compared to preoperative measure on POD 0); however, in group II this parameter increased by 481 ml/min. PSV and RI on POD1 increased much more in group II (from 0.53 m/s to 0.66 m/s and from 0.63 to 0.72 respectively) compared with group II (from 0.57 m/s to 0.58 m/s and from 0.62 to 0.66 respectively).
Conclusion: After right lobe LDLT with MHV, there is an increase of Qpv and total hepatic blood flow with a decrease of PSV, as a result of optimization of the venous outflow from the graft compared with blood flow of the right lobe graft without MHV.

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BOS068 THE IMPACT OF EXTRA-ANATOMICAL HEPATIC ARTERY RECONSTRUCTION DURING LIVING DONOR LIVER TRANSPLANTATION ON BILIARY COMPLICATION, GRAFT AND PATIENT SURVIVAL

Jinsoo Rhu, Man Kim Jong, Seong Choi Gyu, Jae-Won Joh, Suk-Koo Lee, Jiyoun Hong, Kyeongdeok Kim
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Background: This study is designed to analyze the feasibility of extra-anatomical hepatic artery reconstruction in living donor liver transplantation.
Methods: Patients who underwent their first living donor liver transplantation in our center from January 2008 to December 2017 were reviewed. Hepatic artery reconstruction was classified as anatomical or extra-anatomical reconstruction. Potential risk factors for bile leakage was analyzed using multivariable logistic regression analysis. Potential risk factor for biliary stricture-free survival, graft survival, and overall survival were analyzed using multivariable Cox proportional hazard models.
Results: Among 800 patients, 35 (4.4%) underwent extra-anatomical reconstruction. Extra-anatomical reconstruction (n = 2/35, 5.7%) showed similar rate of hepatic artery complication to anatomical reconstruction. (n = 46/772, 5.9%, P = 0.699) Seven patients (7/35, 20.0%) with extra-anatomical reconstruction experienced hepatic artery complication after anatomical reconstruction and changed to extra-anatomical reconstruction. Extra-anatomical reconstruction showed significant risk of increased bile leakage (OR = 4.167, CI 1.928–9.006, P < 0.001) along with multiple bile duct (OR = 1.606, CI = 1.022–2.526, P = 0.040) and hepaticojejunostomy (OR = 4.108, CI = 2.190–7.707, P < 0.001). However, extra-anatomical reconstruction showed no statistical relationship to poor biliary stricture-free survival (HR = 1.602, CI = 0.982–2.613, P = 0.059), graft survival (HR = 1.745, CI = 0.741–4.109, P = 0.203) and overall survival. (HR = 1.405, CI = 0.786–2.513, P = 0.251) Hepatic artery complication was related to poor biliary stricture-free survival (HR = 2.060, CI = 1.329–3.193, P = 0.001), graft survival (HR = 5.549, CI = 2.883–10.681, P < 0.001) and overall survival. (HR = 1.958, CI = 1.195–3.206, P = 0.008)
Conclusion: Extra-anatomical hepatic artery reconstruction during living donor liver transplantation was not a risk factor of biliary stricture, graft failure and overall survival.

BOS070 PROXIMAL SPLENIC VEIN EMBOLIZATION OF LARGE OR MULTIPLE PORTOSYSTEMIC SPLENORENAL SHUNTS DURING ADULT TO ADULT LIVING DONOR TRANSPLANTATION: NEW APPROACH FOR MAINTAINING ADEQUATE PORTAL FLOW

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Background: In adult living donor liver transplantation (ALDLT), adequate portal flow is essential for regeneration of the graft. In patient who has large portosystemic shunts, special procedures should be required to maintain flow and pressure of the portal vein. As a new method for modulation of large splenorenal shunt (SRS), we introduce intraoperative proximal splenic vein embolization (PSVE) and evaluate its efficacy and safety to prevent portal flow steal in ALDLT patients.
Methods: We retrospectively studied 13 patients who underwent PSVE for modulation of large SRS (> 10 mm in diameter). As primary control method for SRS or if portal steal syndrome remained after direct ligation, embolization to SRS or LRV clamping, we performed embolization of proximal splenic vein using radiological interventional approaches.
Results: The median patient age was 51.5 (range, 45–60) years; 9 were men. The median preoperative Model for End-Stage Liver Disease score was 16.(range, 9–41) and Most patients had hepatofugal flow in preoperative Doppler. The mean maximal diameter of the SRS on preoperative images was 1.34. Mean GRWR was 1.12 ± 0.30. 3 patients underwent SPVE with primary SRS modulation, and 10 patients underwent PSVE as secondary method because portal steal remained after primary SRS embolization or ligation. After PSVE, portal steal phenomenon in intraoperative cine-portogram disappeared in all patients. All patients recovered with satisfactory regeneration of the partial liver graft and there was no procedure-related complication.
Conclusions: PSVE to prevent the portal steal syndrome seems to be a safe and effective graft salvage procedure for huge or multiple spontaneous SRS in adult LDLT.

BOS072 TRANSJUGULAR INTRAHEPATIC PORTOSYSTEMIC SHUNT FOR PORTAL VEIN THROMBOSIS IN LIVER TRANSPLANT CANDIDATES: RECANALIZATION RATE AND CLINICAL OUTCOME

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ASST Grande Ospedale Maggiore Niguarda

Background: Portal vein thrombosis (PVT) is a common finding in patients with cirrhosis, its prevalence ranging between 0.6% and 40%. The occurrence of PVT is particularly feared in liver transplant (LT) candidates because it hampers the feasibility of LT and is associated with a higher morbidity and mortality post-LT.
Aim: We explored the role of transjugular intrahepatic portosystemic shunt (TIPS) for treating PVT in potential LT candidates, who cannot be treated with anticoagulation therapy (AT) or with inadequate recanalization after AT.
Methods and results: From March 2015 to December 2018 at ASST GOM Niguarda, 43 patients eligible for LT and with PVT were treated with TIPS. Baseline characteristics are reportedin

Baseline characteristics	Total number of patients, 43
Male, N (%)	28 (65%)
Age, median (range)	54 (31–70)
MELD, median (range)	13 (8–22)
Platelets count, median (rang	63 (21–179)
Ascites	13 (30%)
Previuos GI bleeding	11 (26%)
Ascites + previous GI bleeding	9 (9%)

Table 1: According to Yerdel classification, PVT was of grade 1 in 3/43 (7%) patients, grade 2 in 34 (79%), grade 3 in 3 (7%), and grade 4 in 1 (2%). Two of 43 (5%) patients had a cavernoma. Median follow-up from TIPS placement was 28 months (range 4–53). Recanalization after TIPS was complete in 24/43 (56%) and partial in 14/43 (32%). No patient had PVT progressing after TIPS. Twenty-one patients were listed for LT. Of these, 9 (43%) have already received a LT, 4 (9%) were subsequently delisted for clinical improvement and 8 (38%) are still on the waiting list. Twenty-two patients were not listed for LT for various reasons: 6 improved clinically, 3 developed extrahepatic complications, 8 died (of theme 5 for liver related complications) and 5 were lost to follow up. All patients resolved ascites and no patients experienced gastrointestinal bleeding after TIPS placement All patients maintained portal patency at regular imaging and were "surgically fit" for LT.
Conclusions: TIPS proved very effective for treating patients with PVT as it maintained portal patency in the great majority of patients who otherwise would not have been suitable for LT.

BOS073 INTERVENTIONAL RADIOLOGICAL TREATMENT OF COMPLICATIONS AFTER PEDIATRIC LIVER TRANSPLANTATION

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Introduction: Significant progress in percutaneous interventional correction of complications in children after liver transplantation was achieved during the period from May 2015 to December 2018.
Object: To estimate surgical technique and results of percutaneous interventional correction of surgical complications after pediatric liver transplantation.
Methods and Patients: 371 pediatric liver transplantations were performed during the observation period. 30 patients underwent correction of complications: 12 cases of arterial stenosis, 5 cases of the portal vein stenosis and 13 cases of biliodigestive anastomosis stricture. The age of the patients was from 6 months to 14 years. The body weight of the children varied from 6 to 51 kg.

Correction of arterial stenosis/thrombosis was managed by endovascular angioplasty: balloon vasodilation in 5 cases, balloon vasodilation and stenting in 7 cases. All patients after the intervention received continuous administration of heparin in an individual dose. Repair of the portal vein stenosis implied endovascular angioplasty: balloon vasodilation in 1 case, and stenting of the portal vein in 4 cases. All patients received oral antiplatelet therapy in the postoperative period. Management of the biliary stricture included percutaneous transhepatic external-internal drainage of the biliary tree. A total of 67 procedures were performed during the observation period in 13 patients.
Results: In patients after correction of vascular complications, there was a stable positive dynamics of Doppler carting, a reduce of the cytolysis syndrome and in patients after biliary stricture correction, decrease of the cholestatic syndrome, a decrease in the diameter of the bile ducts of the graft.

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Conclusion: Interventional radiological treatment of complications after liver transplantation is a safe and effective technique, being minimally invasive, and providing normal liver function in a short time.

BOS074 HEPATIC ARTERY RECONSTRUCTION USING RIGHT GASTROEPIPLOIC ARTERY IN LIVER TRANSPLANTATION

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Background: Hepatic artery anastomosis is still a challenge in liver transplantation due to short and small-caliber graft artery. Previous transarterial chemoembolisations, intimal wall dissection and size mismatches are the obstacles for hepatic artery anastomosis.
Methods/Materials: We retrospectively collected the data about right gastroepiploic artery anastomosis. Right gastroepiploic artery is disected from great curvuture of stomach and freed up to the origin. Demographic datas were obtained. The possible reasons for hepatic artery anastomosis were found. Postoperative complications were observed.
Results: In 6 cases we performed hepatic artery anastomosis by using right gastroepiploic artery. Five was male and 1 was female. All except one underwent living donor liver transplantation. Mean age was 51.8 years(41–64 years). The reasons were previous chemoembolisation in 2 cases, intimal injury during hılar dissection in 3 cases and 1 case with retransplantation. Patient followed 10 monthes. One patient had bile leakage an done patient died becasue of the recurent thrombosis due to antithrombin III deficiency
Conslusion: In the circumstance of improper recipient hepatic artery, right gastroepiploic artery is safe alternative arterial source for adequate arterial flow.

BOS075 SURVEY ON ABDOMINAL ORGAN PROCUREMENT WITHIN SCANDIA TRANSPLANT CENTERS

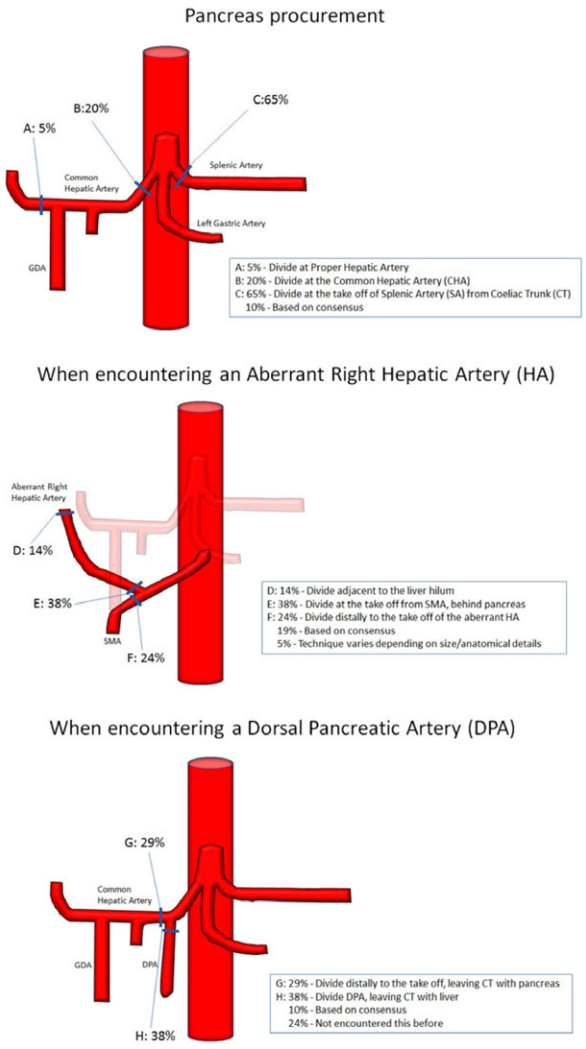
Sune Sun, Greg Nowak, Antonio Romano, Doctor Yao Ming
Karolinska University Hospital, Huddinge

Background:
The need for efficient and ameliorated organ procurement routines is as important as ever. We have conducted a survey to investigate differences in routines among procurement surgeons within Scandiatransplant.
Methods/Materials: In 2018, a survey regarding the abdominal organ procurement was sent to 88 surgeons within 10 surgical centers in Scandinavia. The questions were divided into categories focusing on personal experience (PE), surgical techniques (ST) and communication (C).
Results: 41 responses were received. *PE:* More than 50% of surgeons have practiced organ procurement for > 10 years, with a most common average activity of 5–10 per year. *ST:* 6% do not flush the biliary system during the procurement. 18% never perform sternotomy when no thoracic organs are planned for procurement. 28% choose to also cannulate the portal vein during cold perfusion. Discrepancies were seen in arterial division techniques, as shown in Image.
C: Majority of surgeons communicated orally to recipient surgeon, either directly (55%) or via the transplant coordinator (35%). Only 30% of recipient surgeons gave feedback to the procurement surgeon. The frequency of non-reported findings on grafts at back-table; and if such findings have led to the cancellation of a transplantation; are shown in Table.

Frequency of Non-reported findings on grafts at back-table	Kidney	Liver	Pancreas
<10%	55%	35%	70%
10–30%	39%	65%	24%
30–50%	6%	0%	6%

Encounters of surgical cancellation due to Non-reported findings past 5 years	Kidney	Liver	Pancreas
Never	18%	27%	70%
Maybe once	61%	54%	24%
More than once	21%	19%	6%

Conclusions: The surgeons performing organ procurement within Scandiatransplant have a long experience whilst on average performing few procurements per year. There are wide disparities with regards to organ procurement techniques. Non-reported findings on procured organs are encountered relatively frequently on the receiving end. Comparing these numbers with the transplant activity of Scandiatransplant, they would account for the cancellation of roughly at least 0.6% of kidney- (34/5966); 1.2% of liver- (24/1979); and 3.2% (13/409) of pancreas transplantations for the past 5 years. An overall improvement in the communicative routines is desirable.



BOS076 ROBOTIC LIVER RESECTION IS AN OPTION FOR BRIDGING AND DOWN-STAGING BEFORE LIVER TRANSPLANTATION

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Background: Minimally invasive liver surgery has several advantages as compared to the classic "open" approach. Besides reduced morbidity and earlier return to daily-life activites, it may result in an easier access to the abdomen in cases of future liver transplantation.
Methods: One hundred and ten patients underwent robotic liver surgery (RLS) at Policlinico University Hospital of Modena (University of Modena and Reggio Emilia) between May 2014 and February 2019. Among them, 57 resections were performed for HCC cases, 51 of whom were cirrhotic patients. Seven patients then successfully underwent LT after RLS, while 6 remained on the waiting list.
Results: Mean operative time of liver transplantation after robotic bridging resulted to be shorter as compared to a cohort of patients who received surgical bridging with open approach in our department (393.14 ± 134.27 vs. 515.4 ± 117 min, respectively, p = 0.01). Intraoperative estimated blood loss, transfusion of packed red blood cells (PRBCs) and cold ischemia time (CIT) were also lower in the robotic group, although without reaching a statistically significant threshold
Conclusions: Robotic approach for primary liver tumors represents an alternative for bridging patients with HCC to transplant or to downstage

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patients to within the Milan Criteria, in particular for lesions located in the so-called difficult segments and those that cannot be approached with loco regional treatment.

BOS077 REDUCING HEPATECTOMY TIMES IN DUTCH ORGAN PROCUREMENT TEAMS

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Background: Recent literature shows that a hepatectomy time > 60 minutes negatively influences DCD liver transplant results. An internal audit showed that approximately half of the DCD donor hepatectomies performed in the Netherlands exceeded this threshold.

This led to an improvement program, initiated by the procurement teams, to decrease DCD donor hepatectomy time without impairing procurement quality.
Methods: Between March and June 2018 the improvement program was implemented, consisting of creating awareness, identifying local habits of procurement teams, stimulating cooperation and knowledge exchange and refreshing theory and techniques on organ procurement. We analyzed hepatectomy times in general and in the 5 procurement teams before and after the intervention period, stratified by donor type.

We adjusted for BMI, age and the combination with thoracic procurement in a multivariable linear regression model.
Results: 267 hepatectomies between August 2017-January 2019 were analyzed. We identified a historical (n = 103, 7 months), intervention (n = 53, 3 months) and post intervention (n = 111, 7 months) period. The mean DCD hepatectomy time in the historical group was 76 ± 35 minutes. This significantly decreased during and after the intervention to 49 ± 20 minutes and 43 ± 12 minutes respectively (ANOVA, $p < 0.001$). 90% of DCD hepatectomies were procured within 60 minutes compared to 42% in the historical group. A similar effect was seen in DBD livers, from 51 to 46 and 40 minutes in respectively the historical, intervention and post intervention period (ANOVA, $p = 0.004$). Adjusted analysis showed that the decrease in hepatectomy times was independent of important confounders. The improvement in hepatectomy times had no negative effect on reported liver injuries, acceptance rates and transplantation.
Conclusion: A significant reduction in DCD and DBD hepatectomy times can be achieved through national collaboration by raising awareness and exchanging knowledge and skills.

BOS078 RESCUE HEPATECTOMY AS BRIDGING PROCEDURE TO LIVER TRANSPLANTATION IN PATIENTS WITH TOXIC LIVER SYNDROME: LAST CHANCE OR BEST OPPORTUNITY?

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University Hospital Tübingen

Background: Toxic liver syndrome (TLS) is a life-threatening condition defined as complete liver necrosis with critical multi-organ dysfunction not controlled by conventional treatments. In such a situation, liver transplantation (LT) is the treatment of choice. In case of time-fashion unavailable liver graft, a rescue hepatectomy (RH) with portocaval shunt prior to LT has been proposed. At this regard there are limited data in the literature.
Aim: Review of single center experience with RH for TLS to identify which pts may benefit of this procedure.
Methods: Retrospective single center analysis of 8 pts with TLS who underwent RH between 2007–2013. Data were collected during TLS, RH, anhepatic phase and LT and following scores were calculated: SAPS II, MELD, CLIF-C AD/ACL. Postoperative M&M and long-term results were analyzed.
Results: Demographics are reported in table. All pts were listed for LT immediately after their admission at ICU. The median anhepatic period lasted 13.25 h (range 2.5- 48). Straight after RH a significant improvement of MELD, bilirubin, transaminase, INR, FIO2 and norepinephrine infusion was observed.

PT.n	Age,Sex	Indication to RH	Liver Necr.	Vasoactive drugs	Metabolic acidosis	Resp.Failure	Renal Failure	Hep. Encephalop	PreRH Tretments
1	50M	PNF	Yes	Yes	Yes	Yes	Yes	Yes	MARS, CVVHD
2	37F	FhF (Budd-Chiari)	Yes	Yes	Yes	Yes	Yes	Yes	MARS ,CVVHD
3	62M	ACLF(Small-size.sy)	Yes	Yes	Yes	Yes	Yes	No	CVVHD
4	62M	PNF	Yes	Yes	Yes	Yes	Yes	No	CVVHF
5	52M	ACLF (Vanishing.bile. duct.sy)	Yes	Yes	Yes	Yes	Yes	Yes	CVVH
6	42M	PNF	Yes	Yes	Yes	Yes	Yes	Yes	CVVHF ,HD
7	58M	PNF (veno-occlusive.sy)	Yes	Yes	Yes	Yes	Yes	No	CVVHD
8	20F	FhF (Budd-Chiari)	Yes	Yes	Yes	Yes	No	No	None

5 out of 8 pts (62.5%) survived the anhepatic period, (in contrast to an expected survival of 15% according the mentioned scores) and underwent to a successful LT. Negative prognostic factors for irreversible TLS were: bilirubin > 30 mg / dl, transaminase > 2500 IU / L, MELD > 37, noradrenaline > 3.2 μg/kg/min, encephalopathy, cardiocirculatory resuscitation. 3 pts died after a median time of 6 mo(range 1–104) because of tumor recurrence; 2 pts are still alive after a median FUP of 40.5 mo(range 1–104).
Conclusions: RH represents a lifesaving procedure in selected patients affected of reversible TLS. Following criteria should be considered in the decision making process: high vasopressors requirement, therapy refractory metabolic acidosis, coagulopathy, renal and respiratory failure, encephalopathy > III°,no glyconeogenesis, no thermogenesis.

BOS079 COMBINED LIVER-KIDNEY TRANSPLANTATION IN CHILDREN: SINGLE CENTER EXPERIENCE

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Introduction: Over the past few decades, there has been significant progress in the development of combined liver and kidney transplantation in children.
Object: To evaluate the patient pool, surgical technique, and combined transplantation results in pediatric patients.
Methods and patients: From 2009 to 2018, 18 patients received a transplantation of liver fragments in combination with a kidney. The patients' age was from 3 to 16 years (8.8 years ± 4). The body weight of children varied from 10 to 38 kg (22.6 kg ± 9.5). The indications for transplantation were: autosomal recessive polycystic kidney disease in combination with congenital liver fibrosis or Caroli disease in 16 cases, Alagille syndrome associated with renal hypoplasia in 1 case, and primary hyperoxaluria 1 type in 1 case.

Hepatic graft was represented by the right lobe of the liver in 6 cases (5 transplants from a living related donor and 1 split-transplantation, the left lobe in 4 cases, left lateral segment in 6 cases (4 transplants from a living related donor and 2 split-transplants), whole liver in 2 cases.

The appropriate combination was chosen based on the weight of the patient, the size of the abdomen of the recipient, the availability of the organ for transplantation, the severity of the underlying disease.
Results: The observation period ranged from 1 months to 9 years. All patients are alive with satisfactory function of both grafts. Surgical complications were observed in 6 (35%) patients, and included bleeding in 2 (10.6%) patients, prolonged lymphorrhea in 3 (17.6%) patients, failure of sutures of the aponeurosis in 1 (5.8%) patient who underwent a series of operations prior to transplantation. Also, 1 (5.8%) of the patient developed hepatic artery steal-syndrome, that was managed by selective embolization of the splenic artery.
Conclusion: A pediatric combined liver and kidney transplantation is a safe and effective technique for children with end-stage liver and kidney failure.

BOS082 DETERMINANTS FOR HIGH HEPATIC ARTERY RESISTIVE INDEX AFTER LIVER TRANSPLANTATION: A SINGLE CENTRE MULTIVARIATE ANALYSIS

Rita Gaspari[1], Luciana Teofili[2], Vittorio Mignani[3], Antonio Franco[4], Alessandro Cina[5], Wolfango Avolio Alfonso[6]

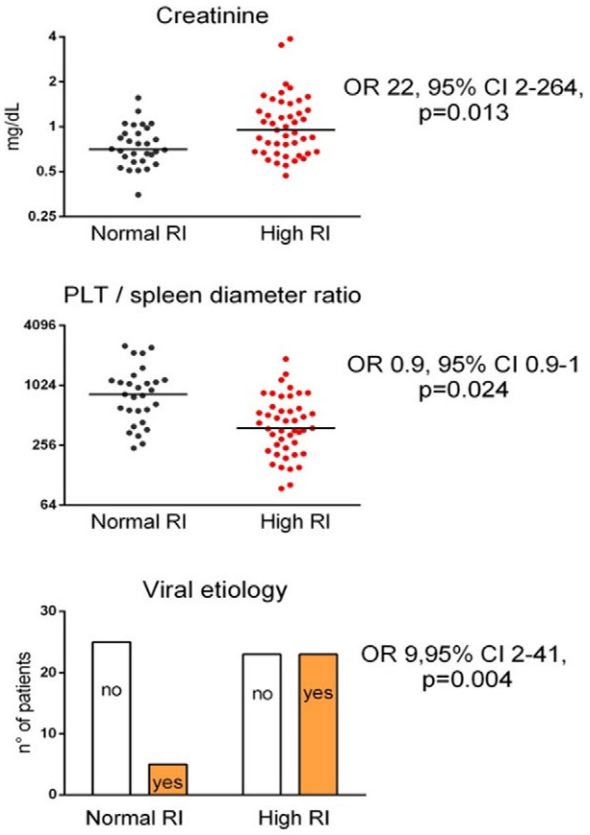
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Early transient increase of hepatic arterial resistive index (RI) at Doppler sonography is observed after liver transplantation (LTx). Determinants and prognostic impact of high RI have not been investigated during the ICU stay.

We analysed variables relative to 80 consecutive LTx, related to deceased donors (age, standard or not), recipients (age, sex, BMI, liver disease, diabetes, previous abdominal surgery, MELD, DMELD, SAPSII, Hb, PLT, INR, aPTT, fibrinogen, creatinine, spleen diameter and PLT/spleen diameter ratio; PLT at day + 1,+2 and + 3, PRBC, PLT and FFP units, day + 90 mortality), surgery (duration and cold ischemia time) and graft recovery (MEAF, day + 3 ALT, rejection, length of stay in ICU). PW Doppler RI values were recorded day + 3 by the same experienced operator at post anastomotic level of the main artery. According to literature, 1 patient (pt) with very early hepatic arterial thrombosis and 4 pts in the low group were excluded. Comparison between normal-and high-RI groups included 75 pts. Univariate and multivariate analysis were performed. A p value < 0.05 was considered significant.

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Pts were grouped has having low (<0.55; n = 4), normal (0.55–0.80; n = 30) and high (0.80–1; n = 45) RI values. At univariate analysis, pts showing high RI were older and more frequently HBV and/or HCV infected; moreover, they had lower PLT count, higher creatinine, INR and aPTT values, and more marked spleen enlargement. At multivariate analysis, high creatinine (OR 22, 95% CI 2–264, p = 0.013), viral etiology (OR 9, 95% CI 2–41, p = 0.004), and low PLT/spleen diameter ratio (OR 0.9, 95% CI 0.9–1 p = 0.024) significantly predicted the occurrence of high RI. Pts with high or normal RI had similar rejection rate, graft recovery, length of stay in ICU and day-90 mortality.The whole of variables associated with high RI suggest that pts with portal hypertension, viral indication and kidney dysfunction are more prone to show high RI, which, however, do notimpact on prognosis.

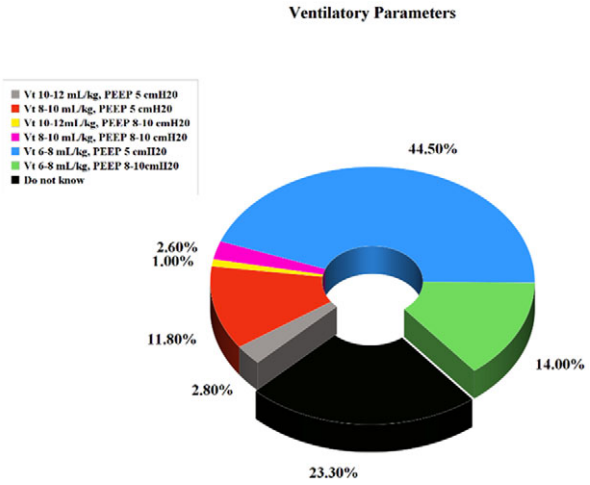


BOS083 ORGAN DONATION SURVEY AMONG HEALTH CARE PROFESSIONALS IN ARGENTINA

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[1]Hospital Italiano de Buenos Aires; [2]Fundación Favaloro

Our objective was to survey Health Care Professionals (HCPs) responsible for the care of potential organ donors (PODs) on attitude toward organ donation, knowledge about procurement process and potential lung donor (PLD) management nationwide.
Methods: An 38-item anonymous questionnaire was distributed online among HCPs previously registered in an Argentinian intensive care society between March and September of 2018.
Results: There were 736 responses, 61% female, with a mean age of 41 (9) years old. Sixty-one percent were physicians, 21% nurses and 18% physiotherapists. Eighty-eight percent of respondents showed a positive attitude towards organ donation, of which 78% were registered as organ donors. The HCPs classified their level of knowledge about organ donation as "suitable" and 80% of them mentioned knowing the care measures for PODs. Of the surveyed HCPs 68% participated actively in the procurement process. The criteria the POD must meet to be considered a PLD were correct in 71% of the answers. However, only 19% had a PLD management protocol. After diagnosing brain death, 51% made no changes to any of the ventilator parameters, and nearly a quarter were not aware of which parameters to select for PLDs (Figure 1).

In case of hypoxemia, 84% would implement some intervention to improve oxygenation. The most frequently used strategies were: positive end expiratory pressure titration, endotracheal suctioning with a closed-circuit and recruitment maneuvers.
Conclusions: HCPs surveyed in Argentina had a positive attitude towards organ donation. They answered correctly most of the questions related to knowledge about procurement process. However lacked detailed knowledge and lung procurement management protocols.



BOS084 CERIA-ZIRCONIA ANTIOXIDANT NANOPARTICLES ATTENUATED HYPOXIA INDUCED HUMAN KIDNEY PROXIAML TUBULAR EPITHELIAL CELLS' APOPTOSIS BY REDUCING MITOCHONDRIAL INJURIES

Sehee Yoon[1], Jee-Won Lee[1], Hyo-Inn Jeon[1], Won-Min Hwang[1], Sung-Ro Yun[1], Kuk-Ro Yoon[2], Sang-Eun Hong[3]
[1]Konyang University College of Medicine; [2]Hannam University, Chemistry; [3]Hanam Univsersity, Chemistry

Aims: Ischemia/reperfusion injury, resulting from hypoxic damage within a graft, is the leading cause of cell death and graft rejection. Ceria-zirconia nanoparticles (CZ NPs) play a role as an more stable antioxidants than ceria nanoparticles. In this study, we investigated whether CZ NPs as an enhanced multi-antioxidant have a important role in ischemic kidney injuries.
Main methods: The ischemic injuries of HK-2 cells were induced by hypoxia chamber or $CoCl_2$. CZ NPs with size 2–3 nm were synthesized using non-hydrolytic sol-gel reaction. To investigate the catalytic effect of CZ NPs, reactive oxygen species (ROS) production was measured using DHE, DCF-DA and Amplex red assay. Cellular survival rate and cytotoxicity were measured with 3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl tetrazolium bromide (MTT) assay. Cellular signaling pathway were studied by real time polymerase chain reaction and Western blot analysis. Mitochondrial changes were investigated by detecting BAX and BCL-2 proteins in mitochondrial isolation. The proteins of OPA-1 and DRP-1 were also measured for detecting mitochondrial dynamics.
Results: The survivals of HK-2 cells were significantly decreased after hypoxia exposures while pretreatment of CZ NPs improved of hypoxia induced HK-2 cells' survivals by reducing ROS production, downregulating proinflammatory markers (decreasing the protein levels of pp38 and pJNK) and improving mitochondrial damages (decreasing the mitochondrial BAX and DRP-1 and increasing OPA-1).
Conclusions: CZ NPs have the potential as a therapeutic medicine for preventing ROS-related ischemia reperfusion injury after transplantation by attenuating mitochondrial damages.

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BOS085 INHIBITION OF CXCR3 EXPRESSION THROUGH BLOCKADE OF STAT3 ALPHA SIGNALING DOWN-REGULATE INFLAMMATION OF RENAL ISCHEMIA-REPERFUSION INJURY

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Background: Signal transducer and activator of transcription 3(STAT3) is the main mediator of IL-6 cytokine signaling.Although it exists in two isoforms:the full-length STAT3α and the truncated STAT3β, their role in acute kidney injury is not clarified.We investigated their relative function through inhibiting STAT3α in ischemia-reperfusion(IR) renal injury.
Method: IR injury was induced in B6 wild type mice.Stattic(a nonpeptide small molecular inhibitor of STAT3 activation) was treated 3 hours prior to IR injury.We quantified intrarenal cytokine expression using real-time PCR and performed FACS analysis.We cultured human tubular epithelial cells(TECs) in hypoxic condition and evaluated the effect of Stattic treatment.We detected the isoforms of phosphorylated STAT3 using western blot analaysis.
Results: IR injury produced more severe tubular damage in control group than in Stattic-treated mice(serum creatinine,2.2 ± 0.1 versus 1.6 ± 0.1 mg/dL, $p < 0.05$). Although inflammatory chemokines, such as IL-6,total STAT3, STAT3α, CXCR3,IL-10 and TGF-β were increased by IR injury in control group, they were attenuated in Stattic-treated mice. Apoptosis of TECs and infiltration of mononuclear cells and macrophages were decreased and the expression of STAT3α as well as total STAT3 was reduced in Stattic-treated mice.These findings were supported by in-vitro study with human TECs. Whereas the level of pSTAT3α was elevated in the hypoxia-conditioned TECs and it was decreased in Stattic-treated cells, the level of pSTAT3β was not changed in both cell groups.The expression of CXCR3 was decreased in accordance to the STAT3α decrease and the supernatant levels of IL-6 and IL-8 were decreased in Stattic-treated cells.
Conclusion: We demonstrated that the activation of STAT3 is associated with progression of IR injury and the α-isoform may contribute as major player.These mechanisms of STAT3/CXCR3 signaling according to each isoforms suggest a novel strategy for management of AKI with STAT3 ihibitor.

BOS086 ESTRADIOL TREATMENT REDUCES LUNG LEUKOCYTE INFILTRATION AFTER BRAIN DEATH IN FEMALE RATS

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Background: Brain death (BD) impacts lung viability for transplantation, by increasing leukocyte infiltration and chemokines production. After BD, female rats develop higher lung inflammation than male, associated with female sex hormones reduction. Evidence highlight protective effects of estradiol on lung inflammation in trauma models. Here we investigated the effect of estradiol treatment in female rats submitted to BD.
Methods: Wistar rats were submitted to BD, by the rapid inflation of an intracranial catheter, and maintained for 6 h. After 3 h, rats were treated with 17β-estradiol (E2 – 50 μg/mL i.v. 2 mL/h). Sham-operated (S) rats were used as controls. After 6 h, lung samples were prepared for histopathological analysis, evaluation of ICAM-1 and VCAM gene expression and culture (explant). IL-1β, MIP-1α and TNF-α were quantified in blood and explant. Leukocyte infiltration was assessed via intravital microscopy.
Results: After BD, higher number of leukocyte was observed in lungs by intravital microscopy and prevented by E2 (S: 76 ± 6.5; BD: 98.1 ± 9: E2: 68.2 ± 4 cell/0.2 mm2; $p = 0.009$). E2 effect was also observed in leukocyte number in histology (S: 2127 ± 149.5; BD: 2343 ± 96.3: E2: 1851 ± 164.3 leukocytes/mm2; $p = 0.011$). BD increased gene expression of ICAM-1 and VCAM, whereas E2 reduced ICAM-1 (ICAM-1 – S: 1.3 ± 0.1; BD: 3 ± 0.8: E2: 1.4 ± 0.1; $p = 0.042$; VCAM – S: 1.1 ± 0.1; BD: 4 ± 0.9: E2: 3 ± 0.4; $p = 0.008$). Serum IL-1β, MIP-1α and TNF-α were increased after BD and E2 treatment reduced IL-1β. In lung explant MIP-1α levels were increased after BD and reduced by E2.
Conclusion: E2 treatment of female BD rats exerts effect in controlling leukocyte mobilization into lungs, probably by reducing the release of chemokines, such as MIP-1α and expression of ICAM-1. Once inflammatory infiltrate might influence transplant reliability, E2 could be considered as a therapeutic tool to reduce lung inflammation in the female donor. Grant 2016/03651–0, São Paulo Research Foundation (FAPESP).

BOS088 A COMPARATIVE STUDY OF PARATHYROID TRANSPORT SOLUTION AND UNIVERSITY OF WISCONSIN SOLUTION: EFFECT ON CALCIUM-SENSING RECEPTOR AND VITAMIN-D RECEPTOR DURING COLD ISCHEMIA IN PARATHYROID TISSUE

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Background: Parathyroid transport solution (PTS) is a preservation solution that contains high-inorganic salts, vitamins, essential and non-essential aminoacids with balanced pH (7.2–7.4). In addition, selenium is added in PTS for detoxifying the parathyroid tissue during cold ischemia.This has been particularly designed for parathyroid preservation and transportation. On the other hand, University of Wisconsin solution (UW) has been recognized as gold standard and known for providing long-term graft preservation successfully.In this study, our aim was to compare PTS and UW solution in parathyroid tissue via cell viability, parathormone release, calcium-sensing receptor (CaSR) and vitamin D receptor (VDR) level during cold ischemia.
Methods/Materials: Parathyroid hyperplasia tissue were obtained from patients who diagnosed with secondary hyperparathyroidism and underwent surgery due to chronic renal failure (n = 7).After pathological confirmation, rest of the glands were divided into half and each part of each gland was placed in an ice cold PTS and UW solution separately.The tissue samples were removed from cold storage after 0 (approximately 30 minutes of cold ischemia was accepted as zero time point), 6,12,18, and 24 hours and cells were isolated for the viability detection and protein extraction.Immunoblotting was performed for CaSR and VDR.In addition, cells were cultivated after 30 days of cryopreservation for parathormone release evaluation.
Results: Cell viability, parathormone release, CaSR, and VDR expression remained stable during cold ischemia between PTS and UW solution and as well as between time intervals.
Conclusion: PTS is designed for parathyroid tissue transportation.PTS retaining the same degree of effectiveness as UW solution can provide for parathyroid tissue, however PTS is a low-cost solution. This patent-pending product can support cell viability and PTH release, and protects CaSR and VDR functionality for up to 24 hours of cold ischemia.

BOS089 ESTRADIOL REDUCES HEART INJURY AND APOPTOSIS AFTER BRAIN DEATH IN FEMALE RATS

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Background: Clinical evidence correlates female donor hearts with higher early mortality in male recipients. Brain death (BD) induces hemodynamic and immunologic alterations impacting organ viability. After BD, female rats present higher heart inflammation associated to female sex hormones reduction. In this study, we aimed to investigate the estradiol influence on cardiac damage caused by BD in female rats.
Methods: Female Wistar Rats (8 weeks) were submitted to BD by rapid intracranial balloon rapid inflation and maintained for 6 h. Rats received 17β-estradiol (E2, 50μ/mL i.v. 2 mL/h) or vehicle immediately after BD induction. Sham-operated (S) rats were used as controls. Heart samples were collected, leukocyte infiltration was analysed and serum troponin-I quantified. In parallel, endothelial nitric oxide synthase (eNOS) expression was evaluated and apoptosis investigated by means of BCL-2 and Caspase-3 expression.
Results: BD induced an increase of serum concentrations of troponin, which were reduced by estradiol treatment (S: 356.1 ± 65.23, BD: 864 ± 94.89, E2: 443.9 ± 83.68 pg/ml; $p = 0.0006$). In parallel, E2 decreased leukocyte infiltration into the heart (S: 83.13 ± 7.01, BD: 105.30 ± 7.39, E2: 50.17 ± 5.68 cells/mm2; $p < 0.0001$) and heart Caspase-3 expression (S: 9.97 ± 2.88, BD: 40.76 ± 10.4, E2: 9.23 ± 2.64 stained area/total area $x10^{-3}$; $p = 0.002$). E2 was also able to increase heart BCL-2 expression (S: 100.6 ± 27.15, BD: 100.5 ± 19.37, E2: 158.3 ± 14.12 stained area/total area $x10^{-3}$; $p = 0.034$). Regarding the eNOS expression, E2 increased its expression in cardiac tissue (S: 23 ± 4, BD: 9 ± 2, E2: 41 ± 5 stained area/total area $x10^{-3}$; $p < 0.0001$).
Conclusion: Our data showed that E2 can prevent cardiac injury induced by brain death, reducing troponin release, heart cell apoptosis, modulating leukocyte infiltration and NO availability. These results point to a potential therapeutic use of estradiol in order to improve heart condition in female BD donors.
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BOS090 ENERGY METABOLISM BREAKDOWN AND PROTECTIVE CELL SIGNALING MECHANISMS IN THE PREVENTION OF FATTY LIVER GRAFT ISCHEMIC INJURY DURING COLD PRESERVATION

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Background: Energy metabolism breakdown is critical for the ischemic injury of fatty liver graft preservation. In this communication, we explore the relevance of preventing the energy breakdown and its consequences on the underlying pathophysiological mechanisms involved in fatty liver preservation when UW and IGL-1 solutions are used.
Material and methods: Fatty liver from Male obese Zücker rats (11 weeks old) were rinsed and stored in IGL-1 and UW solutions, respectively at 4°C. Then livers were subjected to Ringer solution washout, and stored at-80°C until assays. Cold ischemic injury was devaluated by AST and ALT; as well as mitochondrial damage was determined by glutamate dehydrogenase (GLDH) activity. Injury damage was correlated with determinations of changes in ATP and adenosine protein kinase (AMPK), ATP dependent/ ATP non-dependent chymotrypsin proteasome activities, as well as the ubiquitinated protein expression. In addition, XBP and ATF6 (endoplasmic reticulum markers) and liver apoptosis were also measured.
Results: Data revealed that histological findings and liver injury well correlated with the prevention of ATP failure and AMPK activation, both due to the oxygen deprivation during organ cold storage in UW and IGL-1 solution. These findings also correlated with the ATP-chymotrypsin activities and proteasome expression found. This was consistent with the cleaved caspase 3 protein expression, which was higher in UW than in IGL-1.
Conclusions: These data confirm that the effective prevention of energy metabolism breakdown during organ preservation (UW and IGL-1) is critical to promote cytoprotective mechanisms (AMPK, ATP-dependent proteasome activation) to prevent partly the cold ischemia injury. Data reported here, confirm that the presence of the different oncotic agents in UW (HES) and IGL-1 (PEG35) is also an important factor to be considered in future investigations.

BOS091 ACTIVATION OF NQO1 REDUCED ISCHEMIA-REPERFUSION RENAL INJURY IN MICE

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Introduction: Ischemia-reperfusion(IR)-induced reactive oxygen species (ROS) are thought to be a major factor in the development of acute renal injury by promoting the initial tubular damage. NAD(P)H:quinone oxidoreductase 1 (NQO1) is a well-known antioxidant protein that regulates ROS generation. We investigate whether NQO1 modulates the renal IR injury.
Methods: C57BL/6N NQO1-deficient mice (NQO1-/-) were generated. Mice were sacrificed at 4, 12, 24, and 48 h after the surgical procedure. I-R was performed using vascular clamp for 30 min. We analyzed renal function, oxidative stress, and tubular apoptosis after IR injury.
Results: NQO1-/- mice showed increased blood urea nitrogen and creatinine levels, tubular damage, oxidative stress, and apoptosis. In the kidneys of NQO1 + /+ mice, the cellular NADPH/NADP+ ratio was significantly higher and NOX activity was markedly higher than in those of NQO1 + /+ mice. The activation of NQO1 by β-lapachone (βL) significantly improved renal dysfunction and reduced tubular cell damage, oxidative stress, and apoptosis by renal IR. Moreover, the βL treatment significantly lowered the cellular NADPH/NADP+ ratio and dramatically reduced NOX activity in the kidneys after IR injury. From these results, it was concluded that NQO1 has a protective role against renal injury induced by IR and that this effect appears to be mediated by decreased NOX activity via cellular NADPH/NADP+ modulation.
Conclusions: NQO1 activation might be beneficial for ameliorating renal injury induced by IR.

BOS093 DUAL BLOCKADE OF MIR-24 AND MIR-145 INCREASES EXPRESSION OF ANTIOXIDANT ENZYMES HMOX1 AND SOD2

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Introduction: Ischaemia reperfusion injury (IRI) causes significant damage to organs from deceased donors. microRNAs are short non-coding RNAs which each cause repression of many target genes. miR-24-3p and miR-145-5p are two microRNAs with potential detrimental roles in IRI. Our group has used antisense oligonucleotides (ASO) to block miR-24-3p during *ex vivo* normothermic machine perfusion (NMP) of human kidney grafts. This project aimed to model changes in expression of miR-24-3p and miR-145-5p with hypoxia and assess whether ASO therapy can alter the expression of the genes which they target.
Methods: IRI was modelled by placing Human Umbilical Vein Endothelial Cells (HUVECs) into a hypoxic incubator (1% O2) for 24 hrs, followed by reoxygenation for 6 hrs. microRNA and mRNA expression was quantified with RT-qPCR. Results are displayed as fold change.
Results: Hypoxia caused significant upregulation of miR-24-3p (1.51 fold change;$p \leq 0.001$) and miR-145-5p (1.95;$p \leq 0.001$) in HUVECs, which failed to normalise following 6 hours of reoxygenation. Hypoxia also caused significant downregulation of targets HMOX1 (0.165;$p \leq 0.001$) and SOD2 (0.502;$p \leq 0.001$) over the same time course, which again failed to normalise after 6 hours of reoxygenation. This suggests that the miRNA expression changes are exerting significant effects on target mRNA. Using lipofectamine based ASO transfection to inhibit miR-24-3p and miR-145-5p in combination caused significant upregulation of HMOX1 (2.62;$p < 0.05$) and SOD2 (1.61; $p < 0.05$) compared to scramble sequence ASO (control) following hypoxia and reoxygenation (Fig 1). Blockade of either miRNA in isolation failed to alter expression of HMOX1 or SOD2.
Conclusion: Dual blockade of miR-24-3p and miR-145-5p significantly increased expression of antioxidant genes HMOX1 and SOD2, which both have established protective roles in renal IRI. Dual blockade of miR-24-3p and miR-145-5p during NMP represents a novel therapeutic option worthy of further research.

BOS094 MIR-20A INHIBITION OF AUTOPHAGY VIA AKT AND BIM PROTECTS AGAINST RENAL ISCHEMIA-- REPERFUSION INJURY

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We have previously shown that the miR-17-92 encoding miR-17, miR-18a, miR-19a, miR-19b, miR-20a, and miR-92 protected against renal ischemia–reperfusion (I/R) injury; however, the exact role of each miRNA remains unknown. We extended our investigation to miR-20a because it is the most prominently upregulated miRNA in renal I/R injury. We found that autophagy was considerably induced in *in vivo* and *in vitro* models and that miR-20a was upregulated *in vivo* but downregulated *in vitro*. Additionally, miR-20a agomir, a miR-20a mimic, considerably reduced apoptosis *in vitro* by decreasing autophagy. miR-20a directly inhibited the expression of PTEN and BIM and attenuated apoptosis and autophagy, similar to the effect of chloroquine, a pharmacological inhibitor of autophagy. Conversely, the antiautophagic and antiapoptotic effect of miR-20a could be reversed using a small interfering RNA (siRNA) against AKT, downstream from PTEN and BIM. Further, AKT-mediated beclin-1 phosphorylation was increased, which might play a direct antiautophagic effect. Finally, miR-20a agomir administration considerably inhibited autophagy and apoptosis, thereby resulting in a significant recovery of renal function and tissue injury in a mouse renal I/R injury model. Our results establish a renoprotective role for miR-20a in renal I/R injury, where it might interfere with autophagic mechanisms.

BOS096 MICRORNA-214 IS UP-REGULATED EARLY FOLLOWING RENAL ISCHAEMIA REPERFUSION INJURY AND SUBSEQUENT FIBROSIS

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Background: Ischaemia reperfusion injury (IRI) is an inevitable consequence of transplantation and can result in delayed graft function. MicroRNAs (miRs) are small non-coding single strand RNAs that can inhibit gene expression by post-transcriptional repression or degradation of target mRNA. MiR-214 has been shown to be pro-fibrotic in pre-clinical models of chronic kidney disease however its role in the early phase of acute renal injury has yet to be fully elucidated. In this study we sought to characterise miR-214 expression in kidneys over a timecourse following a period of renal IRI and subsequent development of fibrosis.

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Methods: 8–10 week old male C57Bl/6 mice underwent 18 minutes unilateral renal IRI and were culled at 2, 7, 14, 21 and 28 days post procedure (n = 7/8 per timepoint); time-matched sham operated mice were used as controls (n = 4). Kidneys were assessed by histology and gene expression changes detected using qRT-PCR.
Results: Induction of IRI resulted in significant acute kidney injury compared to shams as assessed by acute tubular necrosis (ATN) on histology (67.3% vs 1.25% at 2 days $p < 0.0001$), a 364-fold increase in KIM-1 gene expression ($p < 0.0001$) and up-regulation of pro-inflammatory markers. Importantly, miR-214 was significantly increased during the early phase of injury (1.5 and 3.1-fold increase at 2 days and 7 days respectively $p < 0.05$). Expression remained increased at 14, 21 and 28 days (4.3, 5.5- and 4.1-fold increase respectively, $p < 0.01$) as histological assessment showed rapid progression to fibrosis and significant upregulation of pro-fibrotic gene expression.
Conclusions: MiR-214 was significantly increased as early as 2 days following injury demonstrating a potential role in the acute injury phase and inflammatory response. MiR-214 remained upregulated in line with worsening fibrosis and given its persistent elevation in all phases of injury further examination of its role in IRI is warranted as it could represent a novel target.

BOS08 – KIDNEY REJECTION AND HISTOLOGY: THE IMMUNE RESPONSE IN KIDNEY TRANSPLANTATION: NEW INSIGHTS

BOS097 DYNAMIC TIME WARPING -- AN APPROACH TO GROUPING DSA RESPONSES IN HLA-I KIDNEY TRANSPLANT PATIENTS

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Background: The early dynamics of donor specific antibodies (DSA) after HLA-incompatible (HLAi) kidney transplantation are of great clinical interest. For example early fast rise and subsequent steep fall of DSAs within the first months is associated with acute antibody mediated rejection (AMR), which in turn may reduce the graft function. Here we seek to expand upon this by applying a clustering technique to identify the dynamic groups present in the DSA and their respective association with graft outcomes.
Method: 133 DSA are recorded up to daily (days 1–40). Before classification DSA are first standardised with values scaled between 0 and 1. Second an agglomerative hierarchical method is used, this begins by assigning each DSA to its own cluster. Lastly the most similar clusters are merged together and a new cluster is formed by the average group profiles – this repeats until one remains. Similarity is determined by a dynamic time warping (DTW) measure which is able to accommodate for small shifts in time between profiles.
Results: Results indicate the presence of two major groups DSA fall in to: fast rise and subsequent steep fall (Set1), and slow rise and slow fall (Set2). These groups account for 60% of the DSA. Several other sub groups are also present and are being further investigated. Another notable group is characterised by a rise which forms into a plateau (Set3) which accounts for a further 10% of the DSA. The percentage of AMR for each group is 81%, 73% and 57% respectively.
Conclusion: The DTW hierarchical clustering method used provides a powerful approach to grouping DSA. Two major groups and several sub groups have presented themselves for further study. Preliminary results indicate that a fast rise and subsequently steep fall correlate stronger with the likelihood of AMR, which complements previous research. These dynamic changes in DSA and episode of AMR may predict differential medium term graft outcomes following HLAi Kidney transplantation.

BOS098 EVIDENCE FOR INVERTED DIRECT ALLORECOGNITION IN DONOR SPECIFIC ANTIBODY GENERATION AFTER SOLID ORGAN TRANSPLANTATION

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Background: Generation of de novo DSA post transplantation is a major cause of graft loss. The current immunologic dogma holds that the differentiation of recipient's allospecific B cells into DSA-producing plasmacells requires the help of recipient's CD4 + T cells of indirect allospecificity: i.e. able to recognize the complexes made of recipient's MHCII/processed alloantigen on the surface of allospecific B cells.
Using a translational approach, we herein challenge this vision and provide evidence that passenger CD4 + T cells from donor's origin are able to trigger DSA generation by direct recognition of recipient's MHC class II molecules on allospecific B cells.
Methods and results: Despite being devoid of CD3 + T cells, CD3εKO C57BL6 mice develop a fast (but transient) DSA response after transplantation with a fully mismatched CBA (H2k) heart graft.
CD4 + T cells can be isolated from the heart of CBA mice and are efficiently depleted by administration of anti-CD3 or anti-CD4 monoclonal antibodies. T cell depletion in the donor abrogates DSA generation in CD3εKO recipient mice.
Interaction between donor's (CBA) T cells and recipient's (C57BL6) B cells were further evidenced in vitro, allowing clarifying the molecular mechanisms involved in this non-canonical DSA generation.
Finally, the clinical relevance of our experimental findings was suggested by the fact that renal graft perfusion liquids (n = 20) do contain donor's lymphocytes, including T follicular helper cells.
Conclusion: Our work demonstrates that, in addition to recipient's CD4 + T cells of indirect allospecificity, donor CD4 + T cells transplanted with the graft can also provide help to allospecific B cells through a previously overlooked « inverted direct » pathway.

BOS099 IMPACT OF CYCLOSPORIN ON INNATE CD8 + T-CELLS IN TRANSPLANT PATIENTS WITH MINIMIZED IMMUNOSUPPRESSION

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Neoplasia associated with the loss of antitumor immunosurveillance is a major long-term complication of organ transplantation. Our laboratory study innate CD8 + T-cells, an unconventional αβ-T cell subset, expressing markers of both innate immune cells (receptors of Natural Killer cells (KIR)) and memory T-cells, particularly the transcription factor Eomes. These features, along with our description of their numerical and functional restoration in chronic myeloid leukemia patients responding to treatment, support the hypothesis that innate CD8 + T-cells have a role in cancer immunosurveillance, including in transplant patients.
Peripheral Blood Mononuclear Cells (PBMCs) were collected from 23 patients of a single-center study (CHU Poitiers), who had received renal transplantation for more than 10 years, with no sign of rejection under minimized immunosuppression (low dose of calcineurin inhibitor). Innate CD8 + T-cells (CD3 + CD8 + panKIR+Eomes+) from patients and 16 healthy donors (HD) were immunolabeled and analyzed by flow cytometry. Furthermore, HD PBMCs were cultured *in vitro* for 7 days with cyclosporine (0.1 μg/ml) prior to flow cytometry analysis.
Ex vivo, transplant patients have an increased frequency of innate CD8 + T-cells as compared to healthy donors (mean+/-SD: 5.1%+/-3.1 and12.0%+/-9.8 of CD3 + CD8 + T-cells in HD and patients, respectively, $p < 0.01$). No difference between patients based on their history of cancer was observed. *In vitro*, cyclosporine treatment triggers a 2.5-fold increase of innate CD8 + T-cells ($p < 0.01$). This result is associated with a 2-fold increase of PD-1-expressing cells, a phenomenon that is found in the innate CD8 + T-cell pool ($p < 0.05$) but not in their meanstream CD8 + T-cell counterparts, showing the selective activation state of these cells.
Our study provides the first demonstration of an *in vivo* effect of cyclosporine on innate CD8 + T-cells. Moreover, our *in vitro* resultssuggest a direct action of cyclosporin on this cell population.

BOS100 IMMUNOMICS OF RENAL ALLOGRAFT ACUTE T-CELL MEDIATED REJECTION BIOPSIES OF TACROLIMUS- AND BELATACEPT-TREATED PATIENTS

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Background: Belatacept-based therapy in kidney transplant recipient has been shown to increase long-term renal allograft and patient survival compared with calcineurin inhibitor based therapy, however with an increased risk of acute T cell-mediated rejection (aTCMR). An improved understanding of co-stimulation blockade resistant rejections could lead to a more personalized approach to belatacept therapy. Here, immunomic profiles of aTCMR biopsies of patients treated with either tacrolimus or belatacept were compared.
Methods: Formalin-fixed paraffin-embedded (FFPE) renal transplant biopsies were used for immunohistochemistry, and gene expression analysis using the innovative NanoString technique. To validate NanoString, transcriptomic

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profiles of patients with and without biopsy-proven aTCMR were compared. Biopsies from 31 patients were studied: 14 tacrolimus-treated patients with aTCMR, 11 belatacept-treated patients with aTCMR, and 6 controls without rejection.
Results: A distinct pattern was seen in biopsies with aTCMR compared to negative controls: 78 genes had a higher expression in the aTCMR group (FDRPV < 0.05 to 1.42e-05). The most significant were T cell-associated genes (CD3, CD8, and CD4; p < 1.98e-04), γ-interferon-inducible genes (CCL5, CXCL9, CXCL11, CXCL10, TBX21; p < 1.33e-04) plus effector genes (GNLY, GZMB, ITGAX; p < 2.82e-03). Immuno-phenotypical analysis of the classic immune markers of the innate and adaptive immune system was comparable between patients treated with either tacrolimus or belatacept. In addition, the transcriptome of both groups was similar.
Conclusions: No difference was found in immunomics of aTCMR biopsies of tacrolimus- and belatacept-treated patients. This suggests that clinically-diagnosed aTCMR reflects a final common pathway of allo-recognition which is unaffected by the type of immunosuppressive therapy.

BOS101 THE IMPACT OF INVERTED RENAL CD4/CD8 RATIO IN THE FIRST 3-MONTH BIOPSIES POST-TRANSPLANT ON THE DEVELOPMENT OF TRANSPLANT GLOMERULOPATHY AND VASCULOPATHY IN RENAL ALLOGRAFTS

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Background: Inversion of the CD4/CD8 ratio identified as a hallmark of immunosenescence and an independent predictor of the development of arteriosclerosis and mortality in the general population. We aimed to assess the influence of an inverted renal CD4/CD8 ratio on the development of transplant glomerulopathy (TG) and transplant arteriosclerosis (TA).
Methods: Total 161 patients included in the study. Both interstitial and glomerular CD3, CD4, CD8 positive lymphocytes, leukocytes, and macrophages graded. Patients separated into two groups as Group 1(CD4/CD8 < 2) and Group 2 (CD4/CD8 ≥ 2).
Follow-up biopsies analyzed for the development of TG and TA.
Results: Among161 patients 72 were in Group1, and 89 were in Group 2. No difference found between the two groups in regards to cardiovascular risk factors. Mean CD4/CD8 ratio found to decrease with the increasing time of hemodialysis (HD) (p < .001). The development of ABMR, vascular rejection and the mean number of AR episodes found higher in Group1 (1.57 ± 0.9) than Group 2 (0.7 ± 0.7) (p < .001). The mean CD4/CD8 ratio showed a negative correlation with glomerular and interstitial leukocyte and macrophage infiltration (p < .001). The mean time of the development of TG and TA was seen earlier in Group1 than Group 2 (p < .001). The mean CD4/CD8 ratio was 1.1 ± 0.8 and 1 ± 0.7 for patients who developed TG and TA respectively, while it was 2.3 ± 0.8 and 2.4 ± 0.8 for who did not have TG and TA respectively. Overall -10-year graft survival was 47% and 88% for Group 1 and Group 2 patients respectively (p < .001).
Conclusion: Uremia and HD associated proinflammatory condition underlies the impaired T-cell system by causing premature immunological aging, and this status virtually unchanged after transplant. Mean CD4/CD8 ratio found to decrease with the increasing time of HD and in turn predisposing to early onset of TG and TA. We identified an inverted CD4/CD8 ratio as an immunological risk profile for the high incidence of AR, early onset of TG and TA.

BOS103 ADVANCED IMMUNOLOGICAL AGEING DEFINED BY A VERY LOW THYMIC FUNCTION IDENTIFIES RECIPIENTS WITH SUBSTANTIAL INCREASED RISK FOR LONG-TERM MORTALITY AFTER KIDNEY TRANSPLANTATION

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Background: End-stage renal disease is associated with premature ageing of the T-cell immune system. The hypothesis was tested that advanced immunological T-cell ageing increases the long-term mortality risk after kidney transplantation.
Methods: Patients (N = 210), transplanted with a kidney from a living donor between 2010–2013, were included and prospectively followed. The number of CD31-expressing naive T cells (identifying recent thymic emigrants, a marker for thymic function), telomere length of CD4 + and CD8 + T cells and T-cell differentiation status were assessed by flow cytometry before and at 3, 6 and 12 months after transplantation.
Results: Thirty recipients (median age 63 year, range 26–78) died during follow-up until sept 2018. The absolute numbers of naive CD4 + (living:258 cells/ul vs. deceased:101 cells/ul, p = 0.001) and naive CD8 + T cells (living:97 cell/ul vs. deceased:37 cells/ul, p = 0.001) were significantly lower in the deceased group prior to transplantation. Numbers of naive CD31 + T cells were inversely related with increasing age (r = 0.56, p < 0.001). In a multivariate proportional hazard analysis including recipient age, the number of naive CD4 + T cells remained associated with all-cause mortality (HR 0.98, CI 0.98–0.99, p < 0.001). The lowered number of naive CD4 + T cells in the deceased patient group was primarily caused by a decreased thymic function (less CD31 + naive T cells). In addition, a compensatory increase in CD31-naive T cells, which is normally observed with age-related loss of thymic function, was not observed. Within the first year after transplantation, the number and characteristics of naive T cells remained remarkably stable. All other immunological parameters were not related to patient survival after transplantation.
Conclusion: A severe reduction in thymic function, is highly associated with all-cause mortality after kidney transplantation.

BOS104 HIGH NUMBERS OF CIRCULATING CD8 + CD28- T CELLS IN THE RECIPIENT ARE ASSOCIATED WITH SUBSTANTIALLY LOWERED RISK FOR LATE REJECTION AND GRAFT LOSS AFTER KIDNEY TRANSPLANTATION

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Background: Recent studies have found an inverse relation between the number of differentiated circulating T cells and acute early rejection. In this study, we tested the hypothesis that parameters of an aged T-cell compartment associate with the risk for late rejection after kidney transplantation.
Methods: Recipients of a kidney transplant in the period 2007–2012 were (N = 364) were included. T cell telomere length and thymic output were assessed and T cells were characterized prior to transplantation by flow cytometry as naive (CD45RO-CCR7 +), central-memory (CD45RO+CCR7 +), effector-memory (CD45RO-CCR7-) or terminally differentiated CD8 + Temra (CD45RO-/CCR7-/CD28-) cells. Follow-up was until September 2018. The date of the first time of biopsy-proven late rejection (>6 months after transplantation) was used to calculate the rejection-free survival time.
Results: The median follow up time was 79 months. Forty-nine cases of biopsy-proven rejection were recorded of which most were c-aABMR (77.5%), followed by TCMR 10.3% and mixed type rejections 10.2%. Median time to diagnosis of late rejection was 44 months. Thymic output and T cell telomere length did not associate with late rejection-free survival. However, the percentage and absolute numbers of CD8 + Temra and CD8 + CD28- T cells were significantly lower in patients with late rejection. Specifically, in the highest tertile of percentages of CD8 + CD28- T cells, the cumulative incidence of late rejection at 5 and 10 years was only 5% and 8% compared to 16% and 20% in the middle to lowest tertile (p = 0.002). Multivariate proportional hazard analysis showed that percentage and absolute number of CD8 + CD28- T cells remained significantly associated with late rejection (p = 0.009) and rejection-related graft loss.
Conclusion: High numbers of differentiated CD8 + CD28- T cells decrease the risk for late rejection and rejection-related graft loss after kidney transplantation.

BOS106 TISSUE-RESIDENT MEMORY T-CELLS IN THE KIDNEY -- IMPLICATIONS FOR RENAL TRANSPLANTATION

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Background: Tissue-resident memory T (TRM) cells constitutes a lymphocyte lineage which resides in the tissue without recirculating and being capable of rapidly mobilizing protective tissue immunity upon pathogen recognition. Their presence has been already illustrated for lung, intestine and liver, however TRM in the human kidney and their potential relevance for kidney transplantation has not been addressed so far.
Methods/Materials: Healthy kidney tissues and paired blood samples were obtained from patients undergoing tumor nephrectomies (n = 43). Additionally, we analyzed resected kidneys transplant (n = 5). Isolated lymphocytes were functionally and phenotypically assessed by flow cytometry.
Results: Compared with blood, the kidney harbors significantly higher frequencies of effector memory CD4 + and CD8 + T (TEM) cells. These cells are characterized by an increase of HLA-DR and CD38, as well as by the induction of the co-stimulatory molecules PD-1 and CTLA-4, indicating an activated phenotype. Whereas intrarenal CD8 + T cells display lower levels of KLRG1 expression, CD4 + T cells demonstrate significantly higher levels of KLRG1 compared with peripheral blood. Both CD4 + and CD8 + TEM produce significantly higher amounts of IL-17A than their peripheral blood counterparts. In general, higher frequencies of CD8 + CD69 + CD103 + TRM than CD4 + CD69 + CD103 + TRM are present in the kidney, the former being

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characterized by an induction of HLA-DR and PD-1. Although resected renal grafts did not demonstrate higher frequencies of TRM compared with normal kidneys, these cells express significantly higher levels of CD38.
Conclusion: Here, we document the presence of intrarenal TRM as well as their phenotypic and functional properties for the very first time. Considering that TRM become transplanted as passenger leukocytes along with the graft, their influence on allograft survival needs to be determined.

BOS107 LACK OF ACTIVATING KILLER-CELL IMMUNOGLOBULIN-LIKE RECEPTORS AND KIR HAPLOTYPE A/A ARE ASSOCIATED WITH BK NEPHROPATHY IN KIDNEY TRANSPLANT PATIENTS

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Background: BK nephropathy (BKVAN) is important cause of allograft loss. Natural killer (NK) cell immunologic response might play an important role, due to their killer cell immunoglobulin-like receptors (KIRs). Our aim was to determine the association of KIR genes and ligands with risk of BKVAN in kidney transplant patients (KT pts).
Materials/Methods: Retrospective case-control study (2011–2019) included 23 KT pts (5 women, 18 men) with biopsy-proven BKVAN (cases) and 46 KT pts with persistently negative BK virus in blood and urine, as controls (ctr). Median follow up was 1138 days, sex and age matching 2:1. Historical blood samples from pts and donors were used for HLA and KIR genotyping.
Results: There were no differences in recipient and donor age, total HLA MM, type of induction therapy (th), but a higher proportion of ctr were on mTORi (24% vs. 4%, $p = 0.04$). Median time from KT to BKVAN was 184 days (IQR 141–289). Lower proportion of BKVAN pts were HLA-Cw7 positive (30% vs. 74%, $p = 0.01$) with no difference in donor HLA-Cw7 status (39% vs. 39%, $p > 0.99$). The distribution of HLA-Cw7 recipient-donor pair positivity was different among groups (+/+ 13% vs. 35%, +/- 26% vs. 4%, -/+ 17% vs. 39% and -/- 44% vs. 22%, $p = 0.003$). When adjusting for potential confounders, only donor Cw7 positivity was associated with lower odds for BKVAN (OR 0.09 [0.02, 0.45]). The frequency of activating KIR genes was consistently, but not significantly higher in ctr compared to BKVAN. KIR haplotype A/A was significantly more frequent in BKVAN (52.2% vs. 23.9%, $p = 0.03$). Significantly higher percentage of pts lacking any activating KIR receptor were in BKVAN (35% vs 13%, $p = 0.04$). There was no difference in distribution of any recipient KIR-donor HLA ligand MM ($p > 0.05$).
Conclusion: KIR haplotype A/A and lack of activating KIR might predispose to risk of BKVAN. Donor HLA-Cw7 positivity might be protective. KIR gene analysis might be considered as routine clinical strategy for BKVAN prevention.

BOS109 ELEVATED REGULATORY B CELLS BEFORE KIDNEY TRANSPLANTATION CORRELATE WITH AN INCREASED RISK OF ACUTE GRAFT REJECTION

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Introduction: Regulatory B cells (Bregs) have been proposed as beneficial for renal graft outcome. Transitional B cells have been associated with renal graft operational tolerance, partly through the production of the immunosuppressive cytokine IL10. Transitional B cells have been divided into T1 (enriched for IL10) and T2 subsets and a low T1/T2 ratio has been associated with deterioration in renal graft function. With this background, we have studied different Bregs subsets pre and post-transplantation (Tx) and determined their association with acute graft rejection (AR).
Methods: Bregs were measured pre-Tx and at several times post-Tx in a prospective cohort of kidney transplant recipients (KTR, $n = 220$) and in healthy volunteers (HV). Peripheral blood mononuclear cells (PBMC) were stimulated for 48 hours to increase IL10 production. Transitional B cells were identified as CD19 + CD24highCD38high and production of IL10 was measured intracellularly.
Results: We confirmed that T1 cells are a transitional B cell subset enriched for IL10-producing cells. End-stage renal disease (ESRD) patients had an elevated Breg population compared to HV, with higher frequencies of transitional B cells ($p < 0.001$) and IL10 + T1 cells ($p < 0.01$). Post-Tx, all Breg subsets decreased during the 1-year follow-up ($p < 0.001$), while naïve B cell frequencies increased ($p < 0.001$). This reduction in Bregs was more pronounced in thymoglobulin-treated patients. Higher frequencies of IL10 + T1 cells pre-Tx correlated with AR. Patients with IL10 + T1 cells higher than 2.21% had a 3.7 times increased risk of AR post-Tx. The reduction in IL10 + T1 cells in the first week post-Tx was higher in patients who rejected vs stable patients ($p < 0.05$).
Conclusion: Higher levels of pre-Tx IL10 + T1 correlate with AR. Bregs decrease post-Tx, more markedly in patients with subsequent AR. This modification in the immune-regulatory balance post-Tx could have a detrimental effect on the graft.
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BOS110 MISSING-SELF TRIGGERS NK-MEDIATED MICROVASCULAR INJURIES AND CHRONIC REJECTION OF ALLOGENIC KIDNEY TRANSPLANTS

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Background: Organ transplantation is the treatment of choice of vital organ failure. However, long-term outcome of organ transplantation remains limited by the inexorable loss of graft function, which the prevalent dogma links to the microvascular inflammation triggered by the recipient's antibody response against alloantigens (chronic antibody-mediated rejection).
Methods & Results: Analysing a cohort of 129 renal transplant patients with microvascular inflammation on graft biopsy, we found that, in ~half of the cases, histological lesions were not mediated by allo (nor auto)-antibodies. In these patients, genetic studies revealed a higher prevalence of mismatches between donor HLA class I and inhibitory Killer-cell immunoglobulin-receptors (KIR) of recipient's NK cells. We hypothesized that the allogeneic nature of graft endothelium could create a "pseudo-missing self" situation, thereby the recipient's NK cells exposed to inflammatory stimuli would not receive HLA class I-mediated inhibitory signals from donor endothelial cells. In co-culture experiments with human NK cells and endothelial cells, we demonstrated that the lack of self HLA class I on endothelial cells can activate NK cells. In return, these NK cells can kill endothelial cells. Finally, we confirmed the existence of missing self-induced NK cell-mediated rejection in a murine heart transplantation model.
Conclusion: Our work identifies a new type of chronic rejection, exclusively mediated by innate NK cells, that has the same detrimental impact on graft survival as chronic antibody-mediated rejection.

BOS111 INCREASED NUMBER OF INTRAGRAFT FOXP3 + T CELLS IS STRONGLY CORRELATED WITH DECREASED GRAFT SURVIVAL IN CHRONIC-ACTIVE ANTIBODY-MEDIATED REJECTION

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Background: Chronic-active antibody-mediated rejection (c-aABMR) is the most important cause of late renal allograft failure. Surprisingly, little is known about the type of immune cell infiltrates in the kidney during c-aABMR and the correlation with graft survival. In this study, various immune cell populations in renal biopsies of patients with c-aABMR were quantitatively characterized and correlated with graft survival.
Methods: Multiplex immunofluorescent staining was performed on 20 cases of biopsy-proven c-aABMR. The stainings were designed to identify T cell subsets (CD3, CD8, Foxp3 and granzyme B), macrophages (CD68 and CD163), B cells (CD20) and NK cells (CD57). The number of positive cells were counted in the glomeruli (cells/glomerulus) and the tubulo-interstitial (TI) compartment (cells/HPF).
Results: CD3 + T cells were the dominant cell type in both glomeruli and the TI compartment. The glomeruli had a mean total of 5.5 CD3 + cells, 62% being CD8 + T cells. Forty-six % of CD8 + T cells were positive for granzyme B. Macrophages had a mean of 4 cells per glomerulus, of which 68% were profibrotic M2 macrophages (CD68 + CD163 +).

The TI compartment showed a mean of 116 CD3 + cells per HPF, of which 46% were CD4 + and 54% CD8 + . Macrophage count was 21.5 per HPF with 39% being of M2 type (CD68 + CD163 +). CD20 + cells were sporadically present in glomeruli, whereas 45% of biopsies showed B cell aggregates in the TI compartment. NK cells were rarely present in the glomeruli and TI compartment.

Remarkably, decreased graft survival was significantly associated with increased numbers of CD3 + FoxP3 + cells in the TI compartment ($p = 0.004$) and a trend towards increased amount of macrophages (CD68 +) ($p = 0.08$).
Conclusion: Renal allograft biopsies with c-aABMR have differential compartmentation of infiltrating immune cells with a predominance of CD8 + T cells. Interestingly, increased numbers of FoxP3 + T cells in the TI compartment are associated with inferior allograft survival.

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BOS112 DEVELOPMENT OF BKV NEPHROPATHY IN RENAL TRANSPLANT PATIENTS: ROLE OF THE SPECIFIC IMMUNE RESPONSE

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Background: In the recent years, BK-virus (BKv) associated nephropathy (BKvAN) emerged as a major complication in renal transplantation, affecting up to 10% of kidney transplant recipients and leading to graft loss in more than 50% of cases. BKv reactivation is favored by therapeutic immunosuppression.
Methods/Materials: To access the immune response against BKv, we prospectively characterized the BKv-specific T cell functionality in a cohort of 100 kidney transplant recipients with different BKv reactivation levels (without reactivation, viruria, viremia or BKvAN).
Results: Patients with BKvAN had a severe impairment of BKv-specific CD8 T cell functionality such as a decrease proliferation ($p < 0.05$), TNF-a and/or IFN-γ production ($p < 0.05$) and cytotoxicity capacities ($p < 0.05$) as compared with patients with BKv replication without BKvAN. In contrast, patients with BKvAN had a similar response to other viral antigen (antiviral global stimulation – $p > 0.05$). We observed a gradual loss of functional BKv-specific T cells according to BKv reactivation levels ($p < 0.0001$), associated with an inverse correlation between BKv-specific T cell functionality and plasmatic BKv viral load. This functional impairment suggested an exhaustion of BKv-specific T cells according to BKv reactivation levels.
Conclusion: In conclusion, we observed a reduction of the specific anti-BKv response in patients with BKvAN. The BKv-specific T cell functionality was negatively correlated with plasmatic BKv viral load. This functional impairment suggested an exhaustion of BKv-specific T cells, leading to a defective BKv-specific CD8 T cell response, unable to provide a protective immune response against BKvAN.

BOS09 – BETA CELL REPLACEMENT AND OTHER CELLULAR THERAPIES

BOS113 TOWARDS A NOVEL FULLY-IMPLANTABLE ARTIFICIAL PANCREAS: SITE OF IMPLANT IDENTIFICATION AND OPERATIONAL FUNCTIONALITY IN REAL HUMAN ANATOMY

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Background: Artificial Pancreas (APs) represent technological solutions combining a sensor for continuous glucose monitoring, an insulin pump and a control algorithm. Current APs are still wearable and based on subcutaneous insulin delivery, implying absorption delays.
Methods: We proposed a fully implantable long-term autonomous AP intended for intraperitoneal insulin delivery to obtain a more physiological insulin profile. The device is conceived to be implanted in close proximity of an intestine loop to enable a non-invasive refilling procedure based on ingestible insulin-loaded capsules. Such capsules are expected to passively cross the gastrointestinal tract, and be magnetically captured by the implanted AP thanks to a reversible magnetic circuit embedded in the implanted device. Once docked, the capsule can be punched by a linearly actuated needle, the insulin can be transferred to the internal reservoir and injected on demand with microliter resolution. The overall device has a compact flat design. Preliminary tests were performed on human cadavers to (*i*) identify the optimal implant site and define principles of the surgical procedure; (*ii*) define the suitability of device geometry and dimensions; (*iii*) test device overall working principle for a fine tuning of the final prototype.
Results: An open surgical access to the peritoneal cavity was performed on an human cadaver to implant the device. The AP was placed in a pouch created under the parietal peritoneum in left hypochondria. Upon pouch suturing, a jejunal loop was displaced and fixed to the pouch to favour capsule docking and device refilling. Preliminary operational tests demonstrate that the implantable device is able to reversibly dock the insulin capsule from the intestine, to transfer the hormone in the internal reservoir and to inject intraperitoneally insulin microbolus on demand.
Conclusion: We demonstrated implantability and correct operation of a novel AP, on a real human anatomy.

BOS114 TOWARDS 3D-BIOPRINTING OF BIONIC PANCREAS: EFFECT OF PRESSURE ON THE VIABILITY OF PANCREATIC ISLETS

Marta Klak, Katarzyna Kosowska, Edyta Majdańska, Tomasz Dobrzański, Andrzej Berman, Łukasz Kaczyński, Patrycja Kowalska, Magdalena Gomółka, Mr Wszoła Michał

Foundation of Research and Science Development

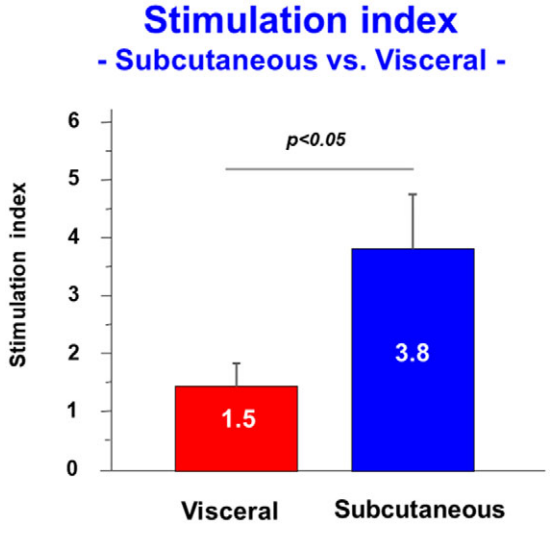
Introduction: 3D bioprinting is the wave of the future in terms of constructing functional human's organs. 3D bioprinting of a bioactive tissue scaffold and Langerhans islets cause many biological and chemical difficulties. It is well known that islets are very susceptible to shear stress, that's why it is essential to examine how the bioprinting process affects on the viability of biological material containing islets. Pressure is also used in islets transplantation into alternative sites (subcutaneous or submucosa tissue). Therefore, the aim of our study was to assess the viability of islets which were subjected to different pressure shear stress with the use a 3D bioprinter.
Materials and methods: In the experiment the BioX 3D printer and a needles with 600 um inner diameter were used. 3% (w/v) alginate solution was prepared and then mixed with pancreatic islets in 3:1 ratio (gel:islets). We used rat and porcine pancreatic islets. Immediately after isolation the islets material was divided into 8 groups: a control without alginate, a control with alginate and 6 groups, which were subjected to a specific pressure in the bioprinter (15, 25, 30, 50, 75, 100 kPa). FDA/PI staining was performed to assess the viability of islets before and after bioprinting. Results were calculated according to a generally available formula evaluating the islets living to dead ratio.
Results: Pancreatic islets, independent of applied pressure, exhibited reduced viability compared to the control group. Compare to the control group, the highest percentage of live islets has been observed at 15 kPa (85%) pressure whereas the lowest at 100 kPa. At 75 kPa pressure the level of loss was at 36%, and at 100 kPa it was already 48%. It has also been shown that rat islets are more resistant to bioprinting conditions than porcine.
Conclusion: The most optimal pressure which should be used while bioprinting of pancreatic islets and islets transplantation is less then 30 kPa.

BOS117 CHARACTERISTIC DIFFERENCE OF ADIPOSE-DERIVED MESENCHYMAL STEM CELLS FROM SUBCUTANEOUS AND VISCERAL FAT TISSUE FOR GENERATING INSULIN-PRODUCING CELL

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Background: We have reported the efficient method on differentiation from adipose-derived mesenchymal stem cell (ADSC) into insulin-producing cell (IPC). However, it is still unclear what kind of adipose tissue is suitable for the cell source even though it is considered as cell quality is important. Here we show the difference of characters IPC differentiated from human subcutaneous and visceral adipose tissue.
Methods: Adipose tissues were gathered from subcutaneous and visceral adipose tissue due to the established procedure (UMIN:#000035546). We measured surface markers of each ADSC derived from subcutaneous (S-ADSC), visceral fat tissue (V-ADSC) and commercially provided ADSC by FACS. In addition, the growth rates of ADSC were compared. IPCs were



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prepared from each ADSC under 3D culture conditions and compared with stimulation index (SI) and insulin immunostaining. As in-vivo functional assessment, 96 IPCs generated from S-ADSC were transplanted into STZ-induced diabetic nude mice (n = 4).
Results: In FACS analysis, the surface markers of commercially available ADSC were CD31-CD34-CD45-CD90 + CD105 + CD146-, whereas that of ADSC derived from subcutaneous and visceral fat tissue were both CD31-CD34-CD45-CD90 + CD105-CD146-. The growth rate of S-ADSC was faster than V-ADSC ($p < 0.05$). IPC differentiated from S-ADSC had a higher SI (3.8 vs. 1.5, $p < 0.05$) at day 21 and strongly expressed on insulin immunostaining than IPC differentiated from V-ADSC. In-vivo study, the blood glucose level in the transplanted mice were converted to normoglycemic state.
Conclusion: The characteristics of ADSC were obviously different by the fat tissue locations even though there was no significance of ADSC surface markers. These differences may be due to the locational differences of cytokines and microenviromental trophic effects, which may lead the decision of ideal transplantation site of IPC by their affinity.

BOS118 THE IMPACT OF RED LED IRRADIATION ON DIFFERENTIATION FOR INSULIN-PRODUCING CELLS FROM MESENCHYMAL STEM CELL

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Introduction: Recent protocols for adipose derived mesenchymal stem cells (ADSCs) differentiation into insulin-producing cells (IPCs) are not only time consuming of over 30 days, but also inefficient. Photobiomodulation therapy with red light emitting diodes (LED) has been used to facilitate stem cell differentiation (Int J Mol Sci, 2018). And, we reported that red LED induced hepatocyte proliferation through ROS/ERK pathway (Hepatol Res, 2018). However, it is unclear about the effect of LED for ADSC differentiated into IPCs, and the aim of this study is to investigate the effect the role of LED during ADSC differentiated into IPCs.
Methods: Commercial human ADSC were used in differentiation. 1x104 human ADSCs were seed in 6-well dish and cultured in DMEM/F12 containing 1% human albumin, 1% B27-serum-free supplement, 1% N2 supplement, 50 ng/ml human activing A, 10 nM exendin-4 for step-one differentiation (7 days). Then additional 10 mM nicotinamide, 50 ng/ml human hepatocyte growth factor, 1 mM valproic acid were used for step-two differentiation (14 days). During differentiation the cells were received red LED (635 nm) irradiation with low (10J:Low LED group) or high (40J:High LED group) energy once a day. After the two-step differentiation finished, the cell morphology, dithizone (DTZ) and PDX1, SOX17, CXCR4, NeuroD1 and Insulin expression were compared to non-LED irradiation (Control).
Results: In all groups, the cells began to form the cluster and ultimately shaped the islet-like cell group after continued 14 days step-two differentiation. The cells in all groups showed the positive DTZ. L-LED group significantly high expression and H-LED group showed significantly low expression of PDX1, SOX17, CXCR4, NeuroD1 and Insulin ($p < 0.05$, respectively).
Conclusion: Red LED irradiation during ADSC differentiation into IPCs could promote IPCs formation and cell mRNA expression, and that may lead to acceleration of IPC generation and maturation.

BOS119 BILE AS A NON-INVASIVE SOURCE OF CHOLANGIOCYTE ORGANOIDS FOR DEVELOPING PATIENT-SPECIFIC DISEASE MODELS

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Introduction: Bile duct related diseases are the leading cause for pediatric liver transplantation (LT) and adult re-transplantation of a liver graft. Studying biliary diseases has been hampered by the inability to culture cholangiocytes long-term. It was shown that Extra-hepatic Cholangiocyte Organoids (ECOs), derived from extra-hepatic bile duct (EHBD) tissue can be long-term expanded *in vitro* and used for bile duct engineering. However, current applications of ECOs are limited because invasive bile duct biopsies are required to obtain ECOs from patients. The aim of this study is to investigate a less invasive source and test if ECOs can be obtained from human bile samples.
Methods: Bile-derived Cholangiocyte organoids (BCOs) were cultured, according to standard protocol and collected from gallbladder bile obtained from donor liver grafts during LT and from bile of endoscopic retrograde cholangiopancreatography (ERCP) in patients. Cultures were initiated from 1 ml of bile. ECOs (n = 3) and BCOs (n = 5) were compared for gene expression (qRT-PCR), protein level (immunohistochemistry and immunofluorescence) and functional level by testing cholangiocyte-specific transporter channels (Ussing chamber and transport assay).
Results: BCOs could be effectively expanded from all sources of bile from patients with a variety of diseases. BCOs expressed similar cholangiocyte markers on gene and protein level as tissue-derived ECOs and both lacked stem cell- and hepatocyte markers. Furthermore, these cells expressed and responded similarly to stimulation and inhibition of different ion-channels. Interesting cholangiocyte-organoids from a cystic-fibroses patient lacked CFTR channel activity, showing that these cells can be used for modeling biliary diseases.

Conclusion: Our study showed that bile provides a novel less-invasive source of patient-specific cholangiocyte-organoids. This creates new opportunities to develop patient-specific disease models and study autologous bile duct regeneration.

BOS120 IMMUNOMODULATORY EFFECT OF MSC ON B CELLS IS INDEPENDENT OF SECRETED EXTRACELLULAR VESICLES

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Mesenchymal stem cells (MSC) have proven immunomodulatory properties towards B cell activation and induce regulatory B cells (Breg), through a dual mechanism of action that relies both on cell contact and secreted factors. One of them are MSC-derived extracellular vesicles (EVs), membrane nanovesicles that mediate cell communication and typically reflect the phenotype of the cell of origin. MSC-EVs could resemble MSC functions, and are being contemplated as an improved alternative to the MSC-based immunomodulatory therapy.

In the present work, we focused on the factors secreted by MSC and aimed to elucidate the putative role of MSC-EVs in the immunomodulation of B cells. EVs and soluble protein-enriched fractions (PF) were isolated from MSC-conditioned medium (CM) using size-exclusion chromatography (SEC) and their capacity to modulate B cell activation, induction of Breg and B cell proliferation was compared to that of the whole MSCs.

Co-culture with MSC or unfractionated CM induced naïve and $CD24^{hi}CD38^{hi}$, IL-10 producing (Breg) phenotypes on B cells while not affecting proliferation. MSC-PF had a comparable effect to MSCs, inducing a naïve phenotype, and even though they did not induce the shift towards a $CD24^{hi}CD38^{hi}$ population, MSC-PF fostered IL-10 production by B cells. Conversely, MSC-EVs failed to promote naïve B cells and to reduce memory B cells. MSC-EVs induced $CD24^{hi}CD38^{hi}$ B cells to a similar extent of that of MSC, but not *bona fide* Bregs since they did not produce IL-10. Our results show that B cell modulation by MSC is partially mediated by soluble factors other than EVs.

BOS122 SHIELDING ISLETS WITH HUMAN AMNIOTIC EPITHELIAL CELLS PROTECTS ISLETS AGAINST HYPOXIA AND ENHANCES ISLET ENGRAFTMENT AND REVASCULARIZATION AFTER TRANSPLANTATION IN A MURIN DIABETIC MODEL

Fanny Lebreton, Kevin Bellofatto, Charles-Henri Wassmer, Vanessa Lavallard, Lisa Perez, Géraldine Parnaud, Estelle Brioudes, David Cottet-Dumoulin, Domenico Bosco, Thierry Berney, Ekaterine Berishvili
Geneva University Hospitals and University of Geneva

Background: Hypoxia is a main cause of considerable islet loss during first days after intraportal transplantation. Human amniotic epithelial cells (hAECs) possess regenerative, immunomodulatory and anti-inflammatory properties and present particular interest in the context of islet transplantation to protect transplanted islets against immune attack, hypoxic and inflammatory injury. The aim of this study was to investigate whether covering islets with a shield of human amniotic epithelial cells (hAECs) improves islets survival under hypoxic conditions *in vitro*, as well as islet engraftment and survival *in vivo*.
Methods: Shielded islets were generated on microwells by mixing islets and hAECs at ratio of 1:100 (100 hAECs per islets). The ability of hAECs to adhere to islets was analyzed by confocal microscopy. Engineered rat shielded or neat islets were cultured under normoxic and hypoxic conditions for 16 h. For all conditions, cell viability and islet function were assessed by static insulin release in response to glucose in vitro.

Next, function of shielded islets was tested in vivo. For this, 1200 human shielded or neat islets were transplanted under the kidney capsule of diabetic SCID mice. Blood glucose and weight were monitored regularly. Intravenous glucose tolerance test was performed 1 month after transplantation. Graft morphology and vascularisation were evaluated by immunohistochemistry.
Results: Islets shielded with hAECs had greater cellular insulin content and increased glucose-stimulated insulin secretion in vitro. Transplantation of shielded islets resulted in considerably earlier normoglycemia and vascularization, improved glucose tolerance, and increased insulin content, both in rat and in human islet transplantation experiments.
Conclusion: Co-transplantation of islets with hAECs had a profound impact on the remodelling process, maintaining islet organisation and improving islet revascularisatio

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BOS123 IMPROVING B-CELL FUNCTION BY CO-CULTURING WITH HUMAN UMBILICAL VEIN ENDOTHELIAL CELLS AND AMNIOTIC EPITHELIAL CELLS

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Introduction: Islet transplantation is a valid cure for patients with type 1 diabetes. Because of the lack of rapid neovascularization after transplantation and the important inflammatory response, long course results are not as good as whole pancreas transplantation. By adding human umbilical vein endothelial cells (HUVEC) and human amniotic epithelial cells (hAEC) to insulin secreting cells, we hope to improve the revascularization and to decrease the inflammatory response respectively and consequently, the beta-cell function.
Material and methods: Rat insulinoma INS cells, HUVEC and hAEC were used and co-cultured in 3D agarose molds in order to create new aggregates with 400 cells per spheroid. Their function was assessed by glucose-stimulated insulin secretion test and compare to insulinoma INS cells alone. Spheroids morphology were evaluated by histological assessments.
Results: We created round shaped, uniformed spheroids of 150 to 200 μm in diameter. We confirmed the repartition of the different types of cells by immunofluorescence. Upon glucose-stimulated insulin secretion test, we founded no statistic difference between the control group and the three types of co-cultured cells.
Conclusions: Engineering spheroids allows us to control islets size and composition of those aggregates. We observed that adding HUVEC and hAEC doesn't impair beta-cells function in vitro. Those results allow us to move to the in vivo part where we will be able to see the real potential of the HUVEC and hAEC, which is to create faster revascularization and reduce inflammatory response against transplanted islets.

BOS124 THE INFLUENCE OF THE FLOW OF DETERGENT AND DONORS CHARACTERISTIC ON THE EXTRACELLULAR MATRIX COMPOSITION AFTER HUMAN PANCREAS DECELLULARIZATION

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Foundation for Research and Science Development

Introduction: The extracellular matrix (ECM) consists, among others, of polysaccharides, glycosaminoglycans and proteins such as collagens, laminins and fibronectin. It is being increasingly used in tissue bioengineering. Obtaining ECM of the highest quality through decellularization is a big challenge due to some differences in organ structure. Therefore one general procedure cannot be applied. In order to deprive organs of the cellular part, chemical, enzymatic or mechanical methods are used. After decellularization, we get a scaffold made of variety of proteins. And it is the role of these proteins that can significantly affect the maintenance of the spatial structure and be a suitable environment for cells to rebuild a specific organ.
Aim: Estimation of the detergent (Triton X-100) flow parameters and anthropometric donors decellularization process accuracy on the final extracellular matrix composition.
Materials: 4 human pancreas, rejected from transplantation, were used for decellularization. All organs were harvested from brain-dead donors, age 13–38.
Methods: Decellularization of the human pancreas was carried out using the flow method with Triton X-100. The experiment compared 4 different flow values. After decellularization, assessment of the final DNA concentration and the protein composition by means of mass spectrometry was performed. Results were compared to anthropometric data of donors. In addition, immunohistochemical staining depicting the presence of ECM and glycosaminoglycans was performed. Transmission electron microscopy analysis was also carried out.
Results: The best results were obtained using a flow between 35–40 ml/min. Rinsing pancreas for no more than 30 minutes with PBS containing heparin also affected the results. With these parameters, the lowest DNA concentration was obtained. Analysis of the protein profile with anthropometric data has shown that body weight and abdominal circumference can affect the final result of the whole process.

BOS125 NOVEL WATER-BASED, DETERGENT-FREE DECELLULARIZATION TO PRODUCE BIOACTIVE ECM-BASED SCAFFOLDS FOR PANCREATIC ISLETS TRANSPLANTATION

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Introduction: Acellular ECM-based biomaterials are obtained at the cost of a significant loss of critical components of the innate matrisome impairing the bioactivity of the end-product. In the frame of the BIOCAPAN project (www.biocapan.eu), a detergent-free decellularization method was developed to generate ECM-based biomaterials to enhance and prolong islet function and lifespan.
Methods: Human pancreases were surgically benched and placed in 1-liter jars containing diH_20 and shaken at 200 rpm for 24 hours. Tissue was rinsed with DNAse and a TRIS buffer solution before a final wash with diH_20 for 24 hours. The obtained biomaterial was lyophilized, milled and solubilezed. The pancreatic matrisome was analyzed using mass-spectrometry and an ELISA Multiplex assay. ECM effects' on cell viability through MTT assays and GSIS were performed with multiple cell-lines such as hMSC, MIN6 and hESC-derived pancreatic progenitors to determine their capacity to drive cell differentiation. The immunogenicity of ECM was tested in a Treg induction assay where naïve human CD4 + T cells were cultured with aCD3/aCD28 Ab, IL-2, TGFb +/- ECM.
Results: The obtained ECM shows the presence of the innate matrisome, including multiple types of collagen, ECM regulators, glycoproteins, proteoglycans and secreted factors were identified. Viability of MIN6 cells suggested tha the ECM was not toxic. hMSCs proliferated and grew well with the ECM which was able to induce higher yields of hESC-derived β-cells. The ECM did not show activation of hemolysis, coagulation, platelets or lymphocyte. Finally, ECM did not impair *in vitro* Treg induction, a major mechanism of immune tolerance.
Discussion & Conclusion: A novel detergent-free decellularization method to produce ECM scaffolds was developed whose composition recapitulates the innate islets niche. Extensive *in vitro* experiments are undergoing to test the ability of these ECM-based scaffolds to enhance islets function and lifespan *in vitro* and *in vivo*.

BOS126 DE NOVO GENERATED T CELL RECEPTOR CLONOTYPES DOMINATE THE REPERTOIRE IN PEDIATRIC HSCT PATIENTS

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Immune reconstitution and transfer of antigen-specific T cell-responses in the context of hematopoietic stem cell transplantation (HSCT) mitigate infection and cancer relapse and promote long-term survival. The role of the pre-transplant T cell receptor (TCR) repertoire of the donor and recipient in post-transplant TCR reconstitution remains unclear. In particular, it is not known whether the post-transplant replenished TCR repertoire is of donor origin or de novo generated. To address this, we assessed TCR repertories in 14 pediatric donor-recipient pairs pre-HSCT and in recipients 2.2 – 5.1 years post-HSCT by next-generation sequencing. TCRβ clonotypes were identified in PBMCs and pairwise clonotype overlap analysis was performed. In addition, we inferred the antigen-specificity of the obtained TCR repertoires from similarity to TCRs in recently published curated databases. Despite long-term follow-up, we identified overlapping clonotypes in thirteen donor-recipient pairs (92.9%) which accounted for up to 20.6% of the post-HSTC repertoire. Persisting clonotypes from the pre-transplant recipient repertoire tended to be more prevalent after reduced-intensity conditioning regimens but were also observed in patients following myeloablative conditioning with complete donor chimerism. The specificity analysis revealed a dominance of CMV- and influenza-

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specific clonotypes of the donor-derived TCRs, suggesting a transferred protection. This study contributes to the understanding of TCR reconstitution mechanisms and provides new insights in antigenic specificity in follow-up of HSCT.

BOS127 SCAFFOLD MATERIAL PROPERTIES OF DECELLULARIZED TISSUE DERIVED FROM HEALTHY AND IPF DONOR LUNGS DIRECTS CELLULAR RESPONSES TO MAINTAIN DISEASE-LIKE PATHOLOGY

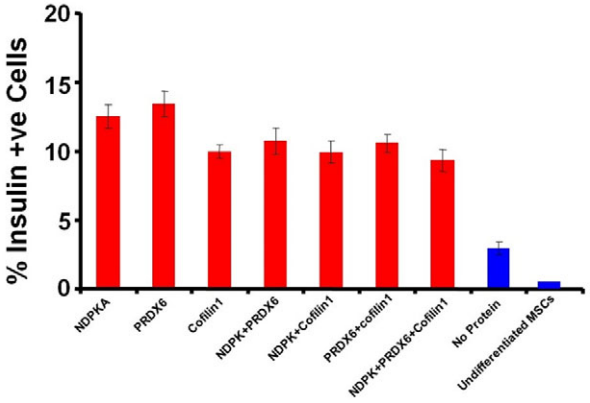
Linda Rendin, Anna Löfdahl, Catharina Müller, Hanna Isaksson, Leif Bjermer, Emma Ahrman, Johan Malmström, Gunilla Westergren-Thorsson
Lund University

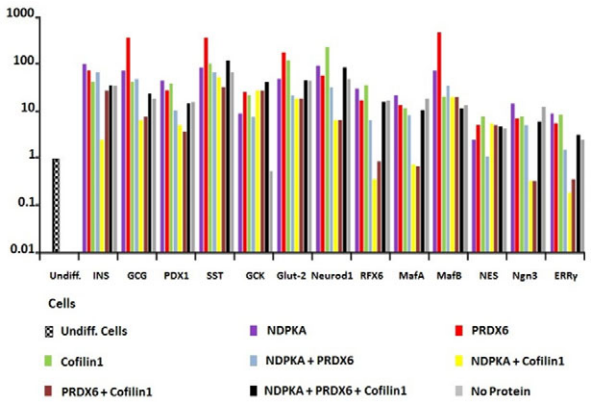
Background: Decellularized tissues offers an excellent approach to study cell-ECM interaction in health and disease. In this study we have used peripheral lung tissue from healthy individuals and patients suffering from idiopathic pulmonary fibrosis (IPF). IPF is a devastating disease characterized by excessive matrix production and stiffening of the tissue. The aim was to examine temporal changes in the original ECM in healthy and diseased scaffolds and how these affect protein production of repopulating lung fibroblasts cultured using heavy isotope labelling (SILAC).
Methods: Human lung tissue slices (350 μm) were decellularized using CHAPS to generate biological scaffolds. The scaffolds were characterized by density, biomechanical properties, histology, and mass spectrometry (MS). Scaffolds were mounted on custom-made holders, to mimic the native setting, seeded with human primary fibroblasts derived from a healthy donor, and cultured using SILAC medium supplemented with 13C6 labeled L-Arginine-HCl and 13C6 15N2 -labeled L-lysine-2HCl. The repopulated scaffolds were examined as described above to study differences in ECM
Results: Heavy isotope labelling of the cultured cells allowed us to follow up- and downregulation of the newly synthesized proteins in compared to the original scaffold due to a mass shift detectable in MS (see Fig 1). Interestingly, healthy fibroblasts cultured on IPF scaffolds had a protein production profile overlapping with the profile of the original scaffold.
Conclusions: We demonstrated that using SILAC in our biological system allowed us to study temporal differences in protein production in healthy and diseased scaffolds. Furthermore, by culturing under static stretch we created a 3D environment similar to the native situation, strongly influencing the cellular response. Collectively, this opens up for in depth identification of proteins involved in lung disease and tissue regeneration.

BOS128 PRDX6 PROMOTES THE DIFFERENTIATION OF HUMAN MESENCHYMAL STEM (STROMAL) CELLS TO INSULIN-PRODUCING CELLS

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Background: Mesenchymal stem cells (MSCs) can be differentiated in vitro to form insulin-producing cells (IPCs). However, the proportion of induced cells is modest. Extracts from injured pancreata of rodents promoted this differentiation, and three upregulated [SE1] [SE2] [SE3] proteins were identified in these extracts.
Methods: The aim of this study was to evaluate the potential benefits of adding these proteins to the differentiation medium alone or in combination.
Results: Our results indicate that the proportion of IPCs among the protein(s)-supplemented samples was significantly higher than that in the samples with no





added proteins (Figure 1). The yield from samples supplemented with PRDX6 alone was 4-fold higher than that from samples without added protein. These findings were also supported by the results of fluorophotometry. Gene expression profiles revealed higher levels among protein-supplemented samples. Significantly higher levels of GGT, SST, Glut-2 and MafB expression were noted among PRDX6-treated samples (Figure 2). There was a stepwise increase in the release of insulin and c-peptide as a function of increasing glucose concentrations, indicating that the differentiated cells were glucose sensitive and insulin responsive.
Conclusion: PRDX6 exerts its beneficial effects as a result of its biological antioxidant properties. Considering its ease of use as a single protein, PRDX6 is now routinely used in our differentiation protocols.

BOS10 – IMPACT OF CLINICAL TRANSPLANTATION ON FERTILITY AND REPRODUCTION

BOS129 CALL FOR A MULTIDISCIPLINARY STUDY GROUP ON PREGNANCY IN LIVER TRANSPLANTED WOMEN

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Today patients who undergone liver transplantation (LTx) enjoy a better long-term quality of life.Pregnancy is well sustained by fertile transplanted women.Transplant related risks(immunosuppression, abdominal bulking effects, kidney damage)aren't still considered true limitations.

In the past, pregnancy was considered as a re-adaptation of the patient's immunological setting with unacceptable risks for transplanted organ and/or transplanted patient.

Moreover, uterine growth was hypothesized able to create compression on both transplanted organ itself or venous system, with functional consequences.

Later, the personal initiative of patients caused a progressive increase in pregnancy cases after solid organ transplant.

Thus, medical community began to question about various aspects of pregnancy after transplant.

Nowadays more than 2000 pregnancies have been reported in the transplant literature and almost 500 after LTx.

In the large majority of cases risks for both babies and mothers resulted sustainable.Despitethe data collected by the various centers in the international sphere, a study group has not yet been formally founded.

Transplantology started to invest resources on the study of reproductive functions restored after transplant, but strong evidences are still lacking.The cases reported are still few and each transplant Center has too few cases to reach robust conclusions.Our project is to create a MULTIDISCIPLINARY STUDY GROUP in order to merge experiences from different transplant Centers(transplant surgeons, gynecologists, transplant hepatologists).

The first step could be the compilation of a questionnaire to estimate the perception about pregnancy after liver transplant.It is also useful to identify Centers with the largest percentage of cases.Subsequently, evidences recorded may be used to optimize clinical management of fertile transplant women with desire of pregnancy.Our mission is to treat our patients to ensure an optimal standard of life.

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BOS130 PREGNANCY IN POST KIDNEY TRANSPLANTATION

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Department of nephrology, tizi ouzou

Introduction: Pregnancy in renal transplant patients is at risk for maternal but especially fetal complications. The risk of acute or chronic rejection inherent in pregnancy is low.
Goal: The aim of our study was to report pregnancies in our renal transplant patients, their evolutionary aspects and a review of the literature.
Results: The average age of patients at the time of kidney transplant was 27 years old. Maintenance immunosuppressive therapy is based on prednisone, azathioprine and anti-calcineurin all our patients. The average time between renal transplantation and the discovery of pregnancy was 3 years. The average age at conception was 30 years old. There have been no changes in immunosuppressive therapy during pregnancy. Mean serum creatinine levels during pregnancy were stable at 12 mg / l. Maternal complications during pregnancy were pregnancy toxemia in 1 case, elevation of serum creatinine in 4 cases. The fetal complications were: low birth weight in 3 cases, stillbirth in one case, abortion in one case. After delivery, there was no acute rejection in our patients.
Conclusion: Renal transplant restores fertility and pregnancy requires careful planning. There should be an expansion of effort by primary care physicians and nephrologists to include the discussion of menstrual and reproductive issues in women

With renal transplant.Women of childbearing age wishing to consider pregnancy should receive complete information and counseling from the transplant team

BOS131 LONG-TERM MATERNAL AND NEONATAL OUTCOMES IN PREGNANCY AFTER LIVER TRANSPLANTATION

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Background: Today women undergone liver transplantation enjoy better health, so they require more frequently possibility of living pregnancy.Many questions about safety of pregnancy are pending.This study analizes pregnancy outcomes in women after liver transplant managed in our Unit.
Materials and Methods: We retrospectively analized all patients undergone liver transplantation in our Clinical Unit from 1990 to 2015.We reviewed medical records and extracted data on maternal demographics, details on liver transplantation, immunosuppressive therapy and liver function at the onset of pregnancy. We also recorded fetal/neonatal outcomes and long-term follow-up of both mother and infant.
Results: We identified 17 childbirths in 13 women undergone liver transplant.Causes of transplant include congenital or acquired disorders.Mean age at transplant was 22 $\pm$ 9 years, mean maternal age at delivery was 33 $\pm$ 5 years and transplant-to-pregnancy interval was 12 $\pm$ 6 years.Mean gestational week was 36.1 $\pm$ 3.5.All women had normal liver function after pregnancy.Immunosuppressive therapy before and during pregnancy included tacrolimus(n = 8),cyclosporine(n = 5)and Mofetil-Mycophenolate (MMF) (n = 1).No maternal death was registered.Maternal complications included increase of AST and ALT, itch(n = 1).Twelwe women had a high adherence to therapy during pregnancy. A woman with poor compliance continued MMF during pregnancy, showing preterm birth (25thweek) and fetal respiratory failure.Another one continued therapy with tacrolimus during breastfeeding without adverse effects.
Conclusion: Liver transplant does not influence woman fertility;during pregnancy we report low rates of minor graft complications and no major issues.There are no adverse effects on babies. It is recommended evaluation with multidisciplinary team.Compliance to immunosuppressive regimen is fundamental to ensure the stability of both graft function and pregnancy.Moreover it is suggested to avoid teratogenic drugs, such as mycophenolic acid.

BOS132 LIVE BIRTH AFTER IN VITRO FERTILIZATION WITH DONOR OOCYTE IN A KIDNEY TRANSPLANT PATIENT

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Background: A 36-year-old woman was referred to the infertility center because of primary infertility based on premature ovarian failure. Our patient had undergone successful living donor kidney transplantation for the end stage kidney disease due to IgA nephropathy in 2013 at the age of 34 years. Triple-drug immunosuppression regimen consisted of tacrolimus, mycophenolate mofetil (MMF), and methylprednisolone (MP).
Methods/Materials: Anonymous oocyte donor underwent ovarian stimulation (a short protocol consisting of recombinant FSH and cetrorelix) and transvaginal retrieval of six oocytes. A sperm sample was collected from the husband on the day of oocytesretrieval. Gynecologists used PICSI technique (Physiological Intra-Cytoplasmic Sperm Injection), which enable to pick and transfer only single one mature sperm in to the oocyte and they transfered one embryo fourth day after fertilization.
Results: The newborn was born preterm (at 34th week of gestation, 1930 g), via cesarean section, as a consequence of mild preeclampsia. Although mild graft dysfunction was observed prior to delivery, all clinical difficulties including hypertension resolved during the puerperium. Diminished graft function repaired completelly.
Conclusion: Renal transplant recipients are high-risk patients who require special care and counseling starting from peritransplant and preconceptional period to their postpartum period.

BOS133 HLA SPECIFIC ANTIBODY PROFILE CHANGES AFTER PREGNANCY IN RENAL TRANSPLANT RECIPIENTS

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Background and objectives: Transplantation and pregnancy are known to be major sensitizing events. The aim of this study is to describe the HLA specific antibody profile and how it changes when exposed initially to transplantation and consecutively to pregnancy. Patients included in this study are female transplant recipients who underwent one or multiple pregnancies after receiving a renal transplant (RT)

Design: Data describing the HLA specific antibody profile changes was provided by the Transplantation Laboratory. We looked at RT recipients who underwent a pregnancy between September 2006 and February 2017. Data was collected using the UK Obstetric Surveillance System (UKOSS) forms.
Results: We identified 20 pregnancies from 16 patients. 4 patients had HLA specific antibodies before receiving a RT, 9 did not have HLA specific antibodies and 7 had unknown status.

Post renal transplantation 5 out of 9 patients HLA Ab negative did not develop new antibodies. The remaining 4 patients experienced an increase in the calculated reaction frequency (cRF) from 0 to 34%, 44%, 61% and 70% respectively.

Patients who had HLA specific antibodies present pre transplantation, their cRF were 20%, 75%, 60% and 50%. From this subgroup, post transplantation, only one had a 20% increase to her cRF.

After the second sensitizing event, the pregnancy, the 4 patients with cRF of 0 % remained at 0 % and only one had an increase in her cRF from 0% to 97%. However, the patients who had pre pregnancy HLA specific antibodies, have had a further increase to their cRF from 48% to 80%, 61% to 93%, 44% to 59%.
Conclusion: In this group of patients, the ones who initially did not develop HLA specific antibodies after the first sensitizing event, renal transplantation, tended to remain with a cFR of 0% even after the second sensitizing event-pregnancy. From all the included patients 10% became highly sensitized after being exposed to RT and subsequently to pregnancy.

#	HLA Abs Pre-Tpx	cRF Pre-Tpx	HLA Abs Post-tpx Pre-delivery	cRF Post-Tpx Pre-delivery	HLA Abs Post-Delivery	cRF Post Delivery
1	Positive	20%	Positive*	48%	Positive *	80%
3	Negative	0%	Positive *	61%	Positive *	92%
5	Negative	0%	Negative	0%	Negative	0%
8	Negative	0%	Negative	0%	Negative	0%
10	Negative	0%	Negative	0%	Negative	0%
10	Unknown	Unknown	Unknown	Unknown	Negative	Unknown
11	Negative	0%	Positive*	34%	Negative	0%
12	Positive	75%	Positive	75%	Positive *	75%
13	Negative	0%	Positive*	44%	Positive*	59%
14	Negative	0%	Negative	0%	no samples	no samples
15	Negative	0%	Negative	0%	Negative	0%
16	Positive	60%	Positive	60%	Positive	60%
17	Positive	56%	Negative	0%	Positive*	97%
18	Negative	0%	Positive*	70%	Positive	55%
21	Unknown	Unknown	Unknown	Unknown	Positive	35%
22	No Information	Unknown	Unknown	Unknown	Unknown	Unknown
23	Unknown	Unknown	Negative	0%	Negative	0%
24	Unknown	Unknown	Negative	0%	Negative	0%
25	Unknown	Unknown	Negative	0%	Negative	0%
26	Unknown	Unknown	Negative	0%	Negative	0%

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BOS134 BEHAVIORAL CHANGE IN A MALE RECIPIENT OF A SECOND KIDNEY TRANSPLANTATION RESULTING FROM THE EXPERIENCE OF THE PARTNER'S PREGNANCY AND CHILDBIRTH

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Introduction: This study aims to investigate the behavioral change in a male recipient of a second kidney transplantation resulting from the partner's pregnancy and childbirth.
Methods: This case study was conducted with qualitative and inductive analyses of a semi-structured interview. The participant was a 41-year-old male recipient whose partner gave birth in the period between his first and second kidney transplantations. The data were interpreted and coded, codes were compared, and subcategories were generated. Furthermore, categories were generated to increase the level of abstraction.
Result: The recipient received the first kidney transplant from his mother as the donor at the age of 26. Subsequently, during dialysis reintroduction, the recipient received a second kidney transplant with his younger brother as the donor at the age of 40. The recipient had three children after the first kidney transplantation. Five categories were extracted with respect to the experiences of the recipient according to his partner's experience of pregnancy and childbirth: "received the kidney transplant without thinking about the future," "regret about the second kidney transplantation, which was caused by insufficient self-care," "fear of the influence of his own diseases on his children," "kidney transplantation and living with his children changed his view of life," and "relationship with medical personnel resolves anxiety."
Conclusion: The recipient was obsessed with his work, which led to self-management failure. Consequently, the recipient experienced allograft loss and a second kidney transplantation. However, compared to the first kidney transplantation, a strong sense of responsibility for his wife and children had changed him. It was a mind-broadening experience, and acquiring the paternal role led to self-management behavior. The acquisition of the paternal role may be effective for improving the self-management of recipients.

BOS136 SOLID ORGAN TRANSPLANTATION DURING CHILDHOOD AFFECTS FERTILITY LATER IN LIFE

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Introduction: The outcome of pediatric solid organ transplantations (SOT) s has improved during the recent decades [1] and remarkable number of SOT recipients have reached adult age. Exposure to immunosuppressive drugs may lead to problems in fertility. The aim of this nationwide registry study was evaluate the number of biological children in adult recipients of pediatric SOT.
Materials and methods: All SOT recipients who were transplanted 1.1.1982–31.125.2015 in Finland were identified. All patients were aged < 16 years at SOT and > 18 years at inclusion to the study.

Totally 213 recipients were enrolled. Individually matched by sex, the year of birth and hometown controls (n = 1064) were identified by the Population Register Center. By linkage to the Birth Registry all live birth and adopted children were searched. The characteristics of the SOT recipients and the controls are shown in

	SOT (n = 213)	Control (n = 1064)	P-value
Age, years	26.8 (18.4–45.4)	28.4 (19.5–45.5)	0.004
Males, n (%)	133 (62)	664 (62)	1.000
Subjects with chilren, n (%)	21 (10)	313 (29)	<0.001
Age at first child, years	25.7 (18.6–29.9)	26.4 (15.9–40.1)	0.225
Males with child, n (%)	11 (8)	175 (26)	<0.001

Results: Twenty-one (10%) of the SOT recipients and 313 (29%) of the matched controls had children. At the birth of the first child, the age of the SOT recipients was 25.7 years and 26.4 years of the controls. Eleven (8%) male (kidney n = 6,liver n = 2, heart n = 3) and 10 (13 %) female (kidney n = 5, liver n = 5) SOT recipients had a child. In the controls 175 (26%) of the males and 138 (35%) of the females had at least one child.
Discussion: Our study shows for the first time, that young adults with a history of SOT during childhood have significantly less frequently children than their matched controls. In males, this may be explained by decreased testicular function after Tx [2]and difficulties to find partner (5). In female patients, the data about pediatric SOT related factors affecting pregnancy are not available and remains to be studied.
Conclusion: Fertility preservation and factors affecting ability to get children after pediatric SOT requires further evaluation cause having a family and children is an important part of normal life.

BOS138 INFLUENCE OF THE NUMBER OF MEDICINES ON GRAFT FUNCTION AND SELF-MANAGEMENT IN WOMEN WHO HAVE GIVEN BIRTH AFTER A KIDNEY TRANSPLANT

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Introduction: For mothers who have undergone kidney transplants, pregnancy and childcare can have significant consequences on self-management. They might be exhausted from childcare and forget to take their medicine. This study assessed the relationship between the number of medicines, graft function, and self-management for women who gave birth after a kidney transplant.
Methods: This was a cross-sectional study in Japan covering 65 kidney-transplant recipients from 21 hospitals who gave birth after transplantation. Self-management status was assessed using *The Kidney Transplantation Self-Management Scale*. Spearman's rank correlation coefficients were used to assess relationships between the number of medicines, serum creatinine, and self-management. Moreover, we divided recipients into small-medicine and large-medicine groups based on a cut-off value determined by the median value of the number of medicines. We compared the serum creatinine levels and self-management scale scores between the two groups.
Result: The mean age was 42.2 ± 7.4 years. The mean age at transplant was 28.4 ± 4.8 years, and the mean age at the birth of the first child post-transplant was 33.6 ± 4.1 years. There were no statistically significant effects of the number of medicines on serum creatinine levels or self-management scores. A Mann-Whitney U test showed no significant differences between groups on any score: serum creatinine ($p = .37$), problem-solving ($p = .76$), self-care behaviour ($p = .95$), and patient–practitioner partnership ($p = .13$).
Conclusion: Medication adherence by self-managing recipients is important to stabilize graft function. This study revealed no significant relationship among the number of medicines, graft function, and self-management in women who gave birth after a kidney transplant. It may be important to focus on their ability to self-manage rather than the number of medicines, and to support their self-management based on their new lifestyles.

BOS139 PREGNANCY IN RENAL TRANSPLANT RECIPIENTS. A SINGLE CENTRE RETROSPECTIVE STUDY

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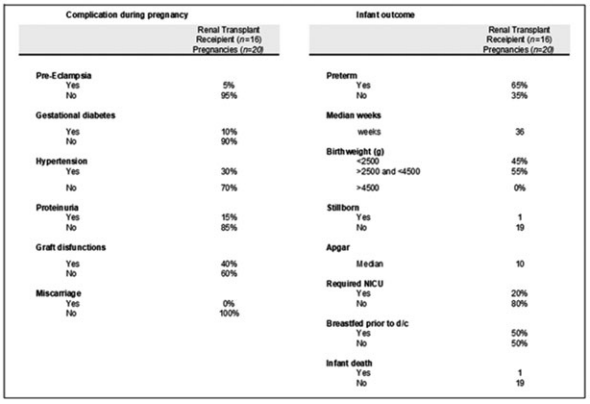
Background and objectives: Pregnancies after renal transplant (RT) are common but can result in adverse maternal and foetal outcomes. The aim of this study is to collect pregnancy outcomes following a RT.
Design: Data on RT recipient who underwent a pregnancy between September 2006 and February 2017 was collected using the UK Obstetric Surveillance System (UKOSS) forms. Results were compared with the general pregnancy outcomes reported by Public Health England.
Results: The demographic characteristics of the patients showed that the mean age at birth was 36 years. The mean BMI of the recipients was 27 kg/m2. The average time between transplantation and pregnancy was around six years.

From twenty pregnancies monitored after RT, 65% of the patients required caesarean section (CS), 5% resulted in stillbirth and there were no miscarriages reported. 5% patient developed pre-eclampsia, 10% gestational diabetes and 30% hypertension. Graft dysfunction was seen 15% of parturients. 20% of parturients had peripartum haemorrhage (PPH), 5% had small bowel resection and 5% suffered RT surgical injury. 25% of the patients required escalation to critical care post-delivery.

Pre-term delivery (<37 weeks) was seen in 65% of the cohort.

When compared to the general pregnancy outcomes published on Public Health England, the stillborn incidence is the same 5%, the CS rate was 65% vs 29% in the general population and low birthweight (LBW) for all pregnancies was 45% compared to 8.7%.
Conclusion: Pregnancy after RT remains a high-risk. Peri-partum complications, requirement for CS, induced labour, PPH, and critical care admission seem to be more frequent. Preterm and LBW occur more frequently. This information could be utilised to inform mothers of the risks of pregnancy following RT. A multi-disciplinary team approach and a transplant / urology surgical presence should be considered for CS following RT to achieve best maternal and foetal outcomes.

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Complication during pregnancy

	Renal Transplant Receipient (n=16) Pregnancies (n=20
Pre-Eclampsia	
Yes	5%
No	95%
Gestational diabetes	
Yes	10%
No	90%
Hypertension	
Yes	30%
No	70%
Proteinuria	
Yes	15%
No	85%
Graft disfunctions	
Yes	40%
No	60%
Miscarriage	
Yes	0%
No	100%

Infant outcome

	Renal Transplant Receipient (n=16) Pregnancies (n=20
Preterm	
Yes	65%
No	35%
Median weeks	
weeks	36
Birthweight (g)	
<2500	45%
>2500 and <4500	55%
>4500	0%
Stillborn	
Yes	1
No	19
Apgar	
Median	10
Required NICU	
Yes	20%
No	80%
Breastfed prior to d/c	
Yes	50%
No	50%
Infant death	
Yes	1
No	19

BOS141 PREGNANCY AFTER KIDNEY TRANSPLANTATION MAY INFLUENCE PATIENT SURVIVAL?

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Irmandade Santa Casa de Misericórdia de Porto Alegre/ UFCSPA

Background: About one in 50 kidney transplanted (Tx) woman became pregnant. It is important to know the influence of pregnancy on long term graft and patient survival as well as early pregnancy outcomes.

Aims: To study the frequency of pregnancy in our center, the pregnancy and newborn outcomes, and to compare the patient and graft survival between pregnant and a control group of non-pregnant recipients.

Methods: Single center, retrospective, case-control study retrieve from a cohort of 1345 fertile age transplanted women, from 1977 to 2016 and followed up until 2018. There were 86 pregnancies in 77 women. The 70 controls were pared with cases in relation to age, transplant year, source of donor and transplant number. The analyzed variables were searched in the data base and medical records.

Results: The frequency of pregnancy was 5.7%. Only 12.8% of the pregnancies did not have any risk factor as hypertension, time of pregnancy during the first 2 years after Tx, serum creatinine below 1.5 mg/d L and proteinuria less than 500 mg/24 h. The risk factor amount was directly associated to pregnancy unsuccessful frequency (0 = 0 1 = 36%, 2 = 45%, 3 = 80% e 4 = 83%). From 86 pregnancies 26.7% were a term, 27.9% were preterm, 3.5% stillborn, 18.6% spontaneous abortion and 23.3% therapeutic abortion. About half of newborns were low weight. The 10 years death censored graft survival were similar between pregnant and control group (75x66%, p = 0.22), however the patient survival was better in pregnant group (96x78%, p = 0.003).

Conclusion: Kidney transplant women can have a success pregnancy with longer life expectancy compared to control group. The amount of risk factors is associated to pregnancy unsuccessful.

BOS142 HORMONE CONTRACEPTIVE THERAPY AND IN VITRO FERTILIZATION IN NORWEGIAN FEMALE KIDNEY TRANSPLANT RECIPIENTS OF REPRODUCTIVE AGE

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Background: Pregnancy after kidney transplantation should be planned. Unintended pregnancies may set both the fetus and the mother at risk. Current immunosuppressive regimen often needs adjusted prior to conception. It is therefore crucial to counsel female kidney transplant recipients (KTRs) of reproductive ageonchoice of contraceptive method and timing of conception.

Methods: In this national observational study of 222 Norwegian fertile female KTRs, aged 12 to 50 years at the time of transplantation, we merged data from the Norwegian Renal Registry and data on contraceptive drug dispensation from the Norwegian Prescription Databaseduring the first 5 years post-engraftment.

Results: During the first year after transplantation only 10% of patients were dispensed systemic or topical contraceptives. In total, 30 patients (14%) received contraceptive drugs during the first 5 years after transplantation. Drugs stimulating ovulation was received by 8 patients (4%) from the 2ndto the 5thyear after transplantation.

Conclusion: The surprisingly small proportion of patients on contraceptive drugs signals the need for improved counseling on contraceptive use in female KTRs of reproductive age. To date there is a lack of knowledge regarding the treating physicians attitude on this topic and no updated recommendations on contraceptive use in female KTRs.

BOS143 INFLUENCE OF PREGNANCY ON EGFR COURSE AFTER KIDNEY TRANSPLANTATION

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Background: Pregnancy after kidney transplantation (KT) is increasing during the last decades. Generally, pregnancy outcomes after KT are good, with high risk for maternal hypertension/preeclampsia and pre- and dysmaturity. Less is known about the effect of pregnancy on the kidney transplant function. Whether, the hyper filtration during pregnancy has effects on eGFR slope over time is unkown. All Dutch university medical centers established a new data network 'PARTOUT' (Pregnancy After Renal Transplantation OUTcomes) to investigate the effect of pregnancy on KT outcomes.

Methods: We conducted a nationwide retrospective multi-center cohort study in women with a pregnancy (>20 weeks) after KT in the Netherlands from 1960 to 2017. Data on transplantation and pregnancy were collected from health records. A slope analysis calculating delta eGFR (CKD-epi) before and after first pregnancy after KT divided by time between measurements was conducted. Linear regression on eGFR slope to identify predictors for faster eGFR decline was performed.

Results: For this eGFR slope analysis we could include 104 women with one pregnancy after KT, KT to delivery interval was 6 years (range 1–24). 73 were pregnant with their first kidney. 30 (29%) women lost their graft at a median time after delivery of 5 yrs (range 0–23 yrs). Mean eGFR before conception was 63 ml/min (± 23 ml/min). eGFR slope post-pregnancy (-1.9 ± 5.7) was significantly worse compared to pre-pregnancy (1.01 ± 7.2) $p = 0.006$. In linear regression on post pregnancy slope we could not identify predictors for faster decline in eGFR.

Conclusions: In this first analysis deterioration of eGFR slope was present in KT women comparing pre and post-pregnancy. Individual slopes of eGFR pre- and post-pregnancy will be further analyzed to identify predictors for worse graft outcome after pregnancy in KT recipients.

BOS144 MIDTERM SERUM CREATININE AND BLOOD PRESSURE DROP FIRST TRIMESTER: PREDICTION OF ADVERSE PREGNANCY OUTCOMES IN THE DUTCH RENAL TRANSPLANT POPULATION

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Background: Pregnancy in renal transplants (RT) increases, accompanied by a high risk of complications. Higher levels of preconceptional serum creatinine (Scr), proteinuria and hypertension are associated with adverse pregnancy outcomes (APO). A recent publication shows a U-shaped relationship between midterm eGFR and APO. The prognostic value of midterm Scr and blood pressure (BP) drop in RT patients is unknown. All Dutch university medical centers established a new data network 'PARTOUT' (Pregnancy After Renal Transplantation OUTcomes) and investigated predictive factors for APO in RT.

Methods: A retrospective multi-center cohort study was conducted in women with pregnancy (>20 weeks) after RT in the Netherlands from 1960 to 2017. Data was collected from health records. Midterm Scr was defined as the lowest Scr in 8–20 weeks of pregnancy. The relationship between midterm Scr, BP and APO was assessed by multivariate regression. A combined adverse outcome was defined as low birthweight (<2500 g), preterm birth (<37 weeks), severe hypertension in 3rd trimester (>160 systolic BP, >100 diastolic BP), deterioration of graft (>20% elevation Scr during pregnancy).

Results: A total of 237 pregnancies after RT were included for analysis. In 153 pregnancies (65%) an APO occurred. Birthweight < 2500 g: 108 pregnancies (46%); preterm birth < 37 weeks 117 (49%); severe hypertension 42 (18%); deterioration of graft during pregnancy 26 (11%). In preliminary analysis, higher levels of midterm Scr were associated with a higher risk of APO (110 (54) vs 87 (27) mmol/l (p = 0.048, OR1.03, CI1.0–1.1). A low or absent physiological BP drop in first trimester was also associated with APO (p = 0.037, OR1.04, CI1.0–1.1).

Conclusion: Besides known predictors for APO, our analysis shows a relationship between midterm Scr, BP drop and APO. Future analysis of the PARTOUT dataset could show other useful clinical parameters for predicting APO and long-term graft function.

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BOS11 – LIVER DONATION, ALLOCATION AND ISCHEMIA-REPERFUSION

BOS145 IS IT POSSIBLE TO REDUCE RATE OF FLUID COLLECTION FOLLOWING KIDNEY TRANSPLANTATION?

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Background: Fluid collection is an important postoperative complication of renal transplantation related with prolonged hospitalization. Impact of dissection instruments on the development of lymphocele and seroma has been questioned.The aim of this study is to investigate whether there is a relationship between fluid collection and use of different dissection instruments.
Methods/Materials: The patients who underwent kidney transplantation were divided into three groups according to the method of dissection as Ligasure ™, monopolar cautery and ligation. A silicone drain was placed in the peri-anostomotic area in all patients. The fluid collection was defined as seroma and lymphocele accumulation in ultrasonography. Following parameters were compared between the groups: the postop day when the drain was withdrawn, the amount of fluid collection and interventions for treatment of fluid collection.
Results: There were 32 kidney transplanted patients (12 female, 20 male) as 11 from a cadaver and 21 from a living donor. The median age of the patients was 46 years (range 9–73). There were 11 (34%), 15(47%) and six patients (19%) in Ligasure ™, monopolar cautery and ligation groups, respectively. Fluid collection developed in 13 (40.6%) of all cases. Fluid collection developed in five (15%), seven (22%) and one patient (3%) in the Ligasure ™, the monopolar cautery and the ligation groups, respectively ($p < 0.05$). Two patients underwent interventional procedure during the follow up due to prolonged recovery of lymphocele (US guided drain placement in Ligasure group ™ and laparoscopic fenestration in the monopolar cautery group).
Conclusion: In our study, fluid collection was significantly less in the ligation group. Despite the small number of cases, we found that minimal dissection and ligation may be an important factor for prevention of lymphocele and seroma development.

BOS146 THYMOGLOBULIN SEEMS TO INCREASE HEMORRHAGIC RISK IN SENSITIZED KIDNEY RECIPIENTS

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Parc de Salut Mar

Introduction and Objective: There is moderate quality evidence that a lymphocyte depleting agent (Thymoglobulin) reduces acute rejection and graft failure but has not been shown to prolong graft survival in high immunological-risk patients (sensitized kidney recipients). It has been also described that thymoglobulin could increase the risk of infections and malignancies, in comparison to basiliximab. Leukopenia and thrombocytopenia are also more common at first days after transplantation among thymoglobulin patients.

Our objective is to analyze bleeding complications in this subset of patients.
Patients and Methods: We carried out a retrospective study evaluating bleeding complications among 515 renal transplants carried out at our institution between 2012 and 2018. We compared high immunological risk patients treated with 5 doses of thymoglobulin (Group 1, n = 91) with low immunological risk patients treated with 2 doses of basiliximab (Group 2, n = 424).
Results: Regarding baseline characteristics, the only 3 statistically significant differences between the two groupswere:gender, (p 0.014), number of transplants (p 0.001) ad previous abdominal surgery (p0.002).There were no statistically significant differences between the two groups.

When analyzing age, BMI, pre-surgical hemoglobin and platelets, multiple arteries, antiagregation, anticoagulation and type of dialysis.
Bleeding-events variables are described in Table 1

Table 1	Group 1 (Thymoglobulin)	Group 2 (Basiliximab	P
PLATELET DECREASE	95142.2 ± 55339.6	52364.3 ± 69116.6	0.001
TRANSFUSION RATE	48.9%	42.1%	0.29
N° UNITS BLOOD TRANSFUSED	3.25 ± 0.572	2.2 ± 0.191	0.028
BLEEDING REQUIRING SURGERY	18.2%	7.7%	0.046
TRANSPLANTECTOMY	5.6%	2.7%	0.33
ACUTE REJECTION	6.7%	5.5%	0.63
DEATH (any cause)	15.4%	9.2%	0.19

Only gender (95% CI 0.004–0.070, p = 0.029) and type of immunosuppression (95% CI 0.361–2, 83, p = 0.012) had statistical significance in a multiple linear regression multivariable analysis.
Conclusions: Using Thymoglobulin in the perioperative transplantation period seems to increase bleeding complications. Optimizing preoperatively these patients should be a priority to reduce this risk.

BOS147 LIVING DONOR LIVER TRANSPLANTATION IN SEPTUAGENARIANS: BETTER LATE THAN NEVER

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Background: The group of elderly population in the world is increasing .Moreover, improvements in quality of chronic liver disease care, which leads to expanding population of septuagenarians (≥ 70 years) in need of liver transplantation (LT). In the early 1990s, numerous publications reported non-inferior LT outcomes in sexagenarians, reflecting the combined advances in surgical techniques, anaesthesia/critical care, and infection control. Further liberalization of age limit has generated a published experience replete with encouraging outcomes in selected septuagenarians undergoing deceased donor LT (DDLT). Cultural obstacles in many Eastern countries including Saudi Arabia have restricted access to DDLT and there is a paucity of experience in the live donor liver transplant (LDLT) world pertaining to elderly LTx outcomes. The objective of this study is to examine the justification of the gift given by LDLT to those patients.
Methods: 295 adult patients underwent LDLT between January 1, 2011 and December 31, 2016 .Twelve (4%) of these patients were septuagenarians and this group was compared to younger cohort (n = 283) via a retrospective analysis which included standard clinical parameters, operative variables, and post-transplant graft and patient survival.
Results: Comorbidity profiles between the two groups were similar and no statistically significant differences were noted in warm/cold ischemia times, operative duration, or blood product utilization. ICU and total hospital stays were comparable. Septuagenarian 1-and 5-year graft and patient survivals were identical at 91.7%. Their younger counterparts had 1-and 5-year patient survivals of 91.1% and 84.0 % accompanied by 1-and 5-year graft survivals of 89.8% and 82.7%, respectively.
Conclusion: Despite its relatively modest sample size, our study highlights recognition that LDLT can afford highly selected elderly patients (free of significant comorbidities, frailty, and sarcopenia) access t.

BOS148 RECIPIENT AGE IN LIVER TRANSPLANTATION: A PENDING ISSUE. A PROPENSITY SCORE MATCHING ANALYSIS OF A LARGE EUROPEAN SERIES

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Background and Aims: Transplant recipients face an arbitrary age limit for liver transplantation (LT). The demand for consider older patients not to be denied access to liver transplantation has intensified as the Europe population continues to live longer and in better health.
Aim: To examine advanced age and its impact on long survival after LT in well-balanced populations.
Methods: All consecutive liver transplantation patients from January 1990 to December 2016 were collected from a monocenter database. Young and elderly liver transplant recipients were compared by means of a propensity score matching (PSM) method (Rubin and Rosenbaum). Adult liver transplant recipients were further subdivided into *young* (50 – 65 years of age) and *elderly* groups (> 65 years of age).
Results: Prior to PSM, one-, five- and 10-year graft survival was 81%, 65% and 54% for the *young group* and 73%, 57% and 40% for the *elderly group* ($p < 0.001$). One-, five- and 10-year patient survival was 85%, 69% and 58% for the *young group* and 75%, 59% and 41% for the *elderly group* ($p < 0.001$). Among 1,126 liver transplants a caliper width of 0.01 was used based on the donor covariates: age and gender, cause of donor death, donor ICU stay

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(days), and recipient covariates: gender, BMI, indication for LT, IBT, CV risk factors and MELD-Era. After PSM, 206 patients were matched. One-, five- and 10-year patient survival rates were 77%, 63% and 52% vs 80%, 64% and 45% ($p = 0.50$) for *young* vs *elderly* recipients, respectively. Also, one-, five- and 10-year graft survival rates were 76 %, 62% and 52% vs 79%, 62% and 44% for *young* vs *elderly*, respectively ($p = 0.42$).
Conclusions: Elderly age has an impact on long-term outcomes in liver transplantation although advanced age alone should not exclude patients from LT.

BOS149 KIDNEY AUTOTRANSPLANTATION: LONG-TERM OUTCOMES AND COMPLICATIONS. 26-YEARS EXPERIENCE IN A TERTIARY HOSPITAL

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Background: Kidney autotransplantation(KAT) is an infrequent procedure.
Objective: To analyze indications, surgical technique, complications and long-term outcomes.
Material/Methods: Retrospective study of patients who underwent KAT at our institution(January 1990-December 2016). Data collected included indications, surgical technique, complications, hospital stay and long-term outcomes. Follow-up data were obtained through clinical visits, serum creatinine, imaging and functional tests:Doppler US, contrast-enhanced US(CEUS) and CT scan.
Results: Fifteen patients underwent a KAT, with a mean age of 41 years (range 34–59).Indications were vascular abnormalities in 8 cases and ureteral injury in 7. The cases of vascular disease were: 4 atherosclerotic stenosis, 2 fibromuscular dysplasia, 1 Takayasu's disease stenosis and 1 renal artery aneurysm. The cases of ureteral injuries were: 6 iatrogenic lesions(4 after ureterorenoscopy, 1 after segmental colectomy and 1 after laparotomy for ectopic pregnancy) and 1 secondary to Crohn's disease. Nephrectomy was performed through laparoscopy in 2 cases(13.3%) and open in 13(86.7%). Vascular grafts were used in 8 patients(7 from hypogastric artery and 1 from saphenous vein) and ureteral reimplantation was performed in 11 cases.Mean surgical time was 380 min(range 300–480).Mean cold ischemia time was 51 min(range 30–90) and mean hospital stay was 9.1 days(range 3–20)

Table 1. Indications of KAT and surgical details.

Indications (n)
-Renovascular disease (8)
Atherosclerotic stenosis (4)
Fibromuscular displasia (2)
Aneurysm (1)
Takayasu disease (1)
-Ureteral stricture (7)
URS (4)
Abdominal surgery (2)
Crohn disease (1)
Ureteral management (n)
-Ureteroneocystostomy (10)
-No ureteral section (5)
Nephectomy (n)
-Open (13)
-Laparoscopic (2)
Vascular grafts (n)
-Hypogastric artery (7)
-Saphenous vein (1)
Mean surgical time (min/range) 380 (300–480)
Mean cold ischemia time (min/range) 51 (30–90)

Seven patients(46.7%) developed postoperative complications: 5 Clavien I (urinary tract infection, fever unknown origin, 3 acute renal failure),1 Clavien II (surgical site abscess treated with antibiotics) and 1 Clavien IVa (renal vein thrombosis requiring nephrectomy).After a mean follow-up of 73.1 months (range 7–312),mean serum creatinine level was 1.4 mg/dl(range 0.7–1.6) and 80% of the patients have a functioning graft(3 kidney losses: 1 early renal vein thrombosis and 2 chronic kidney disease).
Conclusions: KAT is a safe and effective treatment for complex cases.

BOS150 SHOULD ISOLATED CALF VEIN THROMBOSIS BE TREATED WITH ANTICOAGULANT IN KIDNEY TRANSPLANT RECIPIENT?

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Introduction: There is little study on the incidence and clinical significance of isolated calf vein thrombosis (ICVT) in kidney transplant recipients (KTR). ICVT in KTR is difficult to make decision about treatment and follow-up because it is not common and there are several limitations using anticoagulation.
Method: Duplex ultrasound (DUS) was performed at postoperative day 1 week, 2 week, 1, 3, 6, and 12 months from February 2010. Venous thromboembolism prophylaxis was performed with gradual compression stocking or intermittent pneumatic compression only. From February 2010 to April 2016, we retrospectively analyzed patient medical records. A preference of treatment was changed; from 2010 to 2013, we had 'anticoagulation first (AF)' strategy and after 2014 we have had 'serial follow-up first (SFUF)' strategy. We choose AF strategy in specific case that had large thrombus burden (involvement of long segment over 5 cm and multiple lesions over two) with low bleeding risk.
Results: 862 cases of KT were performed and there were 60 cases (6.9%) of DVT. 11 cases were DVT involved above popliteal vein and 49 cases were ICVT (81.6%). All cases of ICVT were asymptomatic. Time of diagnosis was most common during 2 weeks and 3 cases were diagnosed later than 3rd month after KT. 21 patients (42.8%) was treated by AF and 28 patients (57.1%) was managed by SFUF. 5 patients of SFUF group were taken anticoagulation for maintenance of thrombus on follow-up DUS in early 2014, after then there was no one who needs treatment conversion. Duration of anticoagulation was planned 3 month but only 15 patients completed. 11 patients stopped early due to bleeding complication, invasive procedure, insufficient graft function and drug interaction. A thrombus extension to proximal deep vein was not observed in both AF and SFUF groups.
Conclusion: ICVT in KTR have low incidence and good prognosis and extension to proximal vein is may effectively prevented by mechanical prophylaxis and attentive su

BOS151 SURGEONS' PERSPECTIVES ON SMARTPHONE FILM RECORDINGS FOR LIVER GRAFT EVALUATION

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Background: Macroscopic assessment of a donor liver in deceased donor organ donation is done by a procurement team, that often will not perform the transplantation themselves. Nowadays, smartphones enable surgeons to share high-quality film recordings, which may make liver evaluation by the accepting surgeon easier. However, procuring surgeons may not feel comfortable using this novel tool, questioning content and quality of their recordings. Therefore, we performed a survey to assess donor and transplant surgeons' experience using smartphone film recordings.
Methods: Both liver transplant surgeons (TS) and donor surgeons (DS) not involved in liver transplantation in the Netherlands were asked to complete surveys regarding film recordings for the assessment of donor liver quality. Surveys concerned questions about film quality, willingness and ability of DS to make recordings and clinical value of the films.
Results: Surveys were completed by a total of 11 DS and 14 TS. Most DS feel competent to make a recording, but 64% of DS are not sure which items the TS want to see. The majority of DS (90%) sometimes has doubts whether the recording is of sufficient quality. More than half of the DS (55%) even fear that wrong decisions could be made based upon the film provided. 91% of DS feel that film standardisation would help. Most TS start the transplantation before they've inspected the liver. However, 92% still asks for a film to look for steatosis, parenchyma quality and perfusion. Visible vascular anatomy isn't rated as an important aspect. 93% of TS believes film standardisation will result in more reliable and useful films.
Conclusion: The practice of smartphone recordings during organ procurement in the Netherlands is considered an important contribution in organ assessment by both DS and TS. Feedback for DS regarding the content and quality of the films is recommended. Standardisation could result in film quality leading to better organ assessment.

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BOS152 EARLY LIVER TRANSPLANTATION FOR SEVERE ACUTE ALCOHOLIC HEPATITIS: PILOT PROGRAM IN A SINGLE TRANSPLANT CENTRE IN ITALY

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Background and Aims: Acute alcoholic hepatitis (AAH) is a clinical syndrome characterized by high mortality rates. There is increasing evidence that early liver transplantation (LT), performed within strict and standardized protocols, can improve survival. The aims of the study were: a) to evaluate demographic and clinical features of patients with severe AAH; b) to assess survival in LT patients for severe AAH; c) to compare outcomes of these patients with those patients with severe AAH non-responding to medical therapy excluded from LT.
Method: We included patients admitted for severe AAH at Multivisceral Trasplant Unit of Padua University Hospital (January 2013 – June 2018). Demographic, biochemical and clinic characteristics were evaluated. Patients not responding to medical therapy were placed on the waiting list for LT only if they were considered suitable candidates by a strict selection process.
Results: 25 patients with severe AAH were evaluated (50% women), with a median age of 45.5 years. 18/ 25 (72%) were not responders to medical therapy and underwent the selection process. Amongst these, 9 patients were placed on the waiting list, and 7/9 underwent LT. Median time from admission to placement on the waiting list was 28.5 days. 6 month survival after liver transplantation was significantly higher in patients with severe AAH who underwent LT compared with patients who were considered not suitable for LT (100% vs. 43%; $p = 0.03$). Median hospitalizationpsot-LT was 18.5 days. 1 patient experience alcohol relapse. LT for severe AAH accounted for 1.2% of total LT performed from 2013 to 2018 and for 8.3% of LT performed for alcohol-related liver disease.
Conclusion: Early LT significantly improve survival in severe AAH no-responding to medical therapy, when a strict selection process is applied. Further studies are needed to properly assess alcohol relapse with a longer follow-up.

BOS153 LIVER TRANSPLANTATION FOR IRRESECTABLE COLORECTAL LIVER METASTASIS: A RETROSPECTIVE ANALYSIS OF POTENTIAL RECIPIENT AS WELL AS POTENTIAL EXTENDED CRITERIA DONORS

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Background: Liver transplantation for nonresectable colorectal liver metastasis (NCRLM) is still experimental. Thus, the use of standard criteria donor is not justifiable. However, extended criteria donor might be used for this indication in clinical trials. The aim of this study was to retrospectively investigate the potential of declined donors with acceptable risk as well as the potential of NCRLM liver transplant recipients.
Methods: All declined donors in central Sweden in the time period 2013 to 2017 were identified through OPO donor registry as well as The Swedish Intensive Care Registry and classified by review of medical records. Donors were classified according to the European Committee Guide to the quality and safety of organs for transplantation (EDQM). All low-to-intermediate risks were accepted, and high-risk contraindications were evaluated on a case-to-case basis. Donors with unacceptable risk were excluded. Only donors with acceptable liver function were included. Potential recipients were identified by review of medical charts of all patients with colorectal liver metastasis evaluated for liver surgery in central Sweden in the time period of 2015–2017. Inclusion and exclusion criteria were based on the Norwegian SECA study.
Results: A total of 1462 potential donors were evaluated. 76 (3.5 pmp) acceptable potential donors were identified. Most common medical contraindication was cancer (60%) followed by viral hepatitis (29%) and age (8%).A total of 1126 patients with colorectal liver metastasis were included of which 156 had nonresectable disease. Only 15 (1.1 pmp) patients fulfilled the selction criterias for liver transplantation.
Conclusions: Potential donors with acceptable contraindication can increase today's donor pool by 9 to 19%. This donor pool is sufficient and displays an acceptable risk-benefit ratio for patients with NCRLM. With current selection criteria a small subset of patients with NCRLM are acceptable for liver transplantation.

BOS154 USE OF OCTOGENARIAN DONORS FOR LIVER TRANSPLANTATION: A SINGLE-CENTER LARGE COHORT EXPERIENCE

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Background: In light of the donor organ shortage and the high number of patients waiting for liver transplantation (LT), many ways have being investigated to increase the donors' pool. One of the first solution put in place was to use the extended criteria donors. Among these, the most frequent and practical choice fell on old (age > 65 years) and very old (age > 80 years) donors.
Method: A retrospective analysis of 647 adult LTs from brain death-deceased donors from Jenuary 2010 to June 2018 was conducted in our institution. After applying the exclusion criteria (re-LT, split liver graft, missed data patient) the study cohort included 554 LTs. We compared the outcome of recipients receiving donors with age ≥ 80 years (study group) vs a matched cohort of donors with age < 80 (control group). We used a propensity score analysis to match the two groups. Donor demographics data (age, gender, cause of death, intensive care unit stay, hemodynamic instability, donor risk index, donor-MELD), intraoperative data (cold ischemia time, warm ischemia time, total infused fluids volume) and recipients characteristics (age, gender, etiology, MELD, portal vein thrombosis, post-transplant complications) were collected.
Results: A total of 73 grafts ≥ 80 years old were used. The study and control groups resulted well balanced in terms of recipient, donor, and intraoperative characteristics after propensity score. There were no differences in incidence of primary non function, initial poor function, re-transplantation or perioperative deaths between the two groups. Also complication rate (Clavien-Dindo > 2) was similar.
Conclusion: Survival outcome with octogenarian donors resulted similar to that of a matched group of recipients with younger donors; overall morbidity resulted not significantly increased. We expect an increasing use of aged donors to enhance donors' pool, the numbers of LTs and to reduce wait-list mortality. A policy of donor-recipient matching is crucial to obtain optimal results.

BOS156 VIABILITY ASSESSMENT USING LIFE CONFOCAL MICROSCOPY VISUALIZES ACUTE GRAFT DAMAGE AND PREDICTS PRIMARY POOR FUNCTION IN LIVER TRANSPLANTATION

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Background: To increase usage of expanded criteria donor liver grafts objective tools to assess graft quality prior to implantation are desperately needed. Our aim was to establish a rapid assessment tool of donor liver quality and investigate its predictive value for clinical liver transplantation.
Methods: We performed a prospective clinical trial to assess the predictive value of real-time confocal microscopy (RTCM) as an assessment tool for organ quality in deceased donor liver transplantation; Syto 16/PI and WGA were used as fluorescence dyes.

A semi-quantitative score (1–5) calculated by number of viable and non-viable cells per examined area (central vein area, portal triad area, total count) was applied. The primary study endpoint was primary poor function (PPF). Graph Pad Prism 7 and IBM® SPSS® Statistics Version 23 was used for statistical assessment. Biopsy results (confocal score), recipient, donor and transplant factors were analysed.
Results: A total of 39 liver transplant recipients (27 male, 69.2%) have been recruited and successfully transplanted. Two grafts originated from a DCD donor (5.13%). Number of ECD donors was 29 (74.4%). The median donor age was 54 years, the median recipient age was 59 years; Cold ischemia time was 7.1 ± 2.1 hours.

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Overall, 18 (46.1%) recipients showed PPF. The mean RTCM score was 3.3 ± 1.5. This score was significantly lower in livers eventually developing PPF: 2.7 ± 1.7 in PPF vs. 3.8 ± 1.2 in the no PPF group, p = 0.039. Importantly the scoreshowed a significantly correlation with the occurrence of PPF (p = 0.035).
Conclusion: Real time confocal imaging of Syto 16/PI und WGAhas a predictive value in respect to primary poor function in clinical liver transplantation. The technique is feasible in the daily routine.

BOS157 D-GAMMA MELD: A NEW PREDICTOR OF EARLY PATIENT AND GRAFT SURVIVAL AFTER LIVER TRANSPLANTATION

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Background: The combination of donor-, transplant- and recipient-related features has been attempted with the intent to create scoring systems able to select patients at high-risk for poor clinical course after liver transplantation (LT). However, many of them have shown unfair prediction performances and typically include variables available only once the transplant has taken place (i.e., cold ischemia time).

The present study aimed at identifying a score combining donor- and recipient-related features, all available before organ procurement, and at comparing it with other previously proposed scoring systems in terms of early (3-month) patient and graft survival.
Methods: 988 adult (≥18 years) first LT were consecutively performed during the period January 2004-September 2018 in the University Centres of Rome.
Results: At multivariable Cox regression analysis, seven independent variables were identified for the risk of 90-day graft loss: MELD score (hazard ratio, HR = 1.05; p < 0.001), procurement distance (HR = 1.22; p < 0.001), split-liver (HR = 3.50; p = 0.001), donor age (HR = 1.16; p = 0.002), hemodynamic instability (HR = 1.58; p = 0.02), use of airplane for procurement (HR = 0.44; p = 0.03), and donor gamma-GT (HR = 1.01; p = 0.04). Using these variables, the new Gamma-MELD score was created. Gamma-MELD had the best diagnostic ability when compared with other scores (MELD, BAR, DRI, ET-DRI), with areas under the curve of 68.2% and 69.1% for the risk of 3-month graft loss and patient death, respectively. Stratifying the entire population in risk-classes, the lower-risk subgroup (Gamma-MELD = 6–19) had a 3-month graft loss rate of 8.0% compared to 16.6% and 42.6% in the corresponding medium- (Gamma-MELD = 20–29) and higher-risk (Gamma-MELD = 30–40) subgroups, respectively (log-rank p < 0.001).
Conclusions: Gamma-MELD is a score ranging 6–40, based only on variables available before organ procurement. This score efficaciously predicted early graft and

BOS158 IMPACT OF ITALIAN SCORE FOR ORGAN ALLOCATION (ISO) SYSTEM ON DECEASED DONOR LIVER TRANSPLANTATION: A MONOCENTRIC COMPETING RISK TIME-TO-EVENT ANALYSIS AUTHORS: SERGIO LI PETRI (LI PETRI), S(1); DUILIO PAGANO (PAGANO), D (1); MARCO BARBÀRA (BARBÀRA)

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Background: Liver transplantation (LT) is a curative treatment for patients with end-stage liver disease and hepatocellular carcinoma. We aimed to evaluate the impact of the Italian Score for Organ allocation (ISO) in terms of waiting-list mortality, probability of LT, and patient survival after LT.
Patient and Methods: All of the adult patients on waiting-list for LT at our institute from January 2014 to December 2017 were included in the study. The probabilities of death while on waiting-list, drop-out from the list, and LT were compared by means of cumulative incidence functions, in a competing risk time-to-event analysis setting. Uni- and multivariable logistic regression models were used to estimate and compare the probability of death, and to find potential risk factors for waiting-list death.
Results: There were 286 patients on waiting-list for LT during the study period, 122 of whom entered the waiting-list prior to the implementation of ISO (Group A) and 164 afterwards (Group B). Group A had 62 transplants and Group B had 116 transplants. Group B showed a lesser probability of death (p = 0.005) and a greater probability of transplant (p < 0.001) compared to Group A. Post-transplant survival was similar in the two groups.
Conclusion: Based on preliminary clinical experience from a single transplant center, the ISO allocation system demonstrated an overall reduced probability of patient death while on waiting-list without impairing post-LT survival, suggesting that the ISO system might represent an improved method of organ allocation, with a more beneficial distribution of livers.

BOS159 ANALYSIS OF 124 LAPAROSCOPIC AND ROBOTIC LIVING DONOR LEFT LATERAL SECTIONECTOMIES FOR PEDIATRIC LIVER TRANSPLANTATION. A SINGLE CENTER EXPERIENCE

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KFSH & RC

Objectives: The adoption of fully laparoscopic living donor hepatectomy approach (LAP) in our institution in May 2013 as the standard approach for pediatric liver transplantation. Recently, the robotic approach (ROB) has been implemented. we describe our results.
Methods: From May 2013 until November 2018, a total of 124 left lateral sectionectomies (LLS) have been done. Five out of 124 donor hepatectomies were carried out with the robotic approach. The parenchyma transection was done using the surgical ultrasonic aspirator (LAP) and the harmonic scalpel (ROB). The trans-umbilical approach was routinely applied. After cutting the hilar plate and the bile ducts, the transection plan followed the line until the confluence of the left hepatic vein into the IVC. The S2–3 artery stump was secured with two Hem-O-lock clips, the left portal vein and the LHV secured and transected by the 45 mm vascular stapler after preparing a short Pfannestiel incision for graft extraction. Results. M/F ratio was of 60/64. The mean BMI was of 24.5 ± 3.8. Graft weight was of 224 ± 47 g. The operative time was of 264 ± 28 min. and 375 ± 31with an estimated blood loss of 111 ± 93 ml vs 37 ± 14 (p = 0.0001 and 0.07 respectively for LAP and ROB). The hilar dissection time was of 65 ± 12 min. in the Lap vs 50 ± 5 min in the ROB cases (p=ns). Overall donor complications were 4 (3.2%)(LAP). The conversion rate was 2.4% (n = 3 cases, LAP). The overall 3-y actuarial recipient survival was of 92.7%.
Conclusions: Laparoscopic LLS for donor hepatectomy is a safe and efficient procedure with a very low conversion rate. The ROB approach could be the ultimate evolution potentially shortening the hilar dissection time and providing its intrinsic and valuable advantages for the surgeon as better ergonomy, stable view, detailed anatomy and less manipulation of the graft. Further data are needed to validate this.

BOS160 IS THERE A NEED FOR ADVANCED LIVER SUPPORT SYSTEMS IN THE 21ST CENTURY?

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The Institute of Transplantation

Background: Acute liver failure (ALF) remains a life-threatening medical emergency. Improved intensive treatment unit (ITU) care has revolutionised management, with Liver Transplantation (LT) required in those who fail to improve. Lack of timely donor organs remains a problem. Untransplanted whole human livers could be used in an Extracorporeal Liver Perfusion (ECLP) device to support these patients. Of the 1500 donor livers in the UK in 2017–2018, 1000 were transplanted leaving 500 donor organs unused. We aimed to assess whether there was still a need for advanced liver support in a single institution and if organ availability makes this feasible.
Methods: A retrospective chart review was undertaken of all ALF patients admitted to ITU from 2017–2018. Also, a retrospective audit of all available untransplanted livers was carried out from Dec 2017 to Dec 2018 to identify organs suitable for ECLP: anatomically intact whole organ, ABO matched, non-infected, and available during the patient's ITU admissions (or < 55 hrs prior).
Results: 22 patients were identified (9M/ 13F) during the study period. Ten (45%) died of ALF. The mean age was 42.5 (range: 18–73) and 20 patients had multiorgan failure. 3 patients fulfilled the Kings College super-urgent listing criteria and were transplanted; of these, 1 patient died due to primary non-function. 18 patients developed ALF due to drug overdose, 1 due to acute on chronic alcoholic liver disease, 1 had leflunomide toxicity and 2 had seronegative hepatitis. We matched the ITU admission of these patients with untransplanted livers (26/12/2017 onwards); out of the 8 patients included, 7 had a liver available for ECLP. 4 out of these 7 patients died during the admission.
Conclusion: Mortality from ALF remains high (45%) despite the availability of LT and advanced intensive care support. In the UK enough livers are donated and not transplanted to make ECLP a logistically realistic and feasible option for this cohort of patients.

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BOS12 – INFECTIONS

BOS161 THE PATTERN OF CMV (CYTOMEGALO-VIRUS) VIREMIA POST KIDNEY TRANSPLANTATION; 4 YEAR FOLLOW UP

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Introduction: CMV viremia is common in solid organ transplantation. The objective of the study were to assess the rate, grade, impact of antiviral prophylaxis and timing of CMV viremia according to serological mismatch between donor (D) and recipient (R).
Method: A retrospective study of 395 recipients between April 2010 and March 2014. The cohort divided as shown on table 1.

CMV Serostatus	D-/R-	D+/R-	D+/R+	D-/R+	Total
DCD	32	25	36	32	126
DBD	36	37	37	34	144
LDTx	49	20	33	20	122
Total	117	84	108	86	395

DCD= donation after cardiac death, DBD= donation after brain death, LDTx=live donor transplant, D= donor, R =recipient
Results: The rate of CMV viremia were 24% (n = 95/395).The highest rate were 44% (n = 42/95) in D+/R+ group, followed by D+/R- and D-/R+ CMV mismatch which were similar and were 26.3% in each group, while for D-/R- CMV serostatus was 3%. The majority of CMV vireamia 77% occurred during the first six months, declined sharply to 12% between 7th and 12 months, then the rate were 12% after 12th months post-transplantation. CMV viremia occurance in relation to antiviral prophylaxis 32.6% while on prophylaxis, 44.2% after 90 days of prophylaxis and 23.1% had no prophylaxis.High grade CMV viremia were more frequent in D+/R+ and D+/R- CMV mismatch which were 18% and 16%, respectively. Less frequent in D-/R+, D-/R- CMV mismatch which were 9% and 2%, respectively.
Conclusion: The rate of CMV viremia was 24% of which 13.4% were low grade and 10.6% were high grade viremia. The CMV viremia were more common in the first 6th months post-transplantation, after 90 days of antiviral prophylaxis period , D+/R+ CMV mismatch had the highest rate of viremia, and high grade viremia was more frequent in D+/R+ and D+/R- CMV mismatch. Our recommendation is to extend CMV prophylaxis protocol to 180 days and to consider CMV prophylaxis for D+/R+ mismatch group regardless which induction agent used at the time of transplantation.

BOS162 POST-KIDNEY TRANSPLANT CMV INFECTION GRAFT AND PATIENT OUTCOME: 4 YEARS FOLLOW-UP, SINGLE CENTRE EXPERIENCE

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Introduction: In spite of antiviral prophylaxis, CMV infection is the most common viral complication after kidney transplantation. Our objectives to measure the impact of CMV viremia on graft and patient survival as primary endpoints. while acute rejection, post-transplant lymphoproliferative disease (PTLD), post-transplant diabetes mellitus (PTDM), transplant renal artery stenosis (TRAS), and skin cancer as secondary endpoints.
Methods: A retrospective study of 395 kidney transplant carried out between April 2010 and March 2014.The cohort divided into CMV and non-CMV viremia group.
Results: Our rate of CMV viremia were 24%. There was no difference in biopsy proven PTLD among the two cohorts was 1% in each group. The rate of PTDM was similar which 5% in each group.Only 1% in CMV viremia had TRAS versus 2.3% in non-CMV viremia group.Biopsy proven acute rejection were higher in CMV-viremia than non-CMV viremia group which 13.7% (n = 13/95) and 11% (n = 33/300), respectively (p = 0.7211).More skin cancer cases in CMV viremia group 9.5% (n = 9/95) than those in non-CMV viremia cohort 4.4% (n = 13/300) (p = .0995).Overall graft survival was 83%(n = 328/395) and death-censored graft survival (graft survival without death) among the cohort was 91.4%.Overall graft loss (including death) was 17% (n = 76/395).Death-censored graft loss among CMV viremia cohort were 5.2% (n = 5/95) and among non-CMV viremia were 10% (n = 29/395) (p = .2132).All-cause mortality at four year were higher in CMV viremia than in non-CMV viremia group, which were 18% (n = 17/95) and 9% (n = 27/300), respectively (p = .0237). Patient survival at four year were 82% (n = 78/95) in CMV viremia versus 91% (n = 273/300) in non-CMV viremia cohort.
Conclusion: Patient and graft survival among the cohort were 88.8% and 83%, respectively. All-cause mortality was higher among the CMV viremia cohort but not the graft loss .No statistical difference in rate of acute rejection, skin cancer, PTLD, PTDM, and TRAS among the two cohorts.

BOS163 GERMAN DATA ON ORGAN VIGILANCE – TRANSMISSION OF INFECTIONS FROM ORGAN DONOR TO RECIPIENT

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Introduction: In Europe, vigilance monitoring after organ transplant includes Serious Adverse Events (SAE) as well as Serious Adverse Reactions (SAR). All SAE and SAR related to deceased organ donors from German and recipients in Germany have to be reported to the German Foundation for Organtransplantation (DSO) for further evaluation.

SAE describe delayed findings in the donor or in donor substances after transplant that pose a certain *risk of harm* to the already transplanted recipients of this specific donor, e.g. previously undetected donor infections.

SAR refer to *harm that has occurred* to one or more recipients of the same donor and that is suspicious of being associated with the donor organ, e.g. new HCV infection in a recipient.
Methods: Analysis of total reported SAE/SAR regarding infections from 1/2016 to 12/2017 associated to German organ donors and/or recipients.
Results: 52 donor-associated pathogens (SAE) were detected after shipment in different samples: donor blood (5), swabs (6), bronchioalveolar lavage (BAL/14), not-transplanted organs (2) or organ transport fluid (25). The pathogens were bacterial (43 incl. 6 multidrug resistant (MDR) and one Mycobacterium), fungal (7), viral (1 (HCV)) and one unidentifiable. One donor with occult HCV-infection transmitted HCV to all 5 recipients. These recipients were cured by immediate therapy. In addition 1 VRE was found in a pancreas recipient and 1 C. albicans in a kidney recipient. None of the other pathogens have been shown to be transmitted to any of the recipients.

From donors outside Gemany, 30 donor pathogens have been reported as SAE: bacterial (25 incl. 5 Acinetobacter baumanii and one M. tuberculosis), fungal (3), viral (2) without transmission to German recipients.

Regarding SAR without previous SAE reporting, 17 pathogens were described to cause suspected donor-transmitted infections: bacterial (5), viral (5), fungal (4, one of them from a foreign donor) and undetermined sepsis

BOS164 CHRONIC HEPATITIS E-GENOTYPE 3 INFECTION IN RENAL AND SPK TRANSPLANT RECIPIENTS: A CASE SERIES FROM A SINGLE INSTITUTION

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Introduction: In the UK, Hepatitis E virus-genotype 3 (HEV3), is endemic and has now become a major cause of enterically transmitted viral hepatitis. Unlike HEV-genotype 1, it can establish chronically in the immunosuppressed patient with potential complications such as cirrhosis and liver failure.
Methods and Results: Between 2010–2019, 11 patients investigated for persistently raised ALTs were diagnosed with HEV3 [Table1]. Retrospective analysis of available stored blood samples in 9 patients showed chronic HEV3 infection (HEV-RNA detection > 3 months prior to diagnosis) in all. Notably, 2 chronically infected-HEV patients had negative IgM and IgG testing, at the time of diagnosis. 9 patients received ribavirin treatment, 3/9 achieved clearance, 4/9 have active HEV and 2/9 relapsed after ribavirin cessation.
Discussion: HEV infection should be suspected in all immunosuppressed patients with unexplained transaminitis and should be investigated by molecular testing as HEV serology lacks sensitivity. Chronic HEV3 in our cohort was associated with significant symptom burden and morbidity related to liver fibrosis and cirrhosis. Transmission prevention strategies and early detection and treatment are important for improved outcomes. Further studies are needed to determine regional incidence and prevalence.

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BOS165 EARLY VERSUS LATE URETRIC STENT REMOVAL AFTER KIDNEY TRANSPLANTATION

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Background: Kidney transplantation is the treatment of choice for End stage renal disease. The use of ureteric stents may reduce the risk of postoperative urological complications. On the other hand, prolonged stent usage was shown to be associated with increased risk of urinary tract infections (UTI).
Methods: A retrospective analysis of prospectively collected data of patients who underwent a kidney transplantation in the last 4 years in Hadassah Hospital. Stents were inserted in all patients during the transplantation procedure, there were two groups of patients; those who had stent removal in 4 to 12 weeks after the procedure (the late group) and those 7 to 14 days (the early group). Exclusion criteria included combined kidney and liver transplantation, early death and urological complications. The follow up period was 3 months.

A comparison was done between both groups regarding postoperative infectious complications.
Results: 107 patients were included in the study. 58 had early removal and 49 had late removal of the stent. In the early group there were 22 patients (38 %) with UTI. In the late group there were 14 patients (29 %) (NS $p > 0.05$).

In the early group there were 3/22 UTI's associated with sepsis (14%), and in the late group there were 4/14 (29%). ($p < 0.05$).

Polymicrobial and recurrent UTI occurred in 36 % of the early group and 71 % of the late group. ($p < 0.05$)
Conclusion: In our study, early removal of stents does not reduce the rate of postoperative UTI in the first 3 months. However, it appears that late removal is associated with more sever and frequent infections.

#	Age At Dx	G	Tx	Ind.	Maint.	IgM at Dx	IgG At Dx	Months after Tx of first positive retrospective sample	Duration HEV-RNA Positivity (months)	Peak ALT/ GGT (IU/L)	Treatment	Time to HEV clearance/ Treatment duration (months)	Relapse and Treatment	Follow-up since 1st pos. retrospective sample (M)	Graft outcome	Survival
1	41	F	SPK	Az	FK	+	+	82.5	10.1	1/0 133	Immunos. Ribavirin	1.0 12.5	N	75	Function	Death (cancer)
2	31	F	K	Az	Sir	-	-	30	8.6	337 134	Immunos. Ribavirin	1.5 4	Y Ribavirin	42	Function	Alive
3	46	M	SPK	Az	FK MMF	+	-	25.5	11.8	383 61	Immunos. Ribavirin	2.4 6	N	57	Function	Alive
4	39	F	K	Az	FK AZA Pred	+	+	82.5	3	169 40	Immunos. Ribavirin	2.4 6	N	27	Function	Alive
5	33	M	K	Az	FK MMF	-	-	48.1	>6.8 Lost to FU	Chronic HBV	Immunos. entecavir	Active HEV	-	-	-	-
6	60	F	K	Az	FK	+	+	1.5	29.8	337 683	Immunos. Ribavirin	1.5/ 2	Y Ribavirin	67	Function	Alive
7	31	M	K/PAK	Az	FK MMF Pred	+	+	6.3	>48.2	347 149	Immunos. Ribavirin	Active HEV	-	31	ESRD	Death (ESRD, Cardiac)
8	71	M	K	Az	FK	n/a	n/a	41	Unknown	144 554	No treatment	n/a	n/a	n/a	n/a	n/a
9	59	M	SPK	Az	FK MMF	+	+	22	Unknown	178 70	Immunos. Ribavirin	Active HEV	-	12	Function	Alive
10	39	M	K	Az	FK MMF	n/a	n/a	20	>3	207 84	Immunos. Ribavirin	Active HEV	-	3	Function	Alive
11	33	F	K	Az	FK	n/a	n/a	48	>3	134 70	Immunos. Ribavirin	Active HEV	-	1	Function	Alive

Dx-Diagnosis, **G**-Gender, **Tx**- Transplant, **Ind.**-Induction, **Maint**-Maintenance, **SPK**-Simultaneous Pancreas and Kidney Transplant, **Az**- Alemtuzumab, **FK**-Tacrolimus, **K**- Kidney, **Sir**- Sirolimus, **MMF**-Mycophenolate Mofetil, **AZA**-Azathioprine, **Pred**-Prednisolone

BOS166 THE ASSESSMENT OF RENAL TRANSPLANT PATIENTS REGARDING MICRO-ELIMINATION OF CHRONIC VIRAL HEPATITISES IN TURKEY: AN ANALYSIS OF 2410 PATIENTS

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The World Health Organization targets reaching to 90 percent of porters of hepatitis B virus (HBV) and C virus (HCV) and treating 80% of those until 2030. We aimed at identifying the frequency of HBV and HCV in renal transplant patients in our country, characteristics associated with diagnosis and treatment, and whether or not micro-elimination could be achieved in this patient group

17 centers of renal transplantation has been included in the study. The patients' demographic information, characteristics of renal transplantation, and the diagnosis of viral hepatitis and the characteristics of treatment were recorded on a database

2410 (1957 living – 453 deceased) patients with renal transplant participated in the study. 1464 patients (61%) were males whereas 946 (39%) females. The average age was 46.8 $\pm$ 13.4 years. HBsAg positivity was found with 94 (3.9%) patients. Anti-HCV, on the other hand, was found positive in 232 patients (9.6%)

For 18 HBsAg positive patients (5.8%) and 39 Anti-HCV patients (12.7%), induction treatment was used. 73 patients with HBsAg positive and 202 with Anti-HCV positive were using steroid. 69 HBsAg positive patients and 187 Anti-HCV positive patients were using antiproliferative medications. Furthermore, 58 HBsAg positive patients and 167 of Anti-HCV positive patients were taking calcineurin inhibitor

Oral antivirals were used for HBV in 13 (14%) patients before transplantation and in 72 (76%) patients after transplantationHCV treatment(all interferon) were given in 48 patients before transplantation

The study is still continuing and all the patients that received transplant are being assessed with respect to viral hepatitis treatment

The results of the study will assess the patients with renal transplant with respect to micro-elimination and it will set an example for the other special groups for providing micro-elimination

BOS168 SERUM LEVELS OF CARBOHYDRATE ANTIGEN 19–9 DO NOT SYSTEMATICALLY INCREASE IN CASE OF LIVER CYST INFECTION IN KIDNEY TRANSPLANT RECIPIENTS WITH AUTOSOMAL DOMINANT POLYCYSTIC KIDNEY DISEASE

Marie Neuville, Jean-Marie Krzesinski, Francois Jouret

CHU de Liege

Liver cyst infection (LCI) is a life-threatening complication of autosomal dominant polycystic kidney disease (ADPKD). Its diagnosis is conventionally based on a constellation of clinical, biological and radiological criteria. An elevation of serum levels of Carbohydrate Antigen 19-9 (CA19-9) (compared to individual baseline level) has been reported in 3 kidney transplant recipients (KTR) with ADPKD who presented with LCI, suggesting a potential utility of CA19-9 as a diagnostic biomarker of LCI in APDKD patients.

Here, we retrospectively identified the ADPKD patients who were hospitalized between January 2013 and October 2018 for LCI, with serum levels of CA19-9 measured during this hospitalization. All medical files were reviewed. Baseline serum levels of CA19-9 were defined as sampled at distance from any bilio-pancreatico-digestive pathologies. Seven episodes of LCI in 5 patients were documented: 5 episodes met the clinico-biological diagnostic criteria, and 6 showed a typical accumulation of ^{18}F-FDG around the infected cysts detected by PET/CT imaging done after a median of 7 days [4d; 13d] *post* admission.

The median age of the cohort reached 73 years [54y; 79y]. The woman/man ratio was 4/3. The median body mass index was 26.4 kg/m^2 [22.8 kg/m^2; 28.3 kg/m^2]. Six LCI episodes occurred in KTR. The median CA19-9 levels at the time of LCI were 29.7kU/L [16.2kU/L; 81.5kU/L], with 4 episodes within the normal range (<34kU/L). Baseline serum CA19-9 levels were available in 4 patients, i.e. 6 episodes. The median CA19-9 levels at baseline reached 39.5kU/L [28.7kU/L; 79.3kU/L], with 2 cases within the normal range. Among these 6 LCI, 3 cases (50%) showed decreased serum levels of CA19-9 at the time of LCI.

In conclusion, the serum levels of CA19-9 – in absolute values or in deltas relative to individual baseline values – do not systematically increase in case of LCI in ADPKD patients, which questions its relevance as biomarker of LCI.

BOS170 BK VIRUS INFECTION AMONG KIDNEY TRANSPLANT RECIPIENTS WITH HIGH IMMUNOLOGICAL RISK AND OVERIMMUNOSUPRESSION

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Background: BK virus infection represents one of the main viral infections within the first year after transplantation. We study risk factors for replication in recipients with high immunological risk, and evaluate the strategies used to achieve BK clearance.
Patients and methods: Retrospective unicentric study. We evaluated 44 recipients transplanted in 2008–2016 with high immunological risk (defined as pretransplant PRA $\geq$ 50%, pretransplant DSAs or acute rejection in the first 3 months after transplantation), with a 3-to-7-years follow-up. The screening method was BK PCR in blood, defining replication as two consecutive positive viral loads.
Results: 9 of 44 patients (20%) had positive viral load in the 120 + /–71 days after transplantation. Risk factors for replication were lower age and number of HLA mismatches. All patients received tacrolimus, mycophenolate, steroids and rATG-Thymoglobulin in the first 3 months posttransplantion. Neither tacrolimus plasma levels, nor other immunosuppresive treatments were associated with replication.

Among BK-positive patients, the mean period until BK clearance was 200 (40–375) days, with no cases of renal failure during replication. 8 of 9 patients had mycophenolate at viral-positive diagnosis, and in 6 of 8 its reduction/withdrawal got negative viral load. For the 2 patients left, minimization of tacrolimus cleared BK and in the patient with everolimus at viral-positive diagnosis, the imTOR was replaced with leflunomide, achieving BK clearance 5 months later. In 4 of 9 patients was added iv Ig to compensate the lower level of immunosuppression. No acute rejection was observed during the follow-up. No differences in creatinine and proteinuria at 5 years were observed between BK-positive and BK-negative patients.
Conclusion: The replication incidence was similar to that of standard recipients. A careful screening and a progressive lowering of immunusupresion with the support of iv Ig prevented allograft loss in our cohort.

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BOS172 FREQUENCY OF URINARY TRACT INFECTION BY MULTIDRUG RESISTANCE ORGANISMS AND ITS EFFECT ON GRAFT FUNCTION IN RENAL TRANSPLANT RECIPIENTS

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Background and Objectives: Urinary tract infection is a recurrent complication post renal transplant. It is frequently associated with poor graft outcomes and greater health related expenditures. The objective of this study is to determine the frequency of urinary tract infection by multidrug resistance organisms and its effects on allograft function in renal transplant recipients.
Methods: In this prospective, cross-sectional study, we screened post renal transplant patients visiting outpatient department with clinical signs and symptoms of urinary tract infection (UTI), defined as fever, frequent micturition, dysuria and urine discoloration. Multidrug resistance (MDR) or extensively drug-resistant (XDR) infections were determined by culture and sensitivity (C/S) and are defined as the organisms resistant to three or more types of antimicrobial drugs.
Results: We enrolled 97 renal transplant recipients of which 72 (74.2%) were diagnosed with clinical UTI. The mean age was 50 ± 8 years. Out of 72 UTI patients, 28 (38.9%) were positive for MDR gram-negative UTI infection. *Eschericia coli* was found to be the most frequent (n = 13, 46.4%) pathogen of MDR UTI in post renal transplant recipients and was significantly associated with antimicrobial MDR which included amikacin, amoxicillin, ampicillin, cefixime, cefuroxime, trimethoprim/sulfamethoxazole, fosfomycin, levofloxacin, nitrofurantoin, tazobactam and vancomycin. Other gram-negative organisms were *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*. Recurrent UTI occurred in 7 (9.7%) patients. Graft pyelonephritis was found to be among 3 (10.7%) patients who had creatinine above 1.5 mg/dL during the early months of post-transplant.
Conclusion: Gram-negative organisms were the most frequent pathogens associated with MDR UTI and were responsible to affect graft function in renal transplant recipients. Therefore, adequate and vigilant antimicrobial prophylaxis sh

BOS173 CENTRAL NERVOUS SYSTEM INFECTIONS IN RENAL TRANSPLANT RECIPIENTS

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Background: Symptoms and signs of encephalopathy are common in renal transplant population with wide numerous possible causes which may be classified as infectious and noninfectious. Despite improved antibiotic regimens, central nervous system (CNS) infections remain an important cause of morbidity and mortality in renal transplant recipients.
Methods: Clinical data of patients who received renal transplant from January 2007 to December 2018 were retrospectively analysed. The pathogenesis, risk factors, treatment and outcome of patients who developed CNS infections following renal transplantation were investigated.
Results: Among 1304 cases, 12 were diagnosed with with central nervous system infection (9 male, mean age at the time of infection of 55.08 years). Patients were diagnosed with CNS infection 2 months to 10 years after the transplantation. One patient received ATG, 5 basiliximab and 6 had no induction. For maintenance, 4 received cyclosporine and other tacrolimus. Only one had everolimus and 11 had mycophenolate. 5 patients received steroid pulses for treatment of acute rejection. Causative agents included JC virus, Streptococcus, Pneumococcus, Cryptococcus neoformans, Herpes zoster virus (2 patients), Mycobacterium tuberculosis, Lysteria monocytogenes, West nile virus (2 patients), while one patient had simultaneous Noccardia and Neisseria infection. Antiproliferative drugs were stopped with preserved dose of steroids and decreased dose of calcineurin inhibitor. Patient with JC encephalitis and patient with concommitant Noccardia and Neisseria encephalitis died. One patient returned to dialysis. Other patients recovered with certain level of neurologic sequelae.
Conclusion: The management of CNS infections requires a high level of awareness while neurological symptoms may be nonspecific and caused by noninfectious conditions related to the underlying disease or side-effects of immunosuppressive drugs.

BOS174 COMPARISON OF DIFFERENT VALGANCYCLOVIR FORMULATIONS IN UNIVERSAL 6-MONTHS PROPHYLAXIS OF CMV INFECTION IN RENAL TRANSPLANT RECIPIENTS: A RANDOMIZED SINGLE-CENTRE STUDY

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Introduction: Cytomegalovirus (CMV) is the most common opportunistic infective pathogen in kidney transplant recipients. Valganciclovir (valgcv) is commonly used for prophylaxis, especially in high-risk recipients. Generic valgcv formulations have become available, but the data about their safety and efficacy is lacking.
Methods: Consecutive de novo kidney transplant patients were randomized to generic valgcv Valganciklovir Teva (24 patients) or Alvanocyte, Alvogen (19 patients) or to Valcyte, Roche (23 patients) in a 18-month open-label study. Universal prophylaxis was used for 6 months after the transplantation. CMV DNA was determined at 1,3,6,9,12 and 18 months after the transplantation.
Results: Groups did not differ regarding the clinical characteristics or the risk for development of CMV infection posttransplant. CMV reactivations were most common 9 months after the transplantation 9% for Valcyte, 13% for Valganciklovir Teva and 26% for Alvanocyt ($p = 0.26$), while at 12 months reactivations were recorded in 22%, 8% and 11 % of patients ($p = 0.37$), respectively. Rates of biopsy-proven acute rejection, adverse events, and serious adverse events were similar for all formulations .Lymphocele most commonly occurred in the Valcyte group (35%) compared to 17% in Valgancyclovire Teva and 17% in the Alvanocyte group ($p = 0.23$). One patient from the Alvanocyt and one from the Valgancyclovir Teva group had CMV disease. Glomerular filtration rates were similar in all groups at any time point, while proteinuria was significantly higher at 12 months in patients who received Valcyte 0.32 g/day (0.18 – 0.42), compared to patients on Valganciklovir Teva 0.2 (0.1 – 0.2), or Alvanocyt 0.2 (0.2 – 0.3), $p = 0.04$.
Conclusion: Valgancyclovir efficacy and safety in this limited data set is similar with Valcyte, Valganciklovir Teva and Alvanocyt early after kidney transplantation. Further studies in high risk patients and studies of their efficacy in treatment of the CMV

BOS175 RISK FACTORS FOR BACTERIAL INFECTIONS FOLLOWING THE FIRST MONTH AFTER LIVER TRANSPLANTATION AND THE IMPACT ON SURVIVAL

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Fundeni Clinical Institute

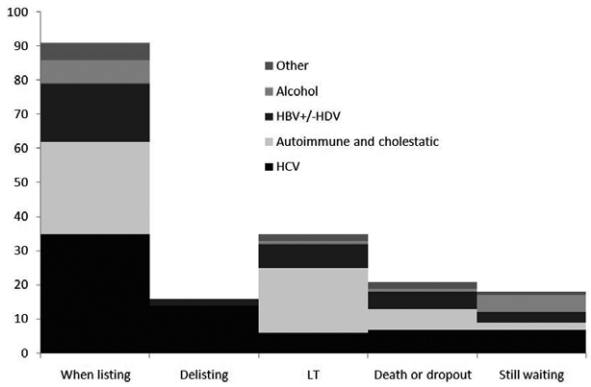
Background: Infectious complications are major causes of morbidity and mortality after liver transplantation (LT), despite recent advances in the transplant field.
Aim: To determine risk factors of bacterial infections within the first month following LT and their impact on patient survival.
Methods: This prospective study included 172 patients with end-stage liver disease who underwent LT at our center from January 2015 to December 2016. Patients were followed-up after LT for detection of bacterial infections. All patients were examined for the possible risk factors suggestive of acquiring infection post-operatively.
Results: There were 63.4% males with a mean age of 47.4 ± 1.1 years. 8.1% of patients died after LT within the first month. Bacterial infections were encountered in 79.1% of patients and 54.1% had infections at multiple sites. Death of patients with the first month was not influenced by presence of infection ($p = 0.96$); only the presence of multiple infections and with multiple germs influenced marginally the death of patients within the first month after LT (78.6% vs 51.9% had multiple infections, $p = 0.05$). The most frequent localization of the infections were pharyngeal (44.2%) and nasal (40.7%), wound infection (18.6%) and drainage tubes (12.8%). The most frequent organism was MSSA (31.1%), ESBL and Acinetobacter species (23% each) and MRSA (15%). In the univariate analysis the following risk factors for multiple bacterial infections during the first month post-LT were identified: low albumin level at LT ($p = 0.01$), high MELD score ($p = 0.002$), higher number of blood units ($p = 0.003$) and fresh frozen plasma ($p = 0.02$) during LT, higher number days of total hospitalization after LT ($p = 0.0002$) and in ICU postoperatively ($p = 0.0001$).
Conclusions: High MELD score and the higher number of days in ICU post-LT are independent risk factors for multiple bacterial infections within the first month post-LT.

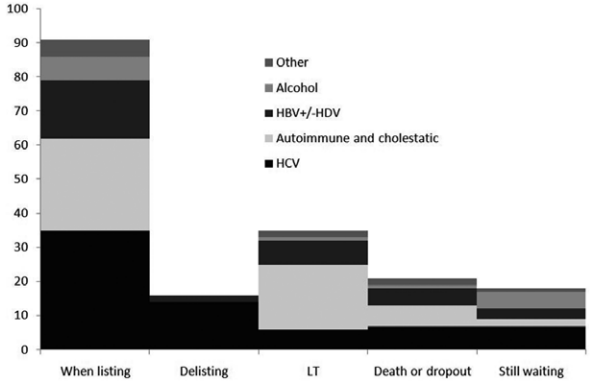
BOS176 SUCCESSFUL ANTIVIRAL TREATMENT DECREASES THE PROPORTION OF HCV-INFECTED LIVER TRANSPLANT CANDIDATES IN THE WAITING LIST

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Patients with decompensated HCV-cirrhosis are still difficult to treat. HCV-treatment is recommended by European Assosiation for the Study of the Liver for liver transplant candidates if Model for End-stage Liver Disease score (MELD) doesn't exceeds 20. Efficacy, tolerability, safety, impact on prognosis and prioritizing in the waiting list after treatment persist to be considerable.
Materials and methods: We analyzed data of 91 patients in waiting list. 35 of them (38%) had chronic HCV-infection. 24 patients (69%) received direct-acting antiviral therapy with 100% SVR. Most of them had MELD less than 20, 3 patients had MELD 20, 21, 25.

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Results: 14 patients were delisted (40% of HCV-infected), 6 received a graft. 7 patients have died or dropped out and what is remarkable 6 of them (85%) were not treated. There still 7 patients who were treated but still require a transplantation because they didn't show an improvement or it was not complete.
Conclusion: Successful antiviral therapy changed the percentage of aetiologies in our waiting list. The part of HCV-infected patients decreased from 38% at the time of inclusion to 17% at the time of transplant.

Direct-acting antiviral treatment allows to treat patients with uncompensated cirrhosis successfully and in some cases permits to delay or cancel liver transplantation but in others doesn't. Patient still need qualified care and reassesment of indications for liver transplantation even after delisting.

BOS13 – ORGAN DONATION AND TRANSPLANTATION: CHALLENGES, ATTITUDES AND SOLUTIONS

BOS177 COMPREHENSIVE STUDY OF AN ATTITUDE OF MEDICAL STUDENTS TOWARDS ORGAN DONATION IN RUSSIA: FIRST RESULTS

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Promotion strategies (PS) hold the potential to help overcome organ shortage. To delineate adequate PS, we conducted the first Russian study of knowledge, perception and views of medical students (MS) towards donation and transplantation, their expectations regarding the future of the field. The study was conducted in 2 groups using different forms of specially compiled questionnaires. Results analysis allowed to determine the level of knowledge and ideas of MS about donation and transplantation, to identify current problems and point ways to solve them.

173 MS of 2–6 years of training were enrolled in the study. In general, MS demonstrate a positive attitude towards donation and transplantation, 78.3% agreed to become an organ donor. The majority of respondents know what brain death (BD) diagnostic procedure is, only 15.1% lack knowledge of BD criteria. 68.5% of MS choose the "opt-out" donation approach over "opt-in" as preferred model, stating that in countries with "opt-in" approach up to 80% of relatives refuse to donate. PS for donation and transplantation are supported by the majority of MS, only 17.8% found such activity inappropriate. MS share common with ordinary people disbeliefs about donation, e.g. 76.4% believe that "black market" of donor organs exists. Only 20% of study participants succeeded to scale organ shortage in Russia.

Finally, 80.3% of MS agreed that special educational courses should be a part of an educational program since "non-medical" issues of donation and transplantation are too complex to be studied as a part of basic bioethics or surgery courses. MS is a social group, which plays an important role in the proper advancement of donation and transplantation, they are not experts in narrow areas, but neither they can be referred to as general public either, so they can act as a "link" between today's socially polarized expert groups and profanes.

The abstract was supported by the Russian Science Foundation, Project No. 17-18-01444.

BOS178 "ACTUALLY I AM TOTALLY PRO-DONATION": AN ANTHROPOLOGICAL STUDY OF REASONS, REGRET, AND RECOMMENDATIONS IN DANISH FAMILY REFUSALS FOR ORGAN DONATION

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University of Copenhagen

Background: In Denmark, low donation rates have initiated a political action plan to get more organs. Families who say no mostly figure as a negative or a problematic issue in national agendas. While the importance of decreasing this group is evident, less attention is devoted to investigating what families actually experience when facing sudden loss and how they themselves articulate the decision not to donate.
Methods/Materials: Based on anthropological interviews conducted in in the private homes of 22 Danish family members who said no to organ donation, this paper aims to bring the No-stories in the spotlight. It discusses the reasons why families said no, it explores whether families regret their decision, and it highlights the recommendations expressed by families regarding improvements of care and increasing donation consents.
Results: The reasons for saying no is the wish for closure in the painful time towards brain death, the wish to say a peaceful goodbye when the heart stops, and the desire to care for other family members and shape a shared experience of "the good death". Other significant reasons are misunderstanding of information, lack of rituals around death, and fear of body mutilation. Families do not regret saying no to donation. No is a meaningful decision for them. But the decision is constantly negotiated among families as they consider the usability of the body and wonder if the right choice is made for the deceased, for themselves, for other family members and for society at large.
Conclusion: Danish families who say no are not against the idea of organ donation, but during time of death, it was right for them to say no. The paper delivers family recommendations towards getting more families to consent, improving family care, and refining public and clinical information efforts. Finally the paper argues that there is much to learn from the experiences of no-families and it is suggested how they can be used in future communication efforts.

BOS179 50 SHADES OF "NO": WHAT DO DANISH INTENSIVE CARE STAFFS DO WHEN A FAMILY SAYS NO TO ORGAN DONATION?

Anja MB Jensen
University of Copenhagen

Background: In Denmark, the neurosurgeons and anesthesiologists treating the patient also handle family approaches for organ donation. Over the last five years, between 21% and 31% of Danish families said no to organ donation. While there are nationally organized courses and guidelines for family communication, how to respond when a family says no to organ donation is handled very individually in the ICU.
Methods/Materials: Based on anthropological interviews with 22 neurosurgeons, anesthesiologists and intensive care nurses, this paper discusses how intensive care staffs experience and handle donation refusals.
Results: Many staffs experience emotional burdens and dilemmas when handling family communication and donation refusals. When is it time to stop asking? When is it right to correct family misperceptions? When can a "no" be justified among colleagues? Should your own passion for donation be evident in a family approach? Or should staffs be "neutral"? This paper clarifies how Danish staffs experience and handle such dilemmas in clinical practice and the many different ways donation approaches are carried out and responded to. Some staffs work strategically towards getting a yes. Some accept without any questions if families say no immediately. Some regard a "no" as an invitation to negotiate, while others find it unethical to keep asking.
Conclusion: The reason for different ways of handling a "no" is based on the staff members individual attitudes to organ donation and, most importantly, on their ideals about family care and respect. Finally, the paper discusses that a family "no" is not the only "no" staffs have to deal with. There is great variation in donation enthusiasm among colleagues at the neuro-intensive care units, and this paper shows how this is handled both in the daily practice and on an

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organizational level. In conclusion, the paper provides the staffs own recommendations for increasing organ donation rates.

BOS180 INTRODUCING E-REGISTRATION IN SLOVENE DONOR REGISTRY

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Slovenija-transplant

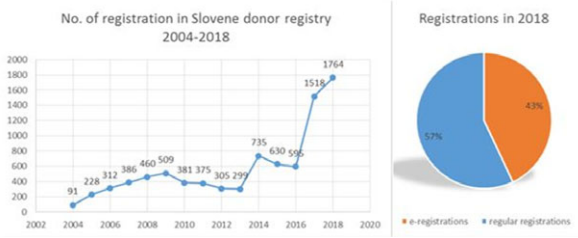
The decision to donate organs and tissues in Slovenia can be formally confirmed by registering in the national donor register set up in 2004 by Slovenija-transplant (ST), a Slovene national competent authority in the field of organ donation. Slovene legal system is a combination of informed and presumed consent and the decision FOR or AGAINST donation can be registered. The number of registrations is currently very low, only 0.5% of all citizens have registered their will so far.

Until November 2018 the donor statement could only be signed personnaly at one of the 68 national authorised donor registration points. Due to low number of designated donors in the register ST looked for a solution to simplify the procedure to attract more people to join the registry. The e-registration option was foreseen in new legislation adopted in 2015 and introduced as a response to the public's initiatives and following trends in information development.

In November 2018 we facilitated the possibility of on-line registration using a digital certificate. We have prepared a press conference and most important national media responded and disseminated the news to general public.

We used the number of new registrations in Slovene donor registry following the introduction of e-registration as an indicator of success. In the first week we have seen a large increase of registrations. Total number of registered donors in 2018 increased for 16% in comparison to year 2017. 43% of all registrations were submitted electronically, which is a good result considering the e-registration was introduced only on November 22nd 2018.

According to the positive response of public after introduction of e-registration and significant increase in the number of registrated donors we believe this flexible method is a step ahead in facilitating increase the number of registrations and a useful tool to further promote organ donation.



BOS181 INVESTIGATION OF THE RELATIONSHIP BETWEEN NURSING STUDENTS' SELF-COMPASSIONS AND ORGAN DONATION ATTITUDES

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University of Health Sciences, Faculty of Nursing,

Background: Nurses who make up the vast majority of health professionals, play an active role in organ donation and transplantation process. Therefore, it is seen that nursing students who are future professionals have a great effect on the knowledge and attitudes of the society about organ transplantation and donation. The aim of this study was to investigate the relationship between nursing students' self-compassions and organ donation attitudes.
Methods: This study was a descriptive, cross-sectional study. The sample of the study consisted of 243 nursing students studying in the 1st, 2nd and 3rd grade of the nursing faculty of a state university in Turkey between February and March 2019. Data were collected by Descriptive Data Form, Self-Compassion Scale and Organ Donation Attitude Scale. Descriptive statistics, Mann-Whitney U test, Kruskal-Wallis test, and Spearman correlation coefficent were used for statistical analysis.
Results: The mean age of the participants was 20.6 $\pm$ 1.2 and 83.1% of them was female. A statistically significant difference was found between fears of medical neglect ($p = 0.022$) and self-judgment ($p = 0.005$) sub-dimensions with gender. There was a statistically significant difference between self-judgment sub-dimension ($p = 0.003$) and self-compassion ($p = 0.004$) with the grade level. A statistically significant difference was found between humanity and moral conviction ($p = 0.033$), and fears of medical neglect sub-dimension with family income status ($p = 0.018$). There was a statistically significant positive correlation between negative attitudes ($r = 0.178$, $p = 0.005$), fears of medical neglect ($r = 0.148$, $p = 0.021$) and fears of bodily mutilation ($r = 0.006$, $p = 0.006$) sub-dimensions with self-compassion.
Conclusion: According to the current study, the socio-demographic characteristics of the nursing students affected their organ donation attitudes and self-compassions. Their negative attitudes towards organ donation increased as their self-compassions increased.

BOS182 KNOWLEDGE, ATTITUDES, AND BEHAVIORS TOWARDS ORGAN DONATION AMONG FIVE DIFFERENT GROUPS OF THE SOCIETY

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Iranian Society of Organ Donation

Background: One of the most important reasons for the refusal of organ donation is lack of the knowledge about and inappropriate attitude and behaviors towards organ donation among different groups of society. The purpose of this study was the investigation of knowledge, attitude and behavior towards organ donation among five different groups of society.
Methods: This cross-sectional study was performed on a total of 150 individuals with five different occupations including Social worker, Military, Nurse, Physician and Housewife in Tehran in 2019. A pre-tested questionnaire with 24 items for knowledge, 10 items for attitude and 7 items for behavior toward organ donation were used. Data analysis was carried out by SPSS v.16.
Results: The results of this study showed that the physicians had the highest score on knowledge about organ donation (P-value > 0.05) that can be due to their related education but in practice were the weakest group. Nurses, as a part of the health care teams, had the next knowledge score. On the other hand, military group with the best attitude about organ donation had the best practice as well (significantly higher than physicians practice score P-value < 0.05), probably because it is easy for them thinking about sacrificing themselves for good deeds. Interestingly, Social workers had the lowest knowledge about organ donation (P-value > 0.05) while housewives' score better than them in this issue maybe because of higher contact of housewives with related TV programs.

Occupation	Age (Mean±SD)	Knowledge score (Mean±SD)	Attitude score (Mean±SD)	Practice score (Mean±SD)
Social worker	35.29 ± 2.66	12.69 ± 3.04	28.88 ± 5.83	1.25 ± 1.00
Military	32.73 ± 9.23	13.22 ± 3.13	31.39 ± 2.93	1.72 ± 1.07
Nurse	35.21 ± 6.76	13.48 ± 1.83	28.65 ± 4.73	1.48 ± 1.20
Physician	30.52 ± 10.45	13.96 ± 2.13	29.40 ± 3.86	0.96 ± 0.73
Housewife	35.35 ± 8.08	12.93 ± 2.55	30.47 ± 4.09	1.35 ± 0.78

The mean age of the five groups did not have a significant difference but education levels were different.
Conclusion: Knowledge alone is not enough to change people behavior about organ donation and it is very important to find the ways to improve people motivation and attitude. Also the effect of TV programs on society knowledge and behavior about organ donation should be considered more seriously.

BOS183 THE DEVELOPMENT OF CHINA ORGAN DONATION HOSPITAL-BASED QUALITY MANAGEMENT SYSTEM ADOPTING THE EUROPEAN AND WHO GUIDELINE

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Background: Since the launch of the China voluntary deceased organ donation program in 2010 to Jan 2019, 21,688 decease organ donors have given their altruistic gift to save 61,902 lives. While the number is increasing, we attempt to construct a quality management system, of which combining framework of Organ Donation Europe Quality System (ODEQS) and the critical pathway of organ donation with the daily practice in China.
Methods: In 2017, a voluntary study was launched at six OPOs in China with a total donation service area of 113.4 million in population. In the 1st phase of the study, an independent group was found to draft survey questionnaires based on the ODEQS criteria for diagnosis analysis. Then key persons from the participating OPOs and donor hospitals (DH) were interviewed. In the 2nd phase, a local system was developed by all partners. In the final phase (in progress), this system was implemented locally. Performance matrix was monitored continuously. A cross-OPO audits will be conducted 1 year (2020) after the implementation of the quality system.
Results: The overall compliance rate to the quality standards was 69% for OPOs and 55% for ICUs being interviewed. Area for improvement was identified and being corrected. The local quality system was established separately for OPO and DH. In total, 115 criteria (97 for OPOs & 73 for DH). 26 quality indicators (26 for OPO and 18 DH) were developed to enable continuous improvement.

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Conclusion: The core of the clinical practice and quality requirement for organ donation is same for the European society and China, with the exception of the lack of brain death law in China and a specific donation category, namely donation after brain death followed by circulatory death was developed to suit the Chinese situation. More Chinese OPOs will be joining the study with the final goal to issue a regional/national guideline for quality and safety management in organ donation and procurement.

BOS184 REPORT ON ANNUAL RESULTS OF DIP IN KOREA

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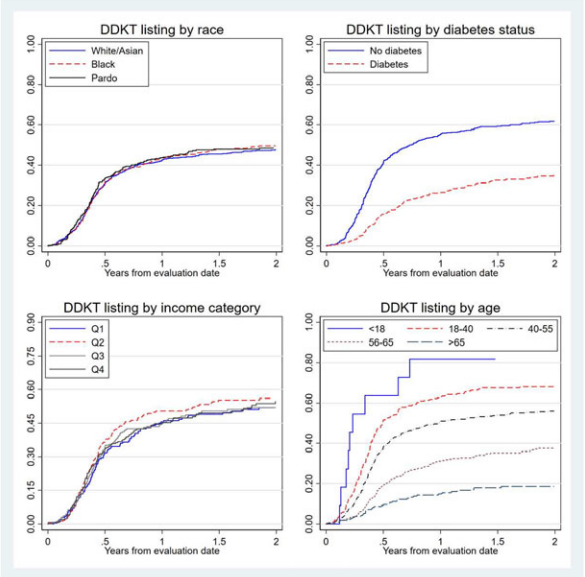
Background: The Donation Improvement Program(DIP) of KODA has been done to increase organ donation at each hospital. The program has been designed to evaluate and educate the medical staffs of each hospital about all steps of donation. We already reported Medical Record Review(MRR) and Hospital Attitude Survey(HAS) of DIP improved the ability of detecting potential donor and diagnosing the brain death. The purpose of this study is to examine the DIP results for recent 7 years.
Methods: For MRR, we analyzed 54,562 cases of medical records of mortality from 77 hosipitals between 2012 and 2018. The rate of identification of potential brain death and actual donation were reviewed retrospectively. The degree of education experience, competence and knowledge related to brain death and donation have been analyzed from HAS data of 964 medical staffs from 15 DIP hospitals in 2012 and 2018.
Result: The identification rate of potential brain death were 25.1%, 41.1%, 68.1%, 73.5%, 68.2% respectively, 6 months before and afrer agreement, 2, 4, 6 year after agreement. And donation rate of each period were 7.6%, 9.8%, 17.5%, 16.0%, 14.0% respectively. The medical staffs who had the necessary competence or knowledge to explain a potential donor was 32.8% in 2012, while it increased up to 38.8% in 2018. Those who had the necessary competence or necessary knowledge to refer a potential donor to OPO increased from 69.0% to 81.7%.

Also, those who has an experience of educated about brain death increased from 36.8% to 49.0%.
Conclusion: However, resulted education of DIP to the same medical group did not affect an potential donor identification and donation after 5 years. Son the need an new strategy to substitute DIP for future activation of organ donation.

BOS185 BARRIERS TO LISTING AND DISPARITIES IN ACCESS TO KIDNEY TRANSPLANTATION IN BRAZIL

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Purpose: Changes in economic and social factors in low- and middle-income countries have led to rising burden of chronic disease. Brazil, a middle-income country with the third-largest volume of transplants in the world, has a nationally-financed healthcare system. We studied barriers to listing and access to kidney transplantation in a Brazilian transplant center.
Methods: We analyzed time from evaluation to listing among 1638 KT patients evaluated for transplantation, and time to deceased donor kidney transplantation (DDKT) and living donor kidney transplantation (LDKT) among 827 KT registrants from 2012–2018 at a large transplant center in Brazil. Using multivariable Cox regression, we explored the risk factors associated with DDKT listing and receipt of DDKT/LDKT. Risk factors include age, sex, race (white/Asian, black, or *pardo* (mixed-race)), blood type, transplant number, diabetes status, and income quartile (Q1 (lowest)-Q4(highest)).
Results: Older age was associated with lower rates of listing (aHR per 10y (Model 1): $_{0.64}0.68_{0.72}$, $p < 0.001$; aHR per 10y (Model 2): $_{0.63}0.86_{0.74}$, $p < 0.001$) (Table 1). Patients with diabetes also had lower rates of listing (aHR: $_{0.40}0.52_{0.67}$, $p < 0.001$). Patients did not display significant racial or income-based disparities in access to DDKT listing. However, among listed patients, those in income Q3 (aHR: $_{1.26}2.48_{4.86}$, $p < 0.01$) and Q4 (aHR: $_{1.08}2.25_{4.70}$, $p = 0.03$) had higher rates of LDKT than those in Q1 (Table 2).
Conclusions: Older age and diabetes substantially lower a patient's chance of being listed for deceased donor kidney transplant, despite Brazil's organ allocation priority points for diabetic patients. Income does not present substantial barriers to listing or to DDKT; however, higher income patients have substantially higher access to LDKT, suggesting potential barriers to LDKT beyond financial coverage.



BOS186 MY LIFE-MY HEALTH- A MOBILE APPLICATION FOR ORGAN RECIPIENTS

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Background: Every year about 850 persons are transplanted in Sweden. The organ recipients face a life long demand of self-management and adaption. In line with the philosophy of person-centered care, they should be empowered within an established partnership with the transplant team. However, this is a challenge within the health care system and new tools and approaches is warranted. Thus, the aim was to develop a mobile application with a content supporting Swedish organ recipients' self-management regardless of where they live or receive follow-up.
Method: The two transplant units performing heart and lung transplantation in Sweden have in collaboration developed the mobile application named My life-my health together with the tech company Engaging Care. The app contains a transplant specific library of 23 "chapters" and a communication function. Two pilot studies were conducted. First including ten organ recipients, 6 men and 4 women aged 27–60 years and with a follow-up 4 months to 16 years. The test involved 30 days designed test journey focusing on content and user ability. The second pilot study involved 6 heart recipients, 2 women and 4 men aged 45–63 years with a follow-up 1 to 14 years. The experienced 10 days designed journey focusing on preparation before follow-up visits by the use of the app.
Results: All participants found the application easy to use. The content was informative, and the tonality was viewed as respectful and nice. All participants felt included in their care and appreciated the opportunity to prepare themselves before the follow-up visit at the out patient clinic. More than half (56 %) experienced increased autonomy after using My life-my health.
Conclusion: Organ recipients as well as their care teams demand a modern digital solution for patient education and self-management support after transplantation. My life-my health is now implemented in Swedish transplant units making knowledge easy to spread and accessible in an equal manner.

BOS187 DATA SHARING PRACTICES AMONG TRANSPLANTATION PROFESSIONALS: A CROSS-SECTIONAL SURVEY

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Background: Clinical trial data sharing in transplantation holds the potential for advancing the field. The aim was to investigate transplant professionals' attitudes towards data sharing, data sharing practices, and facilitators and barriers to data sharing.
Methods: An online cross-sectional survey was developed and widely distributed through social media, societies, transplant experts, transplant centres and authors of recent publications. Data were analysed using descriptive statistics.
Results: The survey was completed by 101 participants, including surgeons (31%), physicians (35%), researchers (14%), transplant pharmacists (1%), nurses (1%) and other (i.e. anaesthesiologists, pathologists and immunologists; 12%). Respondents were mostly aged 50–64 (43%) and 35–49 (34%) and mostly came from Europe (28%), UK (20%), US (18%), Australia (5%) and Canada (5%). Most respondents (strongly) agreed that data sharing is important for progress of research in transplantation (95%) and that data sharing should be facilitated and practiced (98%). 83% of respondents (strongly) agreed that they would find it useful to have access to other researcher's data on a data sharing repository and 83% would be willing to share their data on a data sharing repository.

50% of respondents had previously shared data. The most important reasons for sharing data were collaboration (32%), following a request (29%) or

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promoting open science (17%). The most important reasons for not sharing data were lack of data sharing standards (19%), insufficient funding (13%) or time (13%). Respondents identified the following facilitators to data sharing: availability of an adequate repository (12%), acknowledgement for sharing (12%) and possibility of co-authorship (12%).
Conclusion: There is strong support for data sharing among transplant professionals. Developing data sharing standards, which address the needs and concerns of transplant professionals are needed in order to promote

BOS188 PRINTED PATIENT INFORMATION PROVIDED BY UK RENAL TRANSPLANT CENTRES: DO THEY ADEQUATELY ANSWER QUESTIONS ASKED BY TRANSPLANT RECIPIENTS, PATIENTS ON THE TRANSPLANT WAITING LIST, CARERS AND LIVE KIDNEY DONORS?

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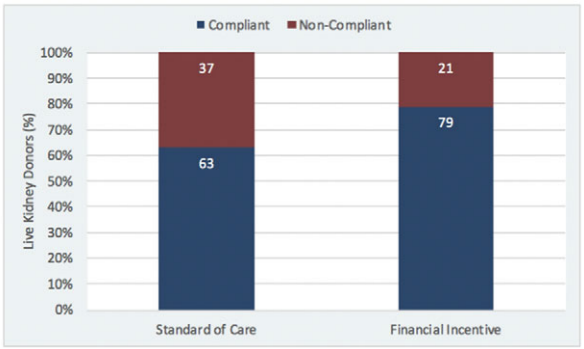
Background: Some questions submitted to the Kidney Transplant Priority Setting Partnership (KTPSP) by patients and carers were determined to be answerable by current evidence. These questions may therefore reflect a gap in patient education. We examined patient materials from UK renal transplant centres to determine whether the materials sufficiently address answerable questions from the KTPSP.
Methods: Printed patient materials from 19 of 24 UK transplant centres were independently examined by two reviewers between November 2017 and June 2018. Reviewers assessed whether 48 answerable questions were sufficiently answered by printed patient materials.
Results: Answerable questions related to pre-operation (14), post-operation (16), living donation (9), drugs and services (6) or the surgical procedure (3). The most answered questions were *What is the process for transplantation?*, *What are the potential complications?*, *What are the risks of having a transplant?* and *What are the main advantages of living donor transplants?*. 12 questions were unanswered by all transplant centres and these questions mostly related to NHS services/drugs (e.g. "If the NHS goes bust how long will my transplant last without immunosuppressants or cheap steroids?"), pre-operation (e.g. *What proportion of those on the waiting list get a transplant?*), post-operation (e.g. *What is the average life expectancy of a kidney transplanted into people at various age ranges?*) and living donation (e.g. *If I donate my kidney and the recipient rejects it, can it be used for someone else on the transplant list or is it just discarded?*".
Conclusion: The printed materials did not sufficiently answer the information needs of participants of the KTPSP. Despite some questions being answered by the materials, patients are still asking them. Patient information materials should address the information needs of patients and their carers, and information should be delivered in a way that is easy to read and understand.

BOS189 CAN FINANCIAL INCENTIVES IMPROVE LIVING DONOR FOLLOW-UP?: A PILOT RANDOMIZED CONTROLLED TRIAL

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Purpose: In the United States, transplant hopsitals are required by the Organ Procurement and Transplantation Network to monitor living kidney donors (LKDs) by way of survey questions and clinical labratory values at 6-months, 1-year, and 2-years post-donation. We found that the majority (57%) of transplant hospitals have failed to meet nationally-mandated thresholds for collecting and reporting this data (Henderson AJT, 2017). Therefore, we sought to test the effectiveness of using small financial incentives to increase patient compliance with completeing LKD follow-up in a pilot randomized controlled trial (RCT).
Methods: We are conducting an ongoing two-arm pilot RCT of LKDs who undergo donor nephrectomy. Using block randomization, LKDs are assigned to the intervention ($25 gift card at time of each follow-up) or control arm (standard of care) upon discharge from their initial post-nephrectomy hospitalization. Follow-up compliance is tracked over time. We present preliminary 6-month results using Fisher's exact test to assess the statistical significance of the difference in compliant follow-up between study arms.
Results: Among 35 LKDs who underwent nephrectomy from 3/2017–12/2017, 19 were assigned to the intervention arm and 16 were assigned to the control arm. The majority of LKDs (N = 27) were Caucasian, with a median age of 48.5 (IQR 36.2–59.0) and no differences between study arms ($p > 0.1$). More LKDs in the intervention arm were compliant with 6-month follow-up (N = 15/19; 79%) compared to the control arm (N = 10/16; 63%) (Figure), although these differences did not reach statistical significance ($p = 0.5$).
Conclusions: We have detected a tendency towards higher rates of 6-month compliance among LKDs who received a small financial incentivize compared to those who received standard of care in a preliminary analysis. We have exapanded the study to another large, urbran transplant center in the United States in preparatin for a fully powered RCT.

Figure. Rates of compliance and non-compliance with 6-month LKD follow-up among LKDs, by treatment arm.



BOS190 COMMUNICATION DURING PERIOPERATIVE CRISES IN TRANSPLANTATION – FOUR CRITICAL SAFETY LESSONS FROM THE AVIATION INDUSTRY

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Background: Intra-operative surgical crises are common in transplantation. Current safety science data suggests that cognitive and behavioural performance decays rapidly in clinical emergencies. In particular, effective communication is compromised during safety-critical phases of surgery. This study aimed to identify structured communication methods from commercial aviation and adapt them for use in surgical emergencies.
Methods: A mixed methods study used focused groups and semi-structured interviews to collect in-depth qualitative data. Phase 1: Interviews with senior airline training captains identified crisis communication tools frequently used in commercial aviation. Phase 2: Focus group consultation with transplant surgical and nursing experts adapted these tools for clinical practice. Phase 3: Manualization of the tools for perioperative use, through development of clinical exemplars and case studies.
Results: Thematic analysis elicited 115 themes based on 2,980 codes. Participant experience amounted to 188,000 flying hours from 17 training captains. Four tools were identified: 1) 'NITS' (Nature, Intention, Time frame and Special instructions) aided structured emergency crew briefings. 2) The 'C1-C2' tool facilitated co-ordinated communication and information management between pilots and their external environment. 3) The 'two-challenge rule' allowed escalation of safety concerns in conditions of low situational awareness and high workload. 4) The 'top-pocket' method supported facilitative decision-making and sharing of mental models. The tools underwent multidisciplinary team review and clinical adaptation in 4 focus groups. Clinical exemplars were produced to assist implementation.
Conclusion: Effective translation of aviation communication tools into surgical practice is not automatic but requires an in-depth adaptation process. The newly adapted tools can contribute to improved performance and patient outcomes in transplantation.

BOS192 EFFECT OF EXERCISE INTERVENTION 'TRANSPLANTOUX' ON PATIENT REPORTED OUTCOMES IN SOLID ORGAN TRANSPLANT PATIENTS

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Introduction: Exercise has the potential to improve long-term outcomes in transplantation. Transplantoux is an exercise intervention aiming at training and supporting transplant (Tx) recipients to walk or cycle up the Mont Ventoux (France). While Transplantoux has been evaluated by VO2 peak exercise

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testing, the effect of Transplantoux on selected Patient Reported Outcomes (PRO) remained to be examined.
Methods: Using a quasi-experimental design over a 12-month period, we included Tx recipients participating in Transplantoux (N = 35 biking, N = 13 hiking), and a matched control sample of Tx recipients (N = 118, matched on organ, age, gender and time post-Tx). Transplantoux consisted of a 6-months home-based individualized exercise program with supervised group training sessions. PROs assessed in all groups before (at baseline & 3 months) and after intervention (at 6, 9 & 12 months) were: perceived health status, depressive symptomatology, anxiety, stress, general health, physical activity and health-related quality of life.
Results: Differences between study groups were observed over time, reflecting differences in PRO baseline values, rather than an effect of the intervention. Specifically, the control group scored lower than bikers/hikers in baseline perceived physical ($p < .0001/p = .0002$) and mental health status ($p = .0005/p = .03$), general health ($p = .02/p = .07$), physical activity ($p = .02/p = .11$), quality of life ($p < .0001/p = .001$) and scored higher for depressive symptoms ($p = .0007/p = .11$), anxiety ($p = .0005/p = .70$) and stress ($p = .02/p = .70$), respectively. Only for stress, an intervention effect was observed with lower stress in hikers than in controls ($p = .02$).
Conclusion: Transplantoux' previously observed intervention effect was not reflected in the PROs. PROs were better in participants than matched controls, indicating that those with poorest perceived health should be targeted for activation as their health outcomes could significantly benefit from exercise.

BOS14 – CHALLENGING TRANSPLANTS, REASSURING OUTCOMES?

BOS193 EARLY KIDNEY GRAFT FAILURE: RISK FACTORS AND COMPLICATIONS

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Hospital Dr Peset

Introduction: Graft failure in the immediate postransplantation period prevents the achievement of the benefits associated to the kidney transplantation
Objectives: To analyse the risk factors associated with our composite endpoint: graft failure during the first year and not reaching a good renal function during the first year.
Material and Methods: We analysed our series of kidney transplants up to January 2019. We compared patients with graft failure and those who had not reached an optimum renal function (Cr > 2 mg/dl) during the first year postransplantation (F group) with the rest of kidney transplants (non-F group).
Results: Median follow-up of 87 + -72 months. Group F: n = 376 (34.1%) was compared with non-F: n = 727 (65.9%). In the multivariate analysis, F was related to a higher proportion of donors from non-controlled and controlled DCD, expanded criteria donors ($p < 0001$). In F group male recipients, diabetic nephropathy and smoking ($p < 0001$) were more frequent. Donors were older, DGF and early acute rejection episodes ($p < 0001$) were more frequent in F group, without differences in induction or maintenance immunosuppression treatment. Recipients in group F were older, showed a higher BMI ($p < 0001$). Cold ischaemia time was higher in group F ($p < 0001$). The most frequent causes of graft failure in group F were those related with the immediate postransplantation procedure, the chronic graft dysfunction and recipient death with functioning graft. Patient survival in group F was lower than in non-F group ($p < 0001$). Expanded criteria donors ($p = 0.007$) and DGF ($p = 0.000$) were the two independent risk factors related to worse prognosis during the first year after transplantation.
Conclusions: The use of expanded criteria donors and cardiac deceased donors were associated with an increase of graft failure and with a suboptimal renal function during the first year. The early graft failure was related to a worse survival.

BOS195 OUTCOME OF EN-BLOC KIDNEY TRANSPLANTATION FROM PEDIATRIC DONORS TO PEDIATRIC RECIPIENTS: A SINGLE-CENTER EXPERIENCE

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Background: Expansion of donor pool is a crucial challenge for kidney transplant programs all over the world. Deceased pediatric kidney donors are not yet well utilized, as en-bloc kidney transplantation has peculiar limiting factors, mainly graft dysfunction, vascular thrombosis, hyperfiltration & Urinary leak. The outcome reports of en-bloc kidney transplantation from pediatric donors to pediatric recipients are still very few. We aim to study graft & patient's survival & major complications of a case series of en-bloc kidney allograts in pediatric recipients transplanted our center.
Methods: Donor & recipient characteristics, en-block graft size, graft function, complications, recipients & grafts survival were retrospectively analyzed in a series of seven en bloc renal allografts. Follow up duration ranged from 12.2 to 50.4 months post transplantation (mean = 27.6 ± 16.2 months). Donors age was 2 to 26 months (median = 4 months) & their weight ranged from 3.2 kg to 12.9 (mean = 7.4 ± 3.2 kg). Recipients age was 1.0 to 16.2 years (mean = 9.1 ± 5.9 years) & their weight ranged from 9.7 to 34.4 kg (mean = 20.7 ± 9.2 kg).
Results: Both recipients & grafts survival was 100% at the last follow up. Recipients' eGFR increased to 81 ± 31.4, 91.6 ± 19.1, & 102.0 ± 41.3 & 93.7 ± 54.1 ml/min/1.73 m^2 at 1, 3, 6 &12 months post transplantation respectively. The mean length of the grafts increased from 5.4 ± 0.6 cm at transplantation time to 7.3 ± 0.9 & 7.6 ± 1 cm at 6 & 12 months after transplantation respectively. Only one recipient showed delayed graft function. Ureteric stenosis & acute cellular rejection were diagnosed in one recipient 2 months post transplantation. No other major complications related to en-bloc grafts were reported in our series.
Conclusion: We can conclude that en-bloc kidney transplantation has an excellent outcome. These results support the utilization of en- bloc transplantation to increase donor pool for pediatric recipients if both medical & surgical settings are appropriate.

BOS196 THE POTENTIAL OF NEONATAL DCD ORGAN DONATION IN SWEDEN – A POPULATION BASED STUDY

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Background: There is a growing shortage of organs for transplantation. Expanding organ donation into the neonatal period may alleviate the current imbalance. However, organ donation in neonates is currently not considered in Sweden. We sought to evaluate the potential of neonatal kidney, liver, heart and hepatocyte donation in neonatal intensive care units in Sweden.
Method: The study population constituted of all children born > 27 weeks, who died during neonatal care during 2006–2016. Patients were identified using the Swedish Neonatal Quality register which collects information on all new-born infants that are admitted to neonatal units. Medical charts for all patients in 3 neonatal units were analysed. Following patients were excluded: 1 No withdrawal of life sustaining treatment. 2. Malignancy 3. Multiorgan failure due to sepsis 4. >365 days of age.

In remaining patients, respective organ was considered viable if following criteria were met: Kidney: Creatinine < 1.5 mg/dl. Urine production > 1 mg/kg/h. No congenital kidney malformation or disease. Weight > 1.7 kg. Liver and hepatocytes: ALT < 3.5 ukat/L or a decreasing trend. No congenital liver malformation or disease. Weight > 3 kg (weight not applied for hepatocyte donation). Heart: No diagnosed heart failure. No congenital heart malformation. Weight > 3 kg.
Results: Out of 317 patients 211 patients were excluded. Finally, 106 (5.3 pmp/year) potential DCD donors could be identified which met inclusion criteria for at least one organ: 59 (2.9 pmp/year) potential kidney, 98 (4.9 pmp/year) hepatocyte, 32 (1.6 pmp/year) liver and 23 (1.1 pmp/year) heart donors.

Most common diagnosis was hypoxic ischemic encephalopathy 30.5%. Mean weight was 2472 grams, mean age was 10.1 days. 21.7% were delivered vaginally, 72.6% via caesarean, 4.7% instrumentally.
Conclusion: Our result indicates that neonatal organ donation could be a valuable contribution to the organ donation pool in Sweden.

BOS197 UK NATIONAL OUTCOMES OF TRANSPLANTS FROM EN BLOC PAEDIATRIC DONORS: 10 YEARS' EXPERIENCE

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Introduction: Paediatric donors have been contributing to the kidney donor pool but there are concerns regarding the small nephron mass, hyperfiltration, technical issues including risks of thrombosis and long-term outcomes. We present UK national outcomes data for en bloc paediatric kidneys.
Methods: Retrospective analysis of NHSBT database for paediatric kidney donors from 2007–2016. The cohort of paediatric donors who lead to en bloc transplants were analysed.
Results:

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Type	En bloc DBD	En bloc DBD	En bloc DCD	En bloc DCD
Age of Donor	5 years and less	Older than 5 years	5 years and less	Older than 5 years
No (%)	46 (97.9%)	1 (2.1%)	35 (94.6%)	2 (5.4%)

Total of 631 paediatric (<18 years) kidney transplants were performed in the study period (single and en-bloc). Of these there were 84 en bloc transplants.

82.7% of the en-bloc kidney transplants were from £5 years old donors.

There were no statistical differences in the recipient age (36.0 years vs 35.9 years), cold ischaemic times (14.2 hours vs 15.1 hours) or the anastomotic times (39.1 min vs 38.8mins) between £ 5 and >5-year-old donor groups when both en bloc and single kidney transplants were considered.

The graft survival was similar between the en bloc and single kidney groups. En-bloc kidneys from DCD donors had worse graft survival (p 0.0007) compared to DBD donors.

Conclusion: Paediatric kidney donors remain a precious source of renal allografts. Despite concerns, the outcomes from paediatric donors of en bloc kidneys are similar compared to older paediatric donors of single kidneys. Careful selection of donor and recipient is warranted when using en-bloc kidneys from small DCD donors.

BOS199 CORRELATION BETWEEN HISTOLOGICAL FINDINGS AND PATIENT CHARACTERISTICS IN A COHORT OF LIVING DONORS: A SINGLE CENTER EXPERIENCE

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Stagnant numbers of deceased organ donors and an increasingly longer waiting time make the living donation more relevant. Evaluations regarding the long-term outcome of kidney donors – especially based on histopathological changes of the donated organs – are insufficient.

The aim of the study was to analyze the living donor collective in Regensburg who donated between 2001 and 2016 (n = 214). Renal, cardiovascular and other baseline data were collected (total 54). During 10 years of follow-up, defined endpoints (e.g., renal, cardiovascular, etc.) were analyzed and stratifications, e.g. donor age < / ≥ 65 years, were elaborated to estimate the donor risk. In addition, we analyzed the 14 day biopsy specimen of the transplanted kidney for chronic, donor dependent changes. Then, we compared baseline and follow-up parameters of patients with histological changes to patients without chronic lesions.

After 10 years of follow-up, there were no donors with an eGFR < 30 ml/min nor with need for RRT. 37% of donors without previously known hypertension developed new arterial hypertension. It turns out, that patients older than 65 had a significantly worse eGFR during the entire observation period.

Besides, the occurrence of IFTA (I) arteriolopathy (A) and glomerulopathy (G) was significantly more frequently detected in older patients (≥ 59 years). Patients with pre-existing arterial hypertension showed more frequent glomerulopathy and arteriolopathy without concomitant IFTA. Concordant to this, the group of patients with the above-mentioned histological changes was significantly older and had a noticeable increased intake of antihypertensives compared to patients with a normal biopsy result.

Thus, it can be stated that in the Regensburg cohort, living donation is not associated with an increased cardiovascular or renal risk profile, however, elder donors showed increased chronic lesions and eGFR decline.

BOS200 KIDNEY RE-TRANSPLANTATION AFTER GRAFT FAILURE: A SINGLE CENTER EXPERIENCE

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University Hospital Zurich

Background: There is an increasing demand for kidney re-transplantation. To date most studies report inferior outcome compared to primary transplantation, consequently feeding an ethical dilemma in the context of chronic organ shortage. In addition, criteria favoring re-transplantation remain unknown.

Methods: We retrospectively analyzed all patient transplanted at our center between 2000 and 2016 with follow up until12/2017. Survival was estimated with Kaplan-Meier method, chance of re-transplantation with Cox regression, using time to transplantation as dependent variable.

Results: Over all 1376 primary transplants and 192 (12%) first re-transplants were performed. 10-year graft survival was comparable for primary transplantation and first re-transplantation (67% vs. 64%, log-rank p = 0.08). Among all 341 patients who lost their graft and went on dialysis, a consecutive 223 (65%) individuals received a new kidney (192 second, 28 third, 2 fourth re-transplantation). Multivariate Cox regression revealed, that candidates were significantly more likely to have re-transplantation if age at graft loss was < 65 years (likelihood ratio LR 2.7; 95%CI 1.3–5.5), initially ≤ 1 light comorbidity in the Charlson-Deyo-Index (LR 1.5; 95%CI 1.0–2.4), BMI < 30 kg/m^2 (LR 2.1; 95%CI 1.0–4.8), former graft survival > 5 years, initial duration of dialysis < 3 years (LR 1.7; 95%CI 1.2–2.4), initial use of peritoneal dialysis (LR 1.5; 95%CI 1.1–2.2), and a minimized number of previous re-transplants (LR 1.4; 95%CI 1.0–2.0).

Conclusions: Our data demonstrate comparable graft survival for primary- and re-transplant within the first 10 years. Eligible patients should have readily access to re-transplantation. Further studies are needed to demonstrate, which of our current likelihood factors are truly legitimate in optimizing candidate selection for re-transplantation.

BOS201 INFLUENCE OF DONOR AGE ON KIDNEY GRAFT SURVIVAL

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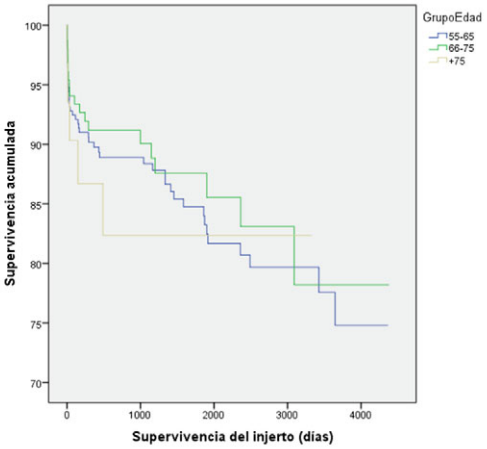
Introduction: Kidney transplantation is the treatment o choice in patients with end stage Kidney disease (ESKD). In recent years, donation activity and kidney transplant in Spain has suffered a significant increase, accompanied by a change in the profile of donors to cope with the waiting list. It has been produced a decrease in mortality due to traffic accidents, the main source of donation, in contrast, strokes are currently the main source. The donor is of older age and with greater morbidity, especially cardiovascular, which makes doubts about its functionality and Whether this is an adequate strategy to expand the donor pool.

Objective: Analyse whether the kidney graft survival is worse in very elderly donors with regard to other groups of expanded criteria deceased donors.

Material and methods: A retrospective analysis was carried out with data from SICATA regarding kidney transplant from a deceased donor with age ≥ 55 years made between 1/1/06 -12/31/15 at the Virgen del Rocío University Hospital. The graft failure was defined as return to dialysis. 495 cases were obtained, which were divided by the age of the donor in three groups: between 55–65 (N = 310), between 66 -75 (N = 154) and > 75 (N = 31). These groups were compared in terms of graft survival (censored for death) using analysis of survival Kaplan-Meier log-rank. Analysis with SPSS 24.0.

Results: The table shows the comparisons between the different population groups and in the Figure is shown the survival functions for each one. Taking into account those results, it cannot be concluded that the age of the donor in these different age groups has significant influence on graft survival with the data we handle.

Conclusions: Kidney transplant improves survival and quality of life in comparison with dialysis long term. Our data did not show significant



	GrupoEdad	55-65 Chi-cuadrado	55-65 Sig.	66-75 Chi-cuadrado	66-75 Sig.	+75+ Chi-cuadrado	+75+ Sig.
Log Rank (Mantel-Cox)	55-65			,345	,557	,323	,570
	66-75	,345	,557			,768	,381
	+75+	,323	,570	,768	,381		

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differences between the different groups of age, which indicates that the use of kidney grafts from elderly donors is accept.

BOS202 EARLY GRAFT LOSS POST KIDNEY TRANSPLANTATION

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Introduction: Renal transplantation is the treatment of choice of end stage renal disease. However, early graft loss is very painful experience for the patients and the health care specialists. The aim of this study was to investigate the incidence and the causes of early graft loss in 90 days post transplantation.
Methods: A retrospective and single centre study of 395 adult kidney transplantation from deceased and living kidney donors was performed between April 2010 and March 2014 at Royal Liverpool University hospital.
Results: Of 395 renal transplantation 3 % (n = 12/395) had experienced early graft loss during 90 days after transplantation. Factors associated with early graft loss were identified; 58.3% of grafts (n = 7/12) lost secondary to renal vein thrombosis and 41.7% (n = 5/12) of graft loss was non-renal vein thrombosis related. Further analysis of renal vein thrombosis related graft loss 33.3% (n = 4/12) were due to coagulation problems (thrombophilia, factor V deficiency and hyperhomocysteinemia) and 25% (n = 3/12) were due to renal vein thrombosis. While for non-renal vein thrombosis, 16.7% (n = 2/12) of graft loss were due to primary non-functioning graft. Infectious complications, pseudoaneurysm, and infarcted graft after paediatric en-bloc transplant, all had similar contributions which were 8.3% for each cause.
Conclusion: During the 4-year study period, the incidence of early graft loss in our hospital was 3%.The most common cause of early graft loss in our centre was transplant nephrectomy due to renal vein thrombosis. Post-transplant infection, pseudoaneurysm, primary non-function graft, and infarction of paediatric en bloc transplantation were associated with early graft loss.

BOS203 NON HEART BEATING DONORS IN KIDNEY TRANSPLANTATION

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kremlin bicetre hospital

Introduction: Due to the shortage of organs, enlarging the pool of donors is an important issue in kidney transplantation. In this study we presents our experience with kidney transplantation using non heart beating donors Maastricht 2 (M2) and Maastricht 3 (M3).
Method: This is a retrospective study in which we included all patients that received a kidney transplantation from a non-heart beating donor from May 2015 and May 2018.
Results: 51 patients were included. 25 patients received a kidney transplantation from a M2 donor and 26 from a M3 donor. Early nonfunctioning kidneys were observed in 13.7% of cases, more frequently in the M2 than in the M3 group with 24% in the M2 v/s 3.8% in the M3 group ($p < 0.04$). The main reason was venous thrombosis (20 v/s 3.8% $p = 0.07$).

Immediate recovery of renal function was observed in 57.7% of cases in the M3 group v/s 9.1 % in the M2 group with a mean creatinine at one week and one month significantly lower in the M3 group 152 μmol/L (111.5–203) v/s 615 μmol/L (406.8–800) at one week ($p < 0.001$) and 122 μmol/l (101.5–144.5) v/s 175 μmol/L (141.5–250) at one month ($p = 0.0013$). In the M2 group, in 68.4% of cases a biopsy was performed because of delayed function while in the M3 group in only 8% of the patients. The main lesion was acute tubular necrosis. The incidence of acute rejection was 23%.

No difference in the renal function was noted between the two groups after the third month with a serum creatinine of 121 μmol/L (103.3–141.8) in the M3 group v/s 116 μmol/L (108–153) in the M2 group ($p = 0.82$), neither at one year nor at the last follow up. The mean follow up was of 22 months (7–25.5).
Conclusion: In our experience as in the literature, kidney transplantation from non-heart beating donors seems to be an interesting option. A longer follow up is needed to confirm these results. In the M2 donors the risk of evnous thrombosis seems more important in the M3 group.

BOS204 VALIDATION OF THE KIDNEY DONOR RISK INDEX IN A DANISH NATIONAL COHORT OF RENAL TRANSPLANT RECIPIENTS

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Background: Tools to predict outcome from renal transplantation based on donor factors are needed to secure the quality of accepted donor organs. The concept of "Standard Criteria donor" and "Extended Criteria Donor" (ECD) was introduced in 2002. This is a dichotomous classification and presently in many European centers most donors are belonging to the ECD category. In 2009 the Kidney Donor Risk Index (KDRI) was introduced. KDRI is a continuous index based on 10 donor characteristics. KDRI was developed using data from deceased donor transplantation in the US but has only been validated in few European cohorts.
Aim: To validate the prognostic value of KDRI in a Danish national cohort of renal transplant recipients (RTR). Furthermore, we wanted to investigate the trajectory of KDRI over time as well as which of the 10 donor factors that had significant impact on the outcome.
Material and Methods: Data from all first-time RTR were retrieved from The Danish Naphrology Reigster and Scandiatrant data base. The full set of data for all 10 donor cretiria were available from 892 donors which were included in the analysis.
Results: All donations were after brain death and no donors were hepatitis C positive. The mean KDRI in the full period was 1.38 (range 0.60–2.94). From 2004 to 2015 there was a steady increase in KRDI from 1.30 to 1.49 ($p < 0.01$). Kaplan Meier estimates for the combined patient and graft outcome based on KDRI quartiles revealed a 5-year graft loss of 12.6% in the lowest KDRI quartile group increasing stepwise to 32.2 in the highest quartile ($p < 0.01$, log rank). Adjusting for recipient age did not change this result. In univariate cox analysis donor age, hypertension, cardiovascular accident, were significant for outcome whereas only donor age was significant in multivariate cox regression.
Conclusion: In a thetional cohort of renal transplant recipients KDRI is a predictor for renal transplant outcome. However, the predictive power is mostly related to donor age

BOS205 SURVIVAL BENEFIT OF PATIENTS UNDERGOING MORE THAN TWO KIDNEY TRANSPLANTS -- MOVING TOWARDS CHALLENGING TRANSPLANTATIONS

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Background: The best option concerning patient survival, cost effectiveness and quality of life for end-stage kidney disease still constitutes kidney transplantation. In times of optimizing treatment we aim to assess weather 3rd, 4thand 5thkidney transplantation (NTx) is reasonable.
Patients and Methods: A retrospective single-center analysis was performed to assess long-term patient and graft survival of 98 NTx performed for the 3rd, 4thand 5thtime. Kaplan-Meier analysis was used to compute overall graft and patient survival. Cox proportional hazard models were employed for uni- and multivariate analysis of demographics and risk factors.
Results: A total of 80 3rd, 16 4thand two 5thNTx were performed during the last 40 years. The 1-, 5-, 10- and 20-years graft and patient survival was 87.8%/94.9%, 73.9%/78.6%, 70.1%/75.6% and 47.7%/69.5%. In comparison, 10% superior survival rates were yielded for the 2ndtransplant cohort (86.6%/98.6%, 75.6%/93.5%, 69.9%/87.8% and 62.1%/75.0%). In the entire cohort, 24 (24.2%) patients died and 31 (31.3%) lost their graft within the observational period. Risk assessment revealed graft loss as a significant risk factor for patient survival. Considering 5- and 10-years graft survival, a significant difference between standard and extended criteria donor organs was detected (77.5% vs. 54.5%; 74.7% vs. 54.5%). The recipient age did not impact significantly on graft and patient outcome. Organs from donors after cardiac death were not utilized in this cohort.
Conclusion: Despite preexisting donor specific antibodies and a challenging-ingsurgery, the favorable outcomes after multiple kidney re-transplants emphasize towards these high-risk transplantations when compared to renal replacement therapy. Even patients beyond their 60s seem to benefit from repeated renal transplantations.

BOS206 WARM ISCHEMIC TIME AND THE KIDNEY DONOR PROFILE INDEX/KIDNEY DONOR RISK INDEX AS A CRITICAL RISK FACTOR OF GRAFT FAILURE FROM DONORS AFTER CARDIAC DEATH

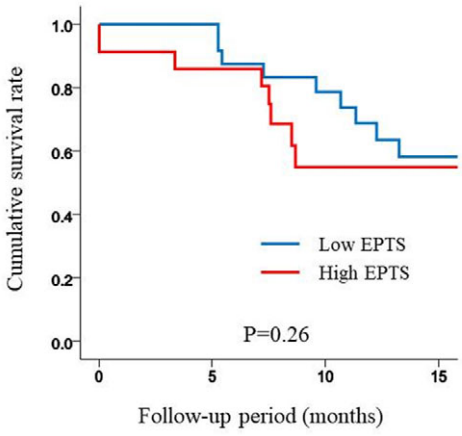
Mamoru Kusaka, Syuhei Tomozawa, Hitomi Sasaki, Naohiko Fukami, Kiyoshi Takahara, Manabu Ichino, Taihei Ito, Takashi Kenmochi, Ryoichi Shiroki
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Objectives: It is important to predict the outcome of grafts prior to kidney transplantation and establish an appropriate allocation system, particularly when considering expanded-criteria donors from donors after cardiac death (DCDs). We evaluated the prognostic value of the warm ischemic time (WIT), the estimated post-transplant survival (EPTS) score and the validity of the Kidney Donor Profile Index/Kidney Donor Risk Index (KDPI/KDRI) for predicting the survival of DCD grafts.
Methods: We retrospectively assessed 145 kidneys transplanted at our center from DCDs (n = 136) or brain-dead donors (n = 9). The EPTS score and KDPI/KDRI were calculated, and the grafts were enrolled.

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Results: The median follow-up period was 9.7 years. The KDPI had a markedly asymmetric distribution (median: 78%), and the KDRI had high index rates (0.71–2.69: median 1.33). The overall 1-, 5-, 10- and 15-year patient survival rates were 97.8%, 94.7%, 87.6% and 83.9% respectively. The overall 1-, 5-, 10- and 15-year graft survival rates were 97.1%, 93.2%, 76.8% and 66.2%, respectively. A Cox multivariate analysis identified a high KDRI (hazard ratio [HR] 2.06, 95% confidence interval [CI] 1.45–7.88, $p < 0.05$) and WIT (>30 min) (HR 3.01, 95% CI 1.07–8.42, $p = 0.036$) as independent risk factors for graft loss. However, the EPTS score was not associated with the graft loss. Furthermore, in kidney transplantations from high-KDRI grafts, the EPTS score was not associated with the graft survival ($p = 0.25$).
Conclusions: The KDPI/KDRI and WIT are good prognostic tools for determining the outcomes of DCD grafts. The WIT should also be included in the allocation system for DCD grafts. Candidates with a high EPTS score should accept high-KDPI/KDRI grafts under conditions of severe organ shortage.

The graft survival in patients with high and with low EPTS among those with a high KDRI



BOS208 SUCCESSFUL EARLY SOFOSBUVIR-BASED ANTIVIRAL TREATMENT AFTER TRANSPLANTATION OF KIDNEYS FROM HCV-VIREMIC DONORS INTO HCV-NEGATIVE RECIPIENTS

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Background: Transplanting kidneys from deceased donors with hepatitis C virus (HCV) viremia has been controversial for some time. Direct-acting antiviral agents have been shown to be highly effective in treating HCV infection. We report our experience with transplanting kidneys from HCV-positive donors with detectable viremia into HCV-negative recipients, followed by early treatment with a sofosbuvir-based antiviral regimen.
Methods: Data were collected from seven HCV-negative recipients receiving kidneys from five deceased HCV-viremic donors. Before transplantation, all intentional transplanted recipients had given informed consent regarding the acceptance of an HCV-viremic kidney. Recipients were closely monitored after transplant with measurements of HCV viremia, liver and renal function, and trough levels of immunosuppressive drugs.
Results: Four donors were infected with HCV genotype 1; the other, with HCV genotype 3a. HCV viremia was detectable in all seven renal transplant recipients within 3 days after transplant. After determination of HCV genotype, antiviral treatment with a sofosbuvir-based regimen (sofosbuvir/ledipasvir, n = 4; sofosbuvir/velpatasvir, n = 3) was initiated within a median of 7 days after transplantation and was continued for 8 to 12 weeks. For all recipients, viral load was below the level of detection at the end of treatment, and all exhibited a sustained virologic response 12 weeks later. All recipients exhibited normal liver enzyme activity at the end of treatment. Renal allograft function and trough levels of tacrolimus remained stable during and after antiviral treatment.
Conclusions: Early administration of a sofosbuvir-based regimen to HCV-negative recipients of kidneys from HCV-viremic donors is an effective and safe approach.

BOS15 – KIDNEY IMMUNOSUPPRESSION-INDUCTION, CONVERSION AND GRAFT COMPLICATIONS

BOS209 EFFECT OF RAPAMYCIN AND BORTEZOMIB TREATMENT ON THE CELLULAR IMMUNITY IN KIDNEY TRANSPLANT PATIENTS WITH HUMORAL REJECTION

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[1]Marien Hospital Herne; [2]Charite Berlin; [3]Knappschaftkrankenhaus Bochum

Humoral rejection is an important cause of early and late graft loss triggered mainly by B cell immunity. Different therapeutic approaches modulating the immune system have been applied so far without a clear preference for one of the strategies or for their effects on the immune system.

Here, we performed a small single center prospective study using Rituximab or Bortezomib to counteract B cell immunity. The aim of this study is to compare the effect of Rituximab or Bortezomib treatmend on the immune system in patients with humoral rejection.

The immune phenotype of patients with humoral rejection after renal transplantation were analysed before the therapy initiation, and 6 months thereafter. We measured the main immune cell types and performed an in-depth characterization of B cell, dendritic cell (DC) and regulatory T cell (Treg) phenotypes.

The immune phenotype of patients with humoral rejection was similar in both therapy groups before therapy initiation. We found no differences in the frequency of the main immune cell types or any B cell-, DC- or Treg subpopulations. 6 month follow up analysis demonstrated a significant decrease of B cell number in the Bortezomib group and nearly non existent B-cell count in the Rituximab group. Furthermore, we found a significantly increased frequency of BDCA3 + myeloid DCs type 2 (mDC2) in patients with Rituximab therapy compared to Bortezomib treated patients. Additionally, we found significant differences in developmental stage of Treg subpopulations in patients with Bortezomib therapy.

Thus effector memory $CD4^+$ T reg cells were significantly reduced, whereas the frequency of naïve $CD4^+$ T cells was significantly increased compared to pretreatment values and to the Rituximab therapy group.

Here, we demonstrate first insights into the immune system changes occurred under rituximab and bortezomib therapy in patients with humoral rejection. Further studies are required to evaluate clinical and immunological long-term effects.

BOS211 LOW TACROLIMUS CLEARANCE SAVES THE LONG TERM GRAFT FUNCTION AFTER KIDNY TRANSPLANTATION- 24 MONTHS SINGLE CENTER OBSERVATIONAL STUDY

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The therapeutic drug monitoring is mandatory in every day clinical practice bearing in mind a high TAC pharmacokinetic variability and non-adherence. The TAC clearance is a part of individual capability of kidney transplant patients to maintain an efficacy target TAC trough blood level.
Methods: 40 kidney transplant pts on Tacrolimus, in 24 months observational study, with the target level 4–6 ng/ml. TAC clearance was estimated according to the D/C ratio of daily TAC dose (D-mgr) divided by trough concentration (C-ng/ml) and 1.0 was accepted as a cutoff between low and high TAC clearance. D/C ratio was controlled ones monthly and TAC clearance was calculated as a mean of the last 10 values. The serum creatinine (sCr, mmol/l), GFR, proteinuria (g/l) and anti HLA antibodies were analyzed.
Results: 27 pts showed low D/C ratio (mean 0.79) while 13 above of 1 (mean 1.23). The mean TAC daily dose was 6.44 and 3.68 mgrin high (HTAC) and low (LTAC) groups respectively. 17 TAC pts developed de novo anti HLA antibodies (5 DSA and 12 Non-DSA), 8(61%) in HTAC and 9(33%) in LTAC. Three and 24 months after KT, sCr/GFR/proteinuria significantly changed (112.3 to 136.2)/(69.7 to 57.09)/(0.42 to 0.58) in HTAC and sCr/proteinruia (116.4 to 111.3)/(0.6 to 0.32) in LTAC.
Conclusion: Our study confirms that the LTAC clearance is associated with a less production of anti-HLA antibodies and better graft function 24 months after transplantation.

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BOS212 SHORT-TERM OUTCOMES COMPARING ALEMTUZUMAB WITH BASILIXIMAB INDUCTION AMONGST RENAL TRANSPLANT RECIPIENTS IN A SINGLE UK RENAL TRANSPLANT UNIT

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Background: In 3C study, Alemtuzumab-based induction treatment reported reduced biopsy-proven rejection(BPAR) at 6 months as compared to standard Basiliximab-based regime amongst kidney transplant recipients (KTRs). Our centre follows up KTRs transplanted both in our unit and at our partnership centre, which use differing induction regime.Hence, we aimed to compare their short-term outcomes post transplant.
Methods: A retrospective study of all KTRs followed-up in a single UK renal transplant unit from 01/03/2018 to 31/11/2018. Data on baseline demographics, delayed graft function (DGF), creatinine at 1,3 and 6 months post-transplant, BPAR, incidence of viral/bacterial infection and post-transplant diabetes mellitus (PTDM) were collected. Data analysis was performed using SPSS version 24. Two-side p value <0.05 was considered statistically significant.
Results: 36 Deceased Donor KTRs (13 female, 23 male) were included in the study. Their mean age was 50 (SD: 12) years. Of these, 23 KTRs (65%) received standard Basiliximab regime (SG) whilst 13 KTRs (35%) received Alemtuzumab induction (AG) with steroid-avoidance regime. There was no statistical significant difference in DGF between the groups (SG: 65.2%, AG: 38.5%, $p = 0.121$). At 1,3 & 6 months post-transplant, the median serum creatinine was 146 μmol/L,125 μmol/L & 125 μmol/L in SG and 152 μmol/L,160 μmol/L & 125 μmol/L in AG, respectively ($p = 0.66$, $p = 0.49$, $p = 0.50$). There were 7 BPAR in SG & 1 in AG($p = 0.66$). 27.3% & 8.3% patients were found to have CMV or BK viraemia in SG and AG respectively ($p = 0.378$). Similarly, there was no difference in rates of bacterial infection requiring hospitalisation (SG: 4.5%, AG: 25%, $p = 0.11$). PTDM rates were also comparable between both groups (SG: 18.8%, AG: 8.3%, $p = 0.613$).
Conclusion: Though the study population was small, there was no statistically significant difference found in short-term outcomes with regards to graft function, rates of rejection, infection & PTDM between Alemtuzumab & Basiliximab induction.

BOS214 THE EFFECTIVENESS OF AZATHIOPRINE TREATMENT IN KIDNEY TRANSPLANT RECIPIENTS WITH BK VIRUS INFECTION

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BK virus (BKV) causes tubulointerstitial nephritis and ureteral stenosis in kidney transplant patients. BKV-induced nephropathy occurs in up to 10% of recipients and is associated with graft failure in 15% to 50% of affected individuals. The study aimed to evaluate the efficacy of azathioprine (AZA) treatment in recipients developing BKV viremia after kidney transplantation.
Materials and Methods: The data of patients who underwent kidney transplantation between January 2010 and March 2018 were evaluated. The changing from mycophenolate to AZA in 25 patients (11 females, 14 males; median age 45 years) was made due to BKV viremia.
Results: The mean serum creatinine levels measured were significant higher and estimated GFR values were lower during AZA switching when compared to the levels of first month after transplantation. Serum creatinine levels in AZA switching did not differ from the measured levels at 1st, 3rd, 6th, 9th, 12th and 18th months after AZA. The median GFR values at 1st and 6th months after AZA switching significantly increased compared to GFR values measured during the drug change. Hemoglobin, lymphocyte, sodium, uric acid and albumin levels measured during AZA switching were significantly higher than first month levels after transplantation. Hemoglobin at 3rd months, AST and ALT at 6th month, albumin at 3rd and 12th months, and leukocyte levels at 1st and 12th months significantly decreased when compared with the levels measured at the time of AZA switching. According to the levels measured during drug exchange, triglyceride levels increased significantly at 12th months after AZA.
Conclusion: As a result, the initiation of AZA instead of mycophenolate therapy in kidney recipients with BKV infection significantly increased GFR values without significant side effects in the short-term. AZA, one of the first agents used in kidney transplantation, should be considered as an effective treatment option in case of development of BKV nephropathy.

BOS215 RIVAROXABAN USE IN RENAL TRANSPLANT RECIPIENTS: A SINGLE CENTER EXPERIENCE

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Background: Despite the advantages of novel oral anticoagulants over Warfarin, limited evidence is available about their safety in renal transplant recipients.
Aim of the study: To present our center experience with the use of the Rivaroxaban in renal transplant recipients.
Methods: A retrospective chart review was conducted for the renal transplant recipients receiving rivaroxaban in Armed Forces Hospitals Southern Region (AFHSR), Saudi Arabia.
Results: From Nov. 2015 until Dec. 2018, 6 post renal transplant patients received Rivaroxaban; 4 patients were on Tacrolimus(FK)(group A), while 3 patients received Cyclosporin(CsA)(Group B); one patient switched from fk to CsA because of persistent supra-therapeutics trough level after initiation of Rivaroxaban despite FK dose reductions. Females costiutes 100 % of group b and 50% in group A. Average age was 57 and 63.3 years in group A and B respectively. Atrial fibrillation was the sole indication for Rivaroxaban use in group B and 50 % of patients in Group A. In group A, the mean FK trough level increased by 32.1% after initiation of rivaroxaban (from 8.1 ng/ml to 10.7 ng/ml), while the CsA C2 level did not show significant change in Group B;(280 ng/l versus 361 ng/l) and did not necessitate CsA dose modifications. In group A, the increase of FK levels were not associated with a clinically significant change in the mean GFR and (77 versus 71 ml/min/1.73 m^2), FK dose adjustments succeeded to achieve FK therapeutic levels except in one case. There were no major bleeding complications or blood transfusions were detected.
Conclusion: In renal transplant recipients, Rivaroxaban increased the FK trough levels and necessitated FK dose adjustments. Its use was not associated with significant CsA levels changes, GFR changes or major bleeding events.

BOS217 EFFECT OF IGURATIMOD ON BONE METABOLISM IN RENAL TRANSPLANT RECIPIENTS: A PRELIMINARY RETROSPECTIVE STUDY

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Iguratimod is widely used for rheumatoid arthritis (RA) in China and Japan. It has been shown to promote bone formation and inhibit bone resorption among RA patients. Our study was to investigate its effects on bone metabolism of renal transplant recipients. A retrospective study was conducted in 21 renal transplant recipients who received donor from cardiac death, admitted to our center from August 2017 to May 2018. Of the 21 patients, there were eight recipients having received iguratomod since the 15th day after kidney transplantation. The mean time after surgery was 9.2 ± 3.2 months. Patients with iguratomod showed lower levels of type I collagen N-terminal peptide (NTx)(44.8 ± 23.1 ng/ml, $p < 0.05$) compared with those without iguratomod (122.6 ± 86.1 ng/ml). The values of type I collagen C-terminal The peptide (CTx), tartrate-resistant acid phosphatase 5b(TRACP 5b), bone alkaline phosphatase(b ALP) and osteocalcin in the iguratomod group were less than those in the control group($p > 0.05$). The emendated calcium and serum phosphorus levels in two groups were almost the same. And the iguratomod group had higher levels of 25-hydroxyvitamin D and parathyroid hormone (PTH) over the control group($p > 0.05$). However, there were no significant difference between the bone mineral density (BMD) of the iguratomod group(-1.8 ± 0.4; -1.6 ± 0.8) and the control gruop(-1.3 ± 0.9; -1.2 ± 0.9) at the right femoral neck as well as lumbar vertebrae ($p > 0.05$). Our results suggested that iguratimod might reduce bone resorption of renal transplant recipients. Its effects on osteoporosis and other bone metabolism process require further validation.

BOS218 EFFICACY AND SAFETY IN THE USE OF INDUCTION THERAPY IN KIDNEY TRANSPLANT RECIPIENTS WITH LOW, INTERMEDIATE AND HIGH RISK: A PROSPECTIVE STUDY. MID TERM RESULTS

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Introduction: Few trials have examined the effect of interleukin-2 receptor monoclonal antibody (IL2RA) or rabbit antithymocyte globulin (rATG) induction versus no induction in patients receiving standard maintenance therapy, data

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show that in patients with standard immunological risk there is no benefits in term of graft or patients survival.
Objectives: The aim of our study is to evaluate the efficacy and safety, in the long term, of the use or not of the induction therapy in kidney transplant recipients, in association with standard maintenance therapy (prolonged release tacrolimus, mycophenolate, steroids) in patients with low, intermediate and high risk (Table 1).
Methods: Data were collect from September 2016 since November 2018. We enrolled consecutively 140 patients divided into five arms (Table 2) according to their Panel Reactive Antibody (low, intermediate and high immunological risk). The patients enrolled in intermediate and high risk were randomized to receive induction therapy as reported in table 2.
Results: In mid term we recorded: Arm 0, 11.34% of biopsy proven acute rejection (BPAR), 48.45% of delayed graft function (DGF), graft and patient survival 88.65% and 94% respectively. Arm 1, 0% of BPAR, 83% of DGF and 100% of graft and patient survival. Arm 2, 0% of BPAR and 75% of DGF, graft and patient survival. Arm 3, 20% of BPAR, 66.6% of DGF, graft and patient survival 86% and 93% respectively. Arm 4: 17.64% of BPAR, 35% of DGF, graft and patient survival 82% and 94% respectively.
Conclusion: Preliminary data showed that the no induction treatment in patients with standard immunological risk is safe and efficacy and the results are similar, according to the literature, to patients treated with IL2RA in term of BPAR, DGF, graft and patients survival. To analyze patients with intermediate risk we need to improve our sample. While rATG in patients with high risk is associated with a low incidence of DGF but similar graft and patient survival.

BOS220 IMPROVEMENT OF MEDICATION ADHERENCE WITH SIMPLIFIED ONCE-DAILY IMMUNOSUPPRESSIVE REGIMEN IN STABLE KIDNEY TRANSPLANT RECIPIENTS

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Background: Many immunosuppressive drugs are prescribed as twice-daily dosing. A simplified once-daily dosing of immunosuppressive drug regimen may improve medication adherence. We investigated medication adherence of simplified once-daily immunosuppressive regimen consisting of extended-release tacrolimus, sirolimus, and corticosteroids along with the efficacy and safety of this regimen.
Material and Methods: This study was a prospective, multicenter, controlled and cohort trial. Stable kidney transplant recipients who had received transplantation at least 3 months before the study enrollment were eligible for the study. Participants were required to fill-out the self-reported immunosuppressant therapy barrier scale (ITBS) questionnaire before and after the conversion. Other clinical laboratory parameters and adverse events were evaluated until 6 months post-conversion.
Results: A total of 160 kidney recipients comprised the intention-to-treat population. The mean total ITBS score was 19.5 $\pm$ 4.0 at pre-conversion and 6 months after converting, the mean total ITBS score was 16.6 $\pm$ 3.6 ($p < 0.001$). Particularly, the ITBS scores of 4 questions related to the frequency of medication dosing were significantly different between pre-conversion and post-conversion. Only 1 patient (0.62%) was diagnosed as biopsy-confirmed acute rejection in the study period. There was no significant change in the mean estimated glomerular filtration rate after the conversion. Overall 95 patients (59.4%) had an adverse event and 28 patients (17.5%) had a serious adverse event. No graft loss and 1 death were reported.
Conclusion: Medication adherence after the conversion to the once-daily immunosuppressive regimen was significantly improved with no additional risks of efficacy failure or adverse events.

BOS221 ANTI-CD40 MONOCLONAL ANTIBODIES DO NOT INDUCE THROMBOEMBOLISM IN VITRO OR IN VIVO

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Clinical trials with anti-CD40L (anti-CD154) monoclonal antibodies (mAb) in patients with systemic lupus erythematosus (SLE) and idiopathic thrombocytopenic purpura (ITP) were halted after unexpected fatal thromboembolic events (TE).

Previous results have shown that soluble CD40L/anti-CD40L mAb immune complexes can activate and induce pro-aggregatory effects on platelets *in vitro* via FcgRIIa. Pulmonary thrombi consisting of platelet aggregates and fibrin and thrombocytopenia were found in human FcgRIIa transgenic mice after injection of pre-formed immune complexes consisting of soluble mouse CD40L and anti-mouse CD40L monoclonal antibody (mAb). To date, no such studies have been performed with immune complexes of soluble mouse CD40 and anti-mouse CD40 mAbs.

We therefore injected human FcgR transgenic mice either with single mouse proteins (soluble CD40L, soluble CD40) or antibodies (isotype controls, anti-mouse CD40L mAb, anti-mouse CD40 mAb), or with immune complexes of soluble protein with the respective antibody. We observed evidence of thromboembolism (thrombi formation in the lung shown by histopathology) and thrombocytopenia with the soluble CD40L/anti-CD40L mAb immune complexes but not with the soluble proteins or antibodies alone, nor with the soluble CD40/anti-CD40 mAb immune complexes.

In vitro platelet aggregation assays (whole blood aggregometry) performed using blood from FcgR transgenic mice and human healthy donors with recombinant proteins, mAbs and immune complexes from respective species confirmed these findings. These data provide *in vivo* and *in vitro* evidence that anti-CD40 mAbs, either alone or in complex with soluble CD40 protein do not induce thromboembolism, indicating that the TE associated with anti-CD40L mAbs are target but not co-stimulation pathway specific. Combined with clinical evidence for multiple anti-CD40 mAbs, these data further de-risk anti-CD40 mAbs for life-threatening thromboembolic events.

BOS222 THE EFFICACY OF THE CONVERSION OF STANDART DOSE TACROLIMUS/MYCOPHENOLIC ACID TO EVEROLIMUS/LOW DOSE TACROLIMUS ON BKV INFECTION

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Background: Calcineurin inhibitors and anti-proliferative immunosuppressives are responsible for activation of BKV that occasionally caused allograft failure after kidney transplant (KTx). Actually, there is no approved treatment except reduction of immunosuppression. In the present study, the efficacy of conversion of standard immunosuppressive treatment to everolimus/low dose tacrolimus/steroid plus ciprofloxacin was investigated.
Methods/Materials: The medical records of KTx recipients whom had transplantation between January 2014 to December 2018 was retrospectively analysed for occurrence of BKV replication, BKV nephropathy, treatment modalities and, their efficacy on patients whom urine BKVPCR>10^4 and/or plasma BKVPCR positive. Everolimus/low dose tacrolimus plus ciprofloxacin was initiated in patients who had at least urine BKVPCR>10^4.
Results: A total of 276 KTx recipients involved, mean age 41.21 $\pm$ 13.8 years, 65.6% men, 88.8% had living donor KTx. Induction was 79.7% Anti-tymocyte-globulin (ATG), maintenance protocol was steroid/MMF/tacrolimus in 98.2% of patients. Urine BKVPCR was positive in 18.5% of patients, persistent and >10^4 copies of urine BKV was 10.1% (n = 28). Plasma BKVPCR was positive in 8% (n = 22) of these patients. From 19 of the 28 patients in whom everolimus/low dose tacrolimus/ciprofloxacin initiated 15 had successful supression of urine BKV replication obtained, but failed in four patients. Moreover conversion of therapy successfully supressed plasma BKV replication in 13/15 of them and only failed in two patients. Other patients; six were lost follow-up and three of them had BKV supression by dose reduction of standard therapy. Two patients had biopsy proven BKV nephropathy, they had well-functioning allograft and allograft and supressed BKV during follow up after conversion.
Conclusion: BKV replication and nephropathy can be successfully prevented by conversion of standard therapy to everolimus/low dose tacrolimus plus ciprofloxacin.

BOS223 BENEFITS OF THERAPEUTIC EDUCATION ON THE QUALITY OF LIFE OF RENAL TRANSPLANT PATIENTS

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Introduction: Even though kidney transplantation generally improves the quality of life (QOL) of patients with end-stage renal failure, some patients still report a low QOL after transplantation. Therapeutic education programs are organized with the aim of individualizing patients' care and improving adhesion to immunosuppressants. The aim of this study was to evaluate the impact of therapeutic education on the QOL of kidney transplant patients.

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Material and methods: This study was conducted in 383 renal transplant patients included in the prospective cohort EPHEGREN between 2012 and 2017. QOL estimated using the SF-36 self-questionnaire and self-reported adverse events induced by immunosuppressants (AEs) were collected over the first year. Patients were considered to have benefited from therapeutic education if they had participated in at least one intervention before or after transplantation. They were classified in a "good" or "poor" QOL cluster using K-means for longitudinal data. Pearson chi-square test and t-test were used to compare the 2 groups.
Results: Two hundred and forty four patients benefited from therapeutic education. Overall, they were characterized by a significantly better physical QOL (PCS) at one year compared to patients who did not benefit from therapeutic education (46.2 ± 6.1 vs. 43.7 ± 7.1, $p = 0.001$). Mental QOL (MCS) at one year was significantly better in patients of the "poor QOL" cluster who benefited from therapeutic education vs. those who did not (42.9 ± 7.9 vs. 39.1 ± 8.5, $p = 0.037$). The proportion of patients reporting at least 5 AEs was significantly higher in patients who did not benefit from therapeutic education (74.1% *vs.* 48.0%, $p < 0.001$).
Conclusion: This study suggests that therapeutic education contributes to improving the quality of life of transplant patients while reducing the number of adverse events. Randomized controlled trials evaluating the impact of therapeutic education are needed in order to confirm these results.

BOS224 CONVERSION FROM EXTENDED DOSE RELEASE-TACROLIMUS TO MELT-DOSE TACROLIMUS IN HIGH METABOLIZER PATIENTS

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Tacrolimus (FK506) is the most used anti-rejection drug in kidney transplantation but especially when using its extended release formulation (ER-Tac, Advagraf), target blood levels can be difficult to reach in high metabolizer patients in the first period after transplantation. In this retrospective monocentric study we analyzed the effect of a switch from ER-Tac to LifeCycle Pharma Tacrolimus (LPCT, Envarsus) in the dose to level ratio of FK506 in high metabolizers patients that can't achieve target blood levels in the first 6 months after transplantation
Methods: We selected 10 patients that recieved a kidney transplant in our institution that were switched from ER-TAC to LCPT in the first 6 months after transplantation because they could not achieve target tacrolimus blood levels (8–12 ng/ml in the first 6 months after surgery) despite a continuus increase in the dose of ER-Tac.

In this analysis we compared FK 506 blood levels, serum creatinina, level to dose ratio, glicemia, dose of ER-TAC and LCPT at the time of the switch and after 1 week and 1 month respectively. Patients were also asked if they sensed a reduction in the feeling of tremors
Results: After the switch from ER-TAC to LCPT we observed a reduction of FK dose (14.9 + 5.9 VS 9.0 + 6.9; $p = 0.04$) and of FK dose / level ratio (2.4 + 1.1 VS 1.1 + 0.9; $p = 0.04$)-

Renal function remain stable, serum creatinine (1.8 + 0.9 VS 1.6 + 0.6; $p = 0.06$). We didn't observe any other variation in the parameters that we evalutaed. All patients reported improvement in tremor.

parameter	before switch	after switch	p value
serum creatinine (mg/dl)	1.8 ± 0.9	1.6 ± 0.6	0.06
FK levels (ng/ml)	6.3 ± 1.2	8.0 ± 1.8	0.9
FK dose (mg)	14.9 ± 5.9	9.0 ± 6.9	0.04
dose to ratio	2.4 ± 1.1	1.1 ± 0.9	0.04

Our data suggest that LPCT can be used in a safer way in high metabolizer kidney transplant recipients.

BOS16 – MOLECULAR MARKERS IN KIDNEY AND LIVER TRANSPLANTATION

BOS225 URINARY APOA4 AS A BIOMARKER FOR CHRONIC RENAL ALLOGRAFT INJURY AND RAPID RENAL FUNCTION DECLINE IN KIDNEY TRANSPLANT RECIPIENTS

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Background: Chronic renal allograft injury (CRAI) remains a major cause of allograft loss in kidney transplant recipients (KTRs). The aim of this study was to identify a urinary biomarker associated with CRAI and rapid renal function decline in KTRs.
Methods: This study included 30 KTRs whose estimated GFR was less than 60 mL/min/1.73 m^2 (CRAI group), and 20 KTRs with normal allograft function (control group). To identify potential urinary biomarkers, we performed SDS-PAGE followed by liquid chromatography-mass spectrometry (LC-MS/MS). SWATH (Sequential Window Acquisition of all THeoretical Mass Spectra) was utilized in protein quantification. Several urinary proteins including Apolipoprotein A4 (APOA4) were validated by enzyme-linked immunosorbent assay (ELISA). Rapid renal function decline was defined as estimated GFR decline of > 3 mL/min/1.73 m^2/year or initiation of dialysis for 3 years after baseline sampling.
Results: Among protein profiles identified by proteomics, urinary APOA4 levels were different between CRAI group and control group (15615.0 vs. 2447.9, $P < 0.001$). Urinary APOA4 levels measured by ELISA validation were also higher in CRAI group than in control group (170914.0 ± 166309.5 vs. 14187.5 ± 19959.8 ng/mL, $P < 0.001$). APOA4 levels had high association with CRAI group compared to control group (area under the curve [AUC] 0.883 (0.794–0.973), $P < 0.001$) in receiver operating characteristic (ROC) curve. Among 50 KTRs, 19 patients (38%) were classified as rapid renal function decline group. Urinary APOA4 levels were higher in rapid renal function decline group than stable renal function group (215430.5 ± 181781.3 vs. 42515.9 ± 72438.4 ng/mL, $P = 0.001$). Log-transformed APOA4 values predicted rapid renal function decline in KTRs (odds ratio 6.70 [95% CI 2.56–22.83]).
Conclusion: These results suggest that urinary APOA4 level might be a potential biomarker for detection of CRAI and could be used as predictor for rapid renal function decline in KTRs.

BOS226 CIRCULATING FIBROBLAST GROWTH FACTOR 23 IS ASSOCIATED WITH CARDIOVASCULAR PROGNOSIS AND GRAFT FUNCTION IN RENAL TRANSPLANT RECIPIENTS

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Aim: Fibroblast growth factor 23 (FGF23) is a hormone that regulates phosphorus and vitamin D metabolism. Elevated FGF23 concentrations are associated with excess risk of cardiovascular disease. The aim of this study was to determine whether circulating FGF23 concentration is independently associated with graft function and cardiovascular risk parameters after renal transplantation.
Methods: This study was conducted among 88 patients (mean age: 44.9 ± 8.7 years, 54% male) who underwent renal transplantation. Demographic data, medications, laboratory values were evaluated, as well as renal resistive index (RRI) and carotid intima-media thickness (CIMT)estimated by Doppler ultrasonography. C-terminal FGF23 concentrations were measured in stored plasma samples. Patients were divided into 2 groups according to mean serum FGF23 values as group 1 (FGF23 ≥ 71; n: 46) and group 2 (FGF23 < 71; n: 42).
Results: Participants had the mean post transplantation time, RRI and FGF23 concentrations were 61.2 ± 22.5 months, 0.65 ± 0.06, 71.2 ± 34.6 RU/ml, respectively. In correlation analysis, serum FGF23 concentration was positively correlated with serum calcium ($r = 0.54$), total cholesterol, ($r = 0.22$) CIMT ($r = 0.18$) and RRI levels ($r = 0.30$) in both male and female patients ($r = 0.24$, $r = 0.291$) respectively, (all $p < 0.05$). A significant inverse correlation was found between the glomerular filtration rate and FGF23 assays ($r = -0.21$, $p < 0.05$). In subgroup analysis, patients in group 1 had significantly higher serum calcium, CIMT, RRI however lower GFR (all $p < 0.05$). In multiple regression analyses, serum FGF23 concentration was a significant determinant of the CIMT scores and RRI (standardized $\beta = 0.318$, $\beta = 0.246$, respectively, all $p < 0.005$).
Conclusion: Increased plasma FGF23 levels were associated with dyslipidemia, lower graft function and increased cardiovascular risk factors in renal transplant recipients.

BOS228 CYSTATIN C AS A PREDICTIVE BIOMARKER OF ACLF DEVELOPMENT AND MORTALITY IN PATIENTS WITH CIRRHOSIS ON LIVER TRANSPLANT WAITING LIST

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Background and Aims: Renal failure is the most common organ failure in patients with decompensated cirrhosis who develop acute-on-chronic liver failure (ACLF), and has a dreadful prognosis. The use of creatinine as estimator of renal function has limitations. Cystatin C (CysC) is an early biomarker of renal dysfunction. However, its prognostic value in patients in the waiting list (WL) for liver transplantation (LT) has not been evaluated. We aimed to assess

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the capacity of CysC to predict both survival and development of ACLF in patients with cirrhosis in the WL.
Methods: Retrospective cohort of patients with cirrhosis listed for LT. Data collected from the inclusion in the WL to death, LT or last date of follow up. CysC was measured at the time of pre-LT evaluation. The ability of liver-, kidney- and global status-related variables recorded at the time of WL inclusion to predict WL mortality and the development of ACLF (CLIF-SOFA definition) were evaluated with competing risk regression analysis.
Results: 180 patients with cirrhosis listed for LT included: median age 59 years, main etiologies of liver disease alcohol, HCV and NASH. The median values of MELD-Na, creatinine and CysC were 16 (13–21), 0.8 mg/dL (0.6–1.07) and 1.46 mg/L (1.13–2.05) respectively. The median follow-up for mortality and ACLF were 12.8 (6.59–24.55) and 11.7 (4.45–22.62) months, respectively. 56 (31%) patients developed ACLF, 54 (30%) underwent LT and 35 (19%) died. After adjusting for possible confounders (MELD-Na, albumin, encephalopathy, gender and subjective global nutritional assessment) CysC $\geq$ 1.5 mg/L was an independent predictor of ACLF (sHR 2.68; 95% CI 1.43–5.00; $p = 0.002$). CysC $\geq$ 1.5 mg/L was an independent predictor of mortality in the WL (sHR 3.58; 95% CI 1.47–8.73; $p = 0.005$) after adjustment for MELD-Na, albumin and ACLF.
Conclusion: Higher levels of CysC are strongly associated with the development of ACLF and mortality in WL, regardless of MELD-Na, albumin or history of ACLF.

BOS229 MICRORNA 155–5P, 181A-5P AND 122–5P DIFFERENTIATE LIVER TRANSPLANTED PATIENTS WITH REJECTION FROM OTHER CAUSES OF GRAFT DYSFUNCTION

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Background: Acute cellular rejection (ACR) is the most common type of rejection in liver transplantation (LT). Its diagnosis is suspected by abnormalities in the liver function tests and confirmed by the findings of the liver biopsy (LB). MicroRNAs (miRNAs) are small non-coding RNAs detectable in plasma and their expression may change in some pathological states. The aim of our study was to assess the performance of a panel of 4 plasma miRNAs (155–5p, 122–5p, 181a-5p and 148–3p) in the diagnosis of ACR.
Methods: A cohort of 145 patients was prospectively followed during their first year after LT. In case of graft dysfunction (GD) defined by AST, ALT, GGT, AP or bilirubin higher than 2-fold the upper limit of normal and an abdominal ultrasound examination without abnormalities, patients were submitted to a LB and a blood draw for the miRNA quantification in plasma. Patients without episodes of GD were submitted to a protocol LB at month 3 after LT in order to rule out ACR, also obtaining plasma at this point.
Results: 21 episodes of ACR were diagnosed from 49 GD episodes. miRNA 155–5p, 181a-5p and 122–5p plasma levels were significantly higher in those patients with ACR ($p < 0.001$) compared to the rest of patients with GD. The area under the ROC curve (AUROC) for the diagnosis of ACR at any time of the first year after LT was 0.93 (IC 95%: 0.85–1). miRNA 155–5p was specially accurate during the first two weeks after transplant differentiating all patients with ACR. In those patients without GD who had signs of ACR in the protocol LB, miRNA 155–5p, 181a-5p and 122–5p plasma levels were also significantly higher ($p < 0.001$). The AUROC of miRNA 181a-5p was 0.93 (IC 95%: 0.79–1) for the diagnosis of this subclinical ACR.
Conclusion: miRNA 155–5p, 181a-5p and 122-5p are differentially expressed in those patients with GD due to ACR and also in those with subclinical ACR, and could be useful as non-invasive biomarkers for the diagnosis of rejection in early stages of LT.

BOS231 A MISPROCESSED FORM OF APOLIPOPROTEIN A-I IS SPECIFICALLY ASSOCIATED WITH RECURRENT FOCAL SEGMENTAL GLOMERULOSCLEROSIS

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Background: Recurrence of idiopathic FSGS, a glomerular disease of unknown aetiology, is a serious complication after kidney transplantation. There are no accurate means to diagnose the relapses or to detect the patients at risk. In an exploratory study we detected Apolipoprotein A-Ib (ApoA-Ib), a high molecular weight form of ApoA-I, specifically in urine of kidney transplanted patients that relapsed of FSGS. The diagnostic performance of ApoA-Ib has been assessed in two independent cohorts obtaining high specificity (94.1%) and sensitivity (87.5%) to detect FSGS relapses. It has also a potential to detect patients at risk of relapse as ApoA-Ib predates the recurrence episodes in most of the cases.
Methods: As urinary ApoA-Ib is strongly associated to FSGS we aimed to unravel the nature of the modification present in ApoA-Ib. To this end, the whole *APOA1*gene was sequenced in ApoA-Ib positive and negative patients and the protein structure was studied using 2D electrophoresis followed by mass spectrometry.
Results: No genetic variations in the *APOA1*gene were found in the ApoA-Ib positive patients that could explain the increase in the molecular mass. The mass spectrometry analysis revealed three extra amino acids at the N-Terminal end of ApoA-Ib that were not present in the standard plasmatic form of ApoA-I. These amino acids corresponded to half of the propeptide sequence of the immature form of ApoA-I (proApoA-I). These results suggest that proApoA-I is miss-cleaved producing ApoA-Ib probably due to an altered protease activity in these patients.
Conclusions: ApoA-Ib, found specifically in urine of recurrent FSGS patients, is a misprocessed form of ApoA-I that retains three aminoacids of the six-aminoacid N-terminal propeptide of proApoA-I. The description of ApoA-Ib could be relevant not only to allow the automated analysis of this biomarker in the clinical laboratory but also to shed light into the molecular mechanism of idiopathic FSGS.

BOS232 NON-INVASIVE DIAGNOSTIC METHODS OF LIVER FIBROSIS IN LIVER TRANSPLANT RECIPIENTS

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Background: The basic examination determining the degree of liver fibrosis is a biopsy and histopathological assessment of the biopsy.This method is invasive, costly and burdened with the risk of error in the selection of the sample and subjectivity in the assessment. Progression of liver fibrosis is not linear, which prompts you to look for methods to evaluate this process, which will be both reproducible and safe. The aim of the study was to compare diagnostic methods assessing the degree of liver fibrosis in transplant patients: liver biopsy – as a reference method, dynamic elastography and tests assessing direct and indirect markers of liver fibrosis – ELF test (*Enhanced Liver Fibrosis*) and FibroTest.
Methods/Materials: The prospective study included 62 patients after liver transplantation. Liver biopsies were performed in case of worsening liver function or were planned as a protocol biopsy. The five-stage METAVIR (F0-F4) scale was used for histopathological evaluation of liver fibrosis. During this period, the patients had a dynamic elastography and blood samples taken to determine fibrosis markers.
Results: The area under the curve for predicting significant fibrosis ($F \geq 2$), advanced fibrosis ($F \geq 3$) and cirrhosis (F4) was: for dynamic elastography 0.5938, 0.8952, 0.9583, for the ELF test 0.7295, 0.7072, 0.8409, for the FibroTest 0.4863, 0.8049, 0.8723. Cut-off values for the diagnosis of particular stages of fibrosis: for dynamic elastography: $F \geq 2$: 4.65 kPa, $F \geq 3$: 8.3 kPa, F4: 12.65 kPa. For the ELF test: $F \geq 2$ 9.27, $F \geq 3$: 10.07, F4: 10.07. For FibroTest: $F \geq 2$: 0.72, $F \geq 3$: 0.4, F4: 0.76.
Conclusion: The cut-off points identified for the clinically relevant stages of liver fibrosis constitute valuable information that is needed in interpretation of the results in a group of patients after transplantation. It is possible to use the dynamic elastography in combination with ELF test, as a non-invasive alternative to the liver biopsy in the diagnosis of liver fibrosis.

BOS233 MIRNA PROFILING IN PEDIATRIC TRANSPLANTED KIDNEY PATIENTS: LOOKING FOR PREDICTIVE REJECTION BIOMARKERS

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Background: In Padua pediatric nephrology unit, protocol biopsies are usually performed to improve kidney graft survival. However, this approach does not prevent histological damage. Therefore, it is important to find early biomarkers useful to define kidney lesions. microRNA (miRNAs) could be valuable candidates. They are short non-coding RNA sequences involved in posttranscriptional pathways modulating renal transplant rejection. miRNAs can also be found into extracellular vesicles (EVs) of biological fluids (e.g. blood). In this study we performed a miRNA profile analysis on protocol biopsies and serum EVs (SEVs) in 20 children transplanted in our center. This method will be useful to the identify new possible predictive biomarkers of renal damage.

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Methods: We considered pediatric patients at one year after transplantation: 10 with normal histology (Banff I) and 10 with acute/chronic rejection (Banff II-III-IV). miRNAs were extracted from kidney tissues and SEVs samples. RNA was evaluated by Agilent Bioanalyzer 2100 and Qubit fluorometer. A "miRNA enrichment-kit" was used to improve miRNA-seq analysis.
Results: 1092 different miRNAs were detected in tissues samples (from 6.42 to 30.8 ng/μl). Among them, 5 miRNAs were overexpressed in the subclinical rejected group compared to not reject one. Differently, 100 different miRNAs were identified in the SEVs sample (< 1 ng/μl). Four out of the five miRNAs identified in the tissues were expressed in SEVs samples too.
Conclusions: We identified 5 miRNAs that were overexpressed in the biopsies of rejected pediatric patients: miR-142-3p, miR-142-5p, miR-101-3p, miR-106b-3p and miR-185-5p. Indeed, hsa-miR-142-5p and hsa-miR-142-3p have been already reported to be associated to acute kidney rejection. These results pave the way to the identification of a noninvasive test, useful to prevent the graft damaging in pediatric kidney transplanted patients.

BOS234 CYTOKINE PROFILE OF ALLOGRAFT 'POST-REPERFUSION FIRST-FLUSH' URINE SAMPLE AS A PREDICTOR OF ADVERSE GRAFT OUTCOME IN RENAL TRANSPLANTATION

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Background: Antigen independent insults to the graft caused by ischemia/reperfusion together with the baseline inflammatory state provides the *nidus* and the cytokine milieu for subsequent anti-graft adaptive responses to develop. Assessing this baseline 'zero hour' inflammatory milieu in the graft might be of significance in predicting graft outcome.
Materials and methods: Zero-hour intra-operative first flush post-reperfusion urine sample was utilized to assess the baseline inflammatory state from 78 prospective renal transplant recipients using a panel of 15 cytokines viz. IL-2, IL-4, IL-5, IL-6, IL-8, IL1β, IL-10, IFN-γ, TNF, RANTES, IL-1α, Granzyme-B, MCP-1, MIP-1α, and IL-12p70 using BD™ Cytometric Bead Array (CBA). Levels of Kidney injury molecule 1 (Kim-1) were assessed by ELISA.
Results: Of the78 patients analyzed, 10 developed acute cellular rejection (ACR), 2 antibody mediated rejection (ABMR), 2 mixed ACR-ABMR, and 7 acute tubular necrosis (ATN) with or without acute rejection over a follow-up period of 2.5 to 11 months. CBA analysis showed significant differences in levels (expressed as ng/ml ± SEM, CI 95%) of IFN-γ (2.9 ± 1.8 Vs. 0.79 ± 0.10; $p < 0.0001$), IL-2 (6.9 ± 2.4 Vs. 1.7 ± 0.2; TNFα (2.07 ± 0.9 Vs. 0.64 ± 0.2; $p < 0.05$), IL-5 (3.02 ± 2.33 Vs. 0.18 ± 0.02; $p < 0.05$), and MIP1α (89.5 ± 30.5 Vs. 33.2 ± 11.8; $p < 0.05$) between those with rejection ±ATN compared to those with stable allograft (SA). IFN-γ was also increased in ATN versus SA ($p < 0.001$). No significant differences were observed in levels of Kim-1.
Conclusions: An IFN-γ signature along with IL-2, and TNF-α signifying a TH-1 cytokine milieu in the zero-hour post-reperfusion first flush urine sample correlated with occurrence of graft rejection and/or acute tubular necrosis. This unique sample proved to be an invaluable non-invasive source for assessing baseline graft inflammation and predicting graft outcome.

BOS236 SERUM AND URINARY BIOMARKERS FOR THE PREDICTION OF LATE ANTIBODY-MEDIATED KIDNEY TRANSPLANT REJECTION

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Background: Screening for donor-specific antibodies (DSA) in serum has acknowledged but limited diagnostic value to uncover late silent antibody-mediated rejection (ABMR). Here, we evaluated biomarkers reflecting micro-circulation inflammation or tissue injury, as an add-on to DSA detection, for improvement of the diagnostic performance of non-invasive monitoring.
Methods: In a cross-sectional study design of systematic ABMR screening, 86 of 741 adult stable long-term kidney transplant recipients underwent, based on a positive DSA result, a protocol biopsy and were retrospectively analyzed for serum and urine levels of E-selectin/CD62E, vascular cell adhesion molecule 1 (VCAM-1), granzyme B, hepatocyte growth factor (HGF), C-C motif chemokine ligand (CCL)3, CCL4, C-X-C motif chemokine ligand (CXCL)9, CXCL10 and CXCL11 applying multiplexed Luminex-based immunoassays.
Results: Among 86 DSA+ study subjects ABMR diagnosis (50 positive, 36 negative) was associated with significantly higher levels of CXCL9, CXCL10 and HGF in blood and CXCL9, CXCL10 and VCAM-1 in urine. Overall, urinary CXCL9 had the highest diagnostic accuracy for ABMR (AUC: 0.77), its evaluation in combination with the mean fluorescence intensity of the immunodominant DSA showed an AUC of 0.86.
Conclusion: Urinary CXCL9, as an adjunct to DSA analysis, may be a valuable biomarker to uncover clinically silent ABMR late after transplantation.

BOS237 BACK SIGNALING OF HLA CLASS I MOLECULES AND NK-/T- CELL LIGANDS IN RENAL TUBULAR CELLS CONTRIBUTES TO THE REJECTION-SPECIFIC MICROENVIRONMENT

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Objective: During the last years, the diverse harmful mechanisms of donor-specific antibodies (DSA) have been studied towards endothelial cells. However, the role of kidney epithelial tubulus cells was less examined and may be underestimated despite their potential contact to DSA and infiltrating T and NK cells during ABMR or TCMR. Therefore, we investigated proximal tubular epithelial cells (PTEC) following stimulation via HLA class I and the ligands CD155 or CD166, which possess own signal-transducing capacities and, hence, may mediate back signaling after NK / T cell encounter or DSA ligation.
Results: Upon stimulation with αHLA, αCD166 or αCD155 mAb, PTEC secreted cytokines and chemokines i.e. IL-6, CXCL1,8,10, CCL-2 and sICAM1 (all $p < 0.05$). This back signaling response was not suppressed by clinically approved immunosuppressive drugs or other conventional pathway inhibitors. Upon co-culture with T and NK cells, PTEC secreted chemokines such as CCL2, CXCL9, CXCL10 and the cytokine IL-6 as well as sICAM-1 as result of this contact-dependent back signaling. Simultaneously, modulation of the CD155 receptor CD226 and the CD166 receptor CD6 was observed in $CD4^+$, $CD8^+$ T as well as NK cells indicating direct ligand/receptor interactions. Furthermore this PTEC response was compared to the cytokine/chemokine microenvironment of BANFF-classified kidney biopsies. Rejection, especially AMBR, was associated with a distinct cytokine milieu, guided by significantly higher levels of chemokines (CXCL9, CXCL10, CCL5, all $p < 0.05$). Histological analyses confirmed the expression of CD155 and CD166 in renal epithelial cells located at distal or proximal tubuli, respectively.
Conclusion: Our results indicate a contribution of PTEC back signaling to antibody-mediated rejection via chemokine release and contribute to a better understanding of the pathomechanisms involved in kidney allograft rejection.

BOS238 ASSOCIATION OF MIRNA WITH ALLOGRAFT FUNCTION AND EXPRESSION PROFILES PREDICTIVE OF ANTIBODY MEDIATED REJECTION AND RECURRENCE OF GLOMERULONEPHRITIS AFTER KIDNEY TRANSPLANTATION

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Background: Many miRNAs were found to be involved in pathological processes that occur following kidney transplantation (KTx), like antibody mediated rejection (ABMR) or glomerulonephritis recurrence (rGN). As most of the miRNAs involved in kidney diseases are extracted by urine, the diagnostic accuracy of such molecules as biomarkers is questionable.
Methods: To analyze expression of selected miRNAs by qPCR (*miR-29c, miR-126, miR-146a, miR-150, miR-155, miR-223*) and their regulation involved in these processes, total RNA was obtained from serum of 100 KTx patients with stable graft function estimated with blood urea nitrogen (BUN), serum creatinine (Cr), cystatin C, CKD-EPI equation, as well as precisely measured using chromium-51 labeled ethylenediamine tetraacetic acid (CrEDTA).
Results: None of miRNAs were significantly related with kidney graft function according to CrEDTA, CKD-EPI or any of the biomarkers for GFR estimation. Selected candidate miRNAs *miR-126* ($p = 0.048$), *miR-150* ($p = 0.024$), and potentially *miR-223* ($p = 0.09$) distinguished ABMR (n = 6) from rGN (n = 3) and *miR-155* ($p = 0.1$) potentially distinguish ABMR from the stable patients group. Most importantly, in patients with rGN there was no *miR-29c* expression, which constitutes the basis for evaluating this potentially diagnostic miRNA as biomarker to distinguish between rGN and other pathologies.
Conclusion: None of the tested miRNAs is associated with kidney graft function and therefore can be diagnostic biomarker in certain etiologies of graft failure. Blood samples of patients with rGN after KTx presented higher expression of *miR-126*, *miR-150*, *miR-223* compared to the ABMR and stable patients group and *miR-155* presented higher expression in both, rGN and

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ABMR, compared to the stable group. *miR-29c* expression has a distinct pattern of expression in the setting of rGN post transplantation and may potentially be used as a non-invasive biomarker to distinguish between pathologies.

BOS239 MONITORING OF MIRNA-181A-5P AND MIRNA-155-5P PLASMATIC EXPRESSION AS PROGNOSTIC BIOMARKERS FOR ACUTE AND SUBCLINICAL REJECTION IN DE NOVO ADULT LIVER TRANSPLANT RECIPIENTS

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Background: Reducing immunosuppression to prevent adverse effects increases graft rejection risk and maintains alloimmune responses associated with graft injury. This study evaluated the capacity of a plasmatic miRNA panel (miR-155-5p, miR-122-5p, miR-181a-5p & miR148-3p) as an early non-invasive prognostic and diagnostic biomarker for T cell-mediated acute rejection (TCMAR) and subclinical rejection (SCR) in adult liver recipients.
Methods: 145 liver recipients were recruited. All patients received a calcineurin inhibitor with or without mycophenolate mofetil and methylprednisolone. Plasmatic miRNA expression was assessed by qPCR pre- and during one year after transplantation.
Results: 17 patients experienced TCMAR, and 8 were diagnosed with SCR during the protocol biopsy at the 3rd month post-transplantation. Pre-transplantation, miRNA-155-5p expression was significantly higher in TCMAR and in SCR patients than in non-rejectors, and miRNA-181a-5p expression was also significantly higher in SCR patients than in non-rejectors. Post-transplantation, before transaminase-level modification, significantly increased miRNA-181a-5p, miRNA-155-5p, and miRNA-122-5p expression was observed in TCMAR and SCR patients. Binary logistic regression analyses showed, post-transplantation, that TCMAR risk was better predicted by individual expression of miRNA-181a-5p (LOGIT = -6.35 + 3.87*miRNA-181a-5p), and SCR risk was better predicted considering the combination of miRNA-181a-5p & miRNA-155-5p expression (LOGIT = -5.18 + 2.27*miRNA-181a-5p+1.74*miRNA-155-5p).
Conclusions: Pre-transplantation plasmatic miRNA-155-5p expression may be useful for stratifying low-immunologic-risk patients, and post-transplantation miRNA-181a-5p & miRNA-155-5p may be candidates for inclusion in early, non-invasive prognostic biomarker panels to prevent TCMAR or SCR. Large prospective randomized multicentre trials are needed to fine tune the cut-off values, algorithms, and

BOS17 – KIDNEY REJECTION AND HISTOLOGY: CLINICAL TOOLS IN PREVENTION AND DIAGNOSIS OF KIDNEY GRAFT REJECTION

BOS241 DAILY DOPPLER ULTRASONOGRAPHY IN THE EARLY PERIOD AFTER KIDNEY TRANSPLANTATION: IMMEDIATE VERSUS DELAYED GRAFT FUNCTION

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Background: There is little data available on the evaluation of kidney transplants by serial daily Doppler-ultrasonography (US) in the early post-operative period after transplantation. The aim of our prospective observational study was to compare daily Doppler-US parameters of the kidney graft between transplant recipients with immediate graft function (IGF) and delayed graft function (DGF).
Methods: A total of 82 consecutive patients who received a kidney transplant between August 2015 and August 2017 were included in the study (85% of the national cohort transplanted). Patients with primary graft nonfunction, graft failure or death early after transplant were not candidates for the study. Regular daily Doppler-US examinations (except weekends) were performed during the first 14 post-operative days. Bipolar graft size (GS), cortical perfusion (CP), end diastolic velocity (EDV), and resistive index (RI) were determined in groups with IGF and DGF.
Results: Sixty-two patients were male (76%), median age was 54 (range 48–63) years, 65 patients had IGF (79%), and 17 patients had DGF (21%). Ultrasound-Doppler parameters in patients with IGF and DGF are presented in the table.

During the early period after transplant, kidney GS increased in both groups. In the patients with IGF and DGF graft was the largest on the 7th and 14th day, respectively. There were no differences in the CP between the groups. At all time points, patients with DGF had higher RI and lower EDV when compared with the patients with IGF.
Conclusion: DGF played a dominant role determining intrarenal resistance and diastolic velocity in the early post-transplant period.

BOS242 KIDNEY GRAFTS ULTRASOUND-GUIDED BIOPSY PERFORMED BY NEPHROLOGIST: REGAINING TECHNIQUE AND IMPROVING RESULTS

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From June 2013 to November 2017, a total of 483 US-guided kidney biopsies were performed in our institution. Optimization of our biopsy protocol: From 24 hour's hospitalization to 6 hours observation. From shared technique by radiologists and nephrologist together to US guided biopsy by nephrologist alone. From 14 G biopsy needle to 16 G.
Results: From 483 biopsies performed, 261 were on renal grafts. Of them, 63 % by radiologist and nephrologist together, 37% by nephrologist alone. Outpatient 6 h observation on 44% of patients. 56 % underwent 24 hours of observation. Automatic biopsy gun of 14 G were used in 34.5%, 16 G in 60 %, 18 G in 5.5%.

Mean age 55 ± 14, 65.5% male. Mean needle passes 2 ± 1, mean valid samples 1.5 ± 0.5. Mean pre-biopsy hemoglobin levels 11.5 ± 1.8 gr/dl, post-biopsy 10.9 ± 1.9 gr/dl, and mean Hb change was 0.6 ± 0.67. Mean obtained glomeruli was 17 ± 11.

14 G biopsy gun mainly used for inpatient protocol (62%) and for nephrologist – radiologist shared technique (49.7%),16 G biopsy gun was mainly used in outpatient cases (57%) and in all nephrologist solo cases.

Overall complications 10.8%, vast majority minor complications. Biopsies on renal grafts less complications vs. native kidneys (6.9% vs. 15.3%). Among transplanted kidneys, complications higher in shared technique vs. Nephrologist alone (8.4 vs 4.1%), also when only 16 G cases selected (4.1% by nephrologist vs. 8.5% by radiologists). Minor differences between the inpatient vs. outpatient (6.2 vs. 7.8%).

Complications related with 14 G vs 16 G needle (12.2 vs. 4.2%), and with 3 or more needle passes (16.6% vs. 5.9%)
Conclusions: We observed less complications using 16 G biopsy needle compared with 14 G, and when 2 or less needle passes were performed.No significant differences in complications between inpatient vs. outpatient with 6 hours of observation protocol. Less complications when biopsy performed by nephrologist alone compared with shared technique.

Parameter/Day	1	3	7	10	14
GS IGF (cm)	11.22 ± 0.99	11.5 ± 0.97	11.94 ± 1.12	11.84 ± 0.81	11.61 ± 0.53
GS DGF (cm)	10.93 ± 0.51	11.46 ± 1.21	11.71 ± 0.6	11.68 ± 0.68	12.29 ± 0.36
p	0.35	0.92	0.58	0.7	0.089
CP IGF (mm)	2.78 ± 0.9	2.95 ± 1.24	2.72 ± 0.91	2.9 ± 1.57	2.92 ± 0.4
CP DGF (mm)	3.2 ± 1.2	2.79 ± 1	2.2 ± 1.33	2.97 ± 1.22	3.1 ± 0.48
p	0.2	0.74	0.75	0.918	0.57
RI IGF	0.7 ± 0.1	0.72 ± 0.1	0.73 ± 0.1	0.72 ± 0.08	0.74 ± 0.08
RI DGF	0.79 ± 0.19	0.86 ± 0.13	0.83 ± 0.11	0.81 ± 0.09	0.79 ± 0.05
p	0.032	0.001	0.018	<0.001	0.36
EDV IGF (cm/s)	9.69 ± 4	9.85 ± 2.96	9.96 ± 3.68	11.53 ± 5.47	10.75 ± 3.03
EDV DGF (cm/s)	4.89 ± 3.48	3.51 ± 3.29	6.47 ± 3.79	8.24 ± 5.79	6.6 ± 1.46
p	0.001	<0.001	0.024	0.2	0.06

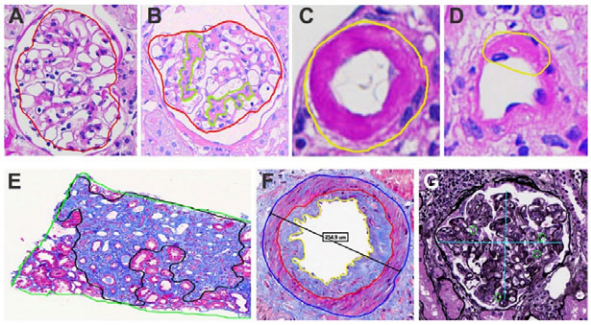
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BOS243 USING COMPUTER-ASSISTED MORPHOMETRICS OF 5-YEAR BIOPSIES TO IDENTIFY BIOMARKERS OF LATE ALLOGRAFT LOSS

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Background: The current Banff scoring system was not developed to predict graft loss and may not be ideal for use in clinical trials aimed at improving allograft survival. We hypothesized that scoring histologic features of digitized renal allograft biopsies using a continuous, more objective, computer-assisted morphometric (CAM) system might be more predictive of graft loss.
Methods: We performed a nested case-control study in kidney transplant recipients with a surveillance biopsy obtained 5 years after transplantation. Patients that developed death-censored graft loss (n = 67) were 2:1 matched on age, gender and follow-up time to controls with surviving grafts (n = 134). The risk of graft loss was compared between CAM-based models versus a model based on Banff scores.
Results: Both Banff and CAM identified chronic lesions associated with graft loss (chronic glomerulopathy, arteriolar hyalinosis, and mesangial expansion). However, the CAM-based models predicted graft loss better than the Banff-based model, both overall (c-statistic 0.754 versus 0.705, $p < 0.001$), and in biopsies without chronic glomerulopathy (c-statistic 0.738 versus 0.661, $p < 0.001$) where it identified more features predictive of graft loss (%luminal stenosis and %mesangial expansion).
Conclusion: Using 5 year renal allograft surveillance biopsies, CAM-based models predict graft loss better than Banff models and might be developed into biomarkers for future clinical trials.



BOS246 CONTRAST-ENHANCED ULTRASOUND IN THE EVALUATION OF EARLY KIDNEY GRAFT FUNCTION: A PILOT STUDY

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Background: The value of contrast-enhanced ultrasonography (CEUS) in the identification of patients with kidney transplant and delayed graft function (DGF) as compared to those with an immediate graft function (IGF) was assessed.
Materials and Methods: A cross-sectional study was conducted in postoperative period on patients with kidney transplant at the Clinical Institute of Urology and Renal Transplantation Cluj-Napoca from October 2017 to November 2018. Two groups of patients were investigated: DGF group defined as the grafts that needed postoperative dialysis and IGF group. All patients agreed to participate were examined by Doppler ultrasound and CEUS with SonoVue contrast agent.
Results: Eighteen patients, age from 23 to 64 years, 6 in the DGF group and 12 in the IGF group were evaluated. The evaluated sample had the median age of 50 years, including 8 women and 10 men with 7/18 with BMI higher than 30 kg/m^2. The resistive index (RI) show significant higher values in the DGF group at the level of upper (UIA; P = 0.004), medium (MIA; P = 0.003) and lower (LIA; P = 0.013) interlobar artery. The CEUS mean cortical transit time (mCTT) and the medulla quality of fit (mQoF) proved lower in the DGF group (Ps = 0.021), as well as the mean segmental artery (SA) time (MSAT; P = 0.027), SA fall time (SAFT; P = 0.049) and SA wash-out rate (SAWoR; P = 0.031) for the DGF group compared to IGF group. Negative associations were observed between RI for all investigated arteries and SAFT for IGF group (upper: ρ=-0.64, P = 0.026; medium: ρ=-0.61, P = 0.037; lower: ρ=-0.58, P = 0.0489) as well as with MSAT (ρ= -0.64, P = 0.035). The mean medium interlobar artery RI significantly associated with the MSAT was observed in the DGF group (ρ=-0.87, P = 0.024).
Conclusion: The patients in the DGF group associate higher values of RI at all level of the interlobar arteries and lower CEUS values of mCTT, mQoF, MSAT, SAFT and SAWoR.

BOS247 INTRA- AND INTER-OBSERVER VARIABILITIES IN THE ASSESSMENT OF RENAL ^{18}F-FDG UPTAKE IN KIDNEY TRANSPLANT RECIPIENTS

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Positron emission tomography (PET) coupled with computed tomography (CT) after injection of ^{18}F-fluorodeoxyglucose (^{18}F-FDG) may help non-invasively disprove the diagnosis of acute kidney allograft rejection (AR) in kidney transplant recipients (KTR). Indeed, the renal uptake of ^{18}F-FDG correlates with biopsy-proven AR-associated inflammation. Still, the intra- and inter-observer variabilities in measuring ^{18}F-FDG accumulation in kidney allograft are unknown. From 11/2015 to 01/2018, we prospectively performed ^{18}F-FDG PET/CT in 95 adult KTR who underwent surveillance transplant biopsy between 3 to 6 months *post* transplantation. Mean standard uptake value (SUVmean) of kidney cortex was measured by 2 different observers in 4 volumes of interest (VOI) distributed in the upper (n = 2) and lower (n = 2) poles. The first observer independently repeated SUV assessment in the uppermost VOI. ANOVA compared SUVmean between the 4 VOIs. Intra-class correlation coefficients (ICC) and Bland-Altman plots were assessed inter- and intra-observer variabilities. No significant difference was observed between the SUVmean of the 4 VOIs of the same kidney (p, 0.41).An ICC of 0.96 [0.94; 0.97] was calculated for the intra-observer variability. Concerning the inter-observer variability, correlations were observed for each VOI with ICC of 0.87 [0.81–0.91], 0.87 [0.81–0.91], 0.85 [0.78–0.89] and 0.83 [0.76–0.88] from the upper to the lower renal poles, respectively. In conclusion, the inter- and intra-variabilities in the assessment of renal ^{18}F-FDG uptake by kidney allograft are low, which makes it transferrable to the clinical routine. Furthermore, the absence of significant difference in SUVmean between the 4 studied poles of one given kidney may allow the delineation of only one VOI per kidney allograft. The upper pole appears to be the best choice on the basis of the inter-observer variability.

BOS248 INDICATIONS AND OUTCOME OF PATIENTS UNDERGOING VERY LATE RENAL TRANSPLANT BIOPSIES

Bakhiet Osman, Huma Alam, Candice Roufosse, Michelle Willicombe

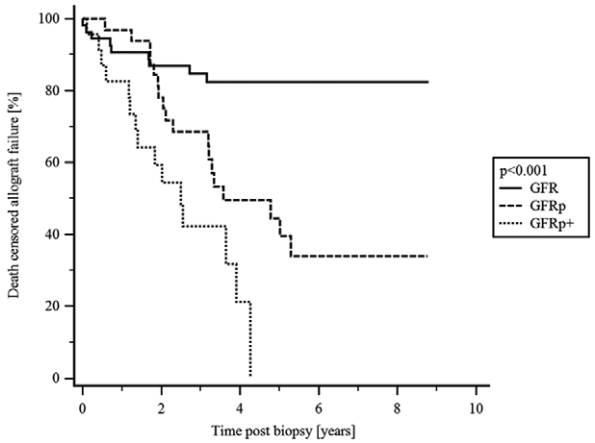
Imperial College Renal and Transplant Centre, Imperial College Healthcare NHS Trust

Background: The utility of histological sampling of biopsies late after renal transplantation has not been extensively reported, which may reflect the perception of lack of treatment interventions. In this study we aim to describe the indications and outcomes of patients undergoing biopsies in the very late post-transplant period.
Methods: We reviewed the clinicopathological features and outcomes of 112 patients undergoing a renal transplant biopsy >10 years post-transplant [median time 14.8 (13.7–15.50) years].
Results: The indications for the biopsy were deteriorating eGFR alone (GFR), eGFR with non-nephrotic range proteinuria (GFRp) and eGFR with nephrotic range proteinuria (GFRp+). GFR was the most common indication.

The predominant histological features were scarring (including glomerular, tubular atrophy and interstitial fibrosis, arteriolar hyalinosis) in 50(44.6%), de novo or recurrent glomerulonephritis in 27(24.1%), alloimmune in 31(27.7%) and other diagnoses in 4(3.6%). Change in immunotherapy occurred in 51 (45.5%) of which 33(29.5%) involved augmentation in therapy.

With a median follow up post biopsy of 5.1(4.5–5.9) years, censored allograft survival was 90.8%, 71.6% and 57.7% at 1, 3, and 5 years respectively. GFRp [3.31(1.47–7.44), $p = 0.004$] and GFRp+ [7.08(3.00–16.54), $p < 0.001$] patients had the worst survival as shown below, and on multivariate analysis, level proteinuria was the only independent risk factor for allograft loss.
Conclusions: This study has shown that biopsies performed late post-transplant may result in a change in management, however independent of histological category, proteinuria and especially nephrotic range proteinuria is associated with poor outcome.

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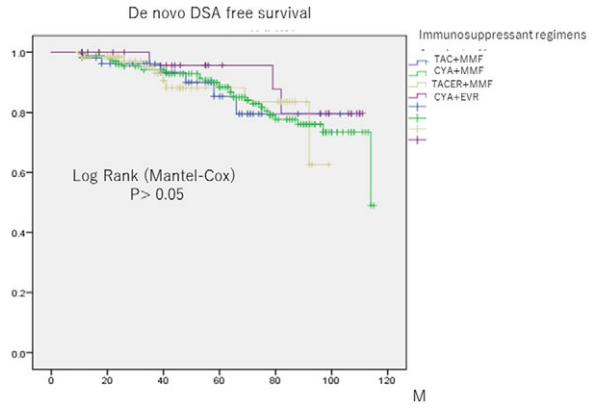


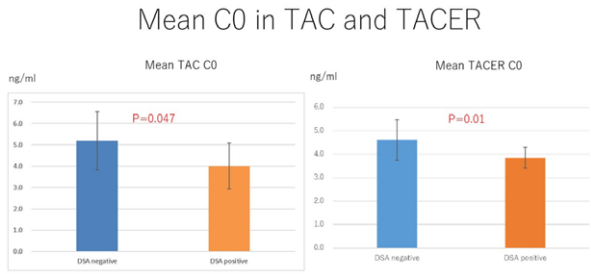
BOS249 MONITORING THE TROUGH LEVELS OF TACROLIMUS AND EXTENDED-RELEASE TACROLIMUS DURING THE MAINTENANCE PERIOD IS IMPORTANT TO PREVENT DE NOVO DSA PRODUCTION

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Background: De novo DSA (dnDSA) production, which leads to the chronic antibody mediated rejection (CAMR) and graft loss, is the key for the long graft survival. Because treatment of dnDSA and CAMR have not been established, prevention is important. To find out the efficient strategy, we investigated the risk factor of the dnDSA and appropriate management of immunosuppression against dnDSA.
Material and Method: Between January 2008 and December 2016, 807 living donor kidney transplantations were performed. 648 of 807 recipients were included in this study. The risk factors of de novo DSA were investigated in 648 recipients with cox regression analysis. 423 of 648 recipients whose immunosuppressant regimens were continued without any changes after operation were investigated. In 53 of 423 recipients, dnDSA were identified (dnDSA positive group). By comparing between dnDSA positive and dnDSA negative groups, the appropriate management of immunosuppression was investigated.
Results: The risk factor of dnDSA was calcineurin withdrawal in the multivariate analysis. The differences in the dnDSA free survival among immunosuppressant regimens were not identified. In the tacrolimus (TAC) and extended-release tacrolimus (TACER) based regimen, the trough levels (C0) in TAC and TACER in dnDSA positive group were significantly lower thanthose in dnDSA negative group.





BOS251 INCIDENCE OF ACUTE REJECTION IN PEDIATRIC RENAL ALLOGRAFT RECIPIENTS: A SINGLE CENTER EXPERIENCE

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Background: There has been a reduction in the incidence of AR in pediatric recipients in the past three decades due to introduction of potent immunosuppressive drugs, as per NAPRTCS report 2014, AR decreased to 16.1%. This study aimed to measure the incidence of AR, risk factors & its impact on the graft in pediatric kidney recipients transplanted in our center.
Methods: This is a retrospective cohort study done on pediatric kidney recipients transplanted in our center between October 2008 & December 2018. It included 120 recipients aging from 1.83 to 16.58 years at the time of transplant with a post-transplant follow up from 1.07 to 117.13 months. Recipients demographic data, AR episodes, risk factors & outcome of AR were collected. Diagnosis of AR was based mainly on graft biopsy findings.
Results: AR was found in 35 recipients (29.1%) with total number of 49 episodes. Out of these recipients 20.0% had 1 episode, 6.6% had 2 episodes & 2.5% had 3 episodes. Acute T cell mediated rejection was diagnosed in 71.4%, acute antibody mediated rejection in 20.4% & both types simultaneously in 8.2% of total episodes. The highest incidence of AR has been found during the first year post-transplant (36.7%). In comparison to pre-rejection values, post-treatment serum creatinine returned back in 34.7% of episodes, meanwhile it increased by =/<25%, 25–75%, &>/=75% in 26.5%, 28.6% & 8.2% of episodes respectively. Chi square showed significant association between AR & history of blood transfusion, delayed graft function & type of graft, yet, logistic regression analysis showed no significant effect of age, sex, history of blood transfusion, type of the graft, delayed graft function, cold ischemia time or degree of HLA mismatch on AR.
Conclusion: Incidence of AR is high among our pediatric renal allograft recipients but none of them had acute graft loss. We need elaborating more about risk factors of AR on larger scale and the effect of AR on long term graft survival.

BOS253 ISOLATED TUBULITIS IN KIDNEY ALLOGRAFTS: THE DEBATE IS NOT RESOLVED

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Introduction: Recently, several groups suggested to eliminate isolated tubulitis without interstitial inflammation (ISO-T) from borderline changes Banff' category (BL) due to its proposed benign phenotype. In this study we evaluated the outcome of ISO-T in the large set of biopsies.
Methods: In this single-center observational cohort study, BL were diagnosed in 781 (12.6%) out of 6197 biopsies performed in 2005–17. All patients with BL diagnosis received steroid pulses therapy. 520 patients with solely BL diagnosis without the history of previous rejections were included. Five-year graft survival and renal graft function were compared between ISO-T (Banff: i0t1, it2, i0t3) and I-T (tubulitis in combination with interstitial inflammation; Banff: i1t1, i1t2, i1t3, i2t1, i3t1) groups.
Results: 298 (57.4%) BL biopsies were ISO-T, 222 patients had I-T BL. Patients in ISO-T group had identical 5-year graft survival as those in I-T group (88.7 vs 88.6%, log rank $p = 0.79$) as well as similar kidney graft function (CKD-EPI eGFR) 3 months, 1, 2 and 3 years ($p = 0.76$, 0.26, 0.36 and 0.38, respectively) after biopsy with BL. In multivariate regression analysis the ISO-T was more frequent after T-cell depletive (rATG) induction (OR = 2.3; 95% CI: 1.5–3.6; $p < 0.001$), in the protocol than in case biopsy (OR = 1.6, 95% CI: 1.1–2.4; $p = 0.026$), accompanied by higher vascular fibrous intimal thickening (OR = 1.6, 95% CI: 1.2–2.1; $p = 0.001$) and interstitial fibrosis (OR = 1.7, 95% CI: 1.2–2.4; $p = 0.005$) while by lower total inflammation (OR = 0.27, 95% CI: 0.2–0.4; $p < 0.001$) and tubulitis (OR = 0.7, 95% CI: 0.5–0.96; $p = 0.027$) scores. The same pattern of ISO-T 5-y outcome was observed in separate cohorts formed either by case or protocol biopsies ($p = 0.5$ and 0.43,

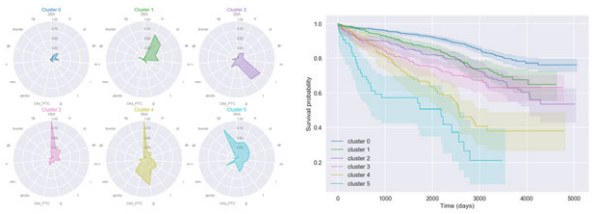
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respectively) or by T-cell depletive or non-depletive induction ($p = 0.77$ and 0.82, respectively).
Conclusion: The exclusion of isolated tubulitis from BL category is not justified. We proposed molecular evaluation of BL risk phenotypes.

BOS254 RECLASSIFICATION OF KIDNEY ALLOGRAFT BIOPSIES USING SEMI-SUPERVISED MACHINE LEARNING

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Background: The current Banff classification is an expert consensus classification for kidney transplant (KT) biopsies. It classifies the biopsies in different phenotypes based on the observed pathological lesions. Although worldwide used, it suffers from limitations, including a non-quantitative nature, the allowance of diagnoses overlap and insufficient prognostic accuracy.
Methods/Materials: The data consisted in 3622 post-transplant biopsies (949 patients), performed between 2004 and 2015. We used the semiquantitative Banff lesion scores and the presence of circulating donor-specific antibodies (DSA) to train a semi-supervised k-mean algorithm. A weighted Euclidean distance was used to enforce the survival outcome in the clusters search. We validated our results with cross-validation and tested the robustness with 50 different initialisations.
Results: We identified 6 non-overlapping clinically and pathologically meaningful clusters that render different survival curves and/or lesions profiles (Fig 1). They include a cluster with chronic injury without inflammation (1), a cluster with tubulo-interstitial inflammation (2), a cluster with DSA in the absence of microcirculation inflammation (3), a cluster with DSA in the presence of ABMR lesions (4), a cluster with transplant glomerulopathy and DSA positivity (5) and a cluster with absence of lesions (0). We demonstrated consistency of our reclassification with the existing Banff classification, providing confidence in the clusters interpretability. Using those profiles as archetypes, we are now developing a continuous scoring system to quantitatively reclassify each biopsy, based on the full histological profile, with better prognostic performance than the current Banff approach.
Conclusion: Based on the existing Banff description of lesions, we successfully reclassified KT biopsies into both clinically and pathologically meaningful clusters. External validation will be needed to corroborate our findings.



BOS255 PRE-IMPLANTATION KIDNEY BIOPSY: VALUE OF THE EXPERTISE IN DETERMINING HISTOLOGICAL SCORE AND COMPARISON WITH THE WHOLE ORGAN ON A SERIES OF DISCARDED KIDNEYS

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Background: Evidence about reliability of pre-implantation biopsy (Bx) is still conflicting, depending on both biopsy type and expertise of pathologist. Aim of the study is to evaluate agreement of general vs specialist pathologists on biopsy and to compare scores with organs in a set of discarded kidneys.
Methods: 46 discarded kidneys (DK) were identified with their corresponding Bx. DK and Bx were blindly graded according to Remuzzi criteria. Bx were graded by 3 general and 2 specialist pathologists whilst the DK was graded by one of the specialists. The scores assigned were compared and the intraclass correlation coefficient (ICC) was calculated for both groups. Bx and DK grades were compared by Wilcoxon signed rank test ($p < 0.05$). Weighted k coefficients were also calculated.
Results: Main results are summarized in Table 1.

	Glomerular grade	Tubular atrophy (TA) grade	Interstitial fibrosis (IF) grade	Vascular grade	Remuzzi Score
General Bx, mean grade	1.44	1.27	1.22	1.56	5.49
Specialist Bx, mean grade	1.29	1.02	1.27	1.31	4.89
Specialist DK, mean grade	1.20	0.98	0.98	1.11	4.24
ICC general vs specialist	0.706/ 0.739	0.312/ 0.412	0.218/ 0.446	0.426/ 0.516	0.512/ 0.686
Wilcoxon p general vs specialist	0.0175/ 0.3363	0.0004/ 0.484	0.0026/ 0.0004	0.0016/ 0.0311	<0.0001/ 0.0002
Kappa general vs specialist	0.2222/ 0.3005	0.3345/ 0.6260	0.3314/ 0.2459	0.0604/ 0.1482	0.3956/ 0.5443

Conclusions: Expert pathologists are more reliable than general pathologists in assessing scores on pre-implantation biopsy. Moreover, Bx seems not to be truly representative of whole organ state. As Bx score is one of the major reasons causing organ discard, thus a quota of suitable organs may be erroneously discarded. Despite the use of several integrated histological-clinical scores, efforts should be made to provide access to expert assessment, correlation with clinical data and macroscopic examination of the organ. Telepathology may overcome aforementioned criticisms by transmission of e-slide and gross organ images.

BOS256 TO PROTOCOL BIOPSY OR NOT PROTOCOL BIOPSY? EFFICACY AND SAFETY IN SURVEILLANCE BIOPSIES AFTER PEDIATRIC KIDNEY TRANSPLANTATION

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Surveillance allograft protocol biopsies (PB) could provide the opportunity to tailor the patient's management based on evidence of subclinical histological signs with potentially important implication for graft outcome. We performed a retrospective study to evaluate the efficacy of the protocol biopsies at 6, 12 and 24 m. post-TX in preventing renal functional decay and to evaluate the prevalence/severity of post-bioptic complications.

From January 2005 to December 2016, 209 pediatric patients (M/F 133/76, age 1.2–18.2 y, weight 5.8 -75.6 kg, LD/DD 47/162) have been transplanted in our centre. 189/209 patients with first renal graft, stable and normal GFR and without risk factors were enrolled after parent consensus. In total 402PB were analysed.

Histological lesions were observed in 119/402 PB that lead to clinical therapies modification in all cases. 90 acute rejections (36.6% Banff 3, 50% Banff 4 IA/IB, 13.4% Banff 2) have been treated with prednisolone pulses, Ig ev and Rituximab in the cases of ABMR. In 11 cases with CNI toxicity, 16 cases of IF/TA, 2 cases of BKV nephropathy, the CNI dosage was reduced and there was a switch from MMF *vs* Everolimus.

The therapy efficacy was evaluated in the follow-up biopsies after the treatments. In 67.6% cases the histological lesions were recovered, whereas in 17.2% and in 15.2% were observed persistent or others lesions. Two years after transplantation, there was no significant difference of GFR between the patients with normal histology from first PB and the patients treated for histological lesions at 6 and 12 m. PB ($p = 0.31$). We observed only a 0.53% of major complications in all PB performed.

Our study confirmed the efficacy and safety of PB for post-TX management and improving the renal allograft outcome in children. Serial protocol biopsies ameliorate the surveillance of the graft and the appropriate immunosuppressive therapy, are good tollerate by pediatric recipients and have a low risk of major complications.

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BOS259 COMPARISON OF PURE ANTIBODY-MEDIATED REJECTION (AMR) WITH MIXED CELLULAR AND AMR IN REGARDS TO THE DEVELOPMENT OF CARDIAC ALLOGRAFT VASCULOPATHY (CAV) AND CARDIOVASCULAR MORTALITY (CVM) IN HEART TRANSPLANT PATIENTS

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Background: Little has been reported on the clinical significance of mixed cellular and AMR in heart transplantation. It remains unclear whether mix rejection (MR) has unique clinicopathologic findings beyond those of pure acute cellular rejection (ACR) and AMR. We aimed to show whether MR has a differential impact on the development of CAV and CVM.
Methods: Patients classified as ACR (n = 24), AMR (n = 20), or MR (n = 26) based on their rejection type in the first 3-months post-transplant. Biopsies stained with Ki-67, CD68, and HLA-DR. Loss of DR expression on capillaries accepted as microvascular destruction. Apoptotic cells detected by the TUNEL method. The degree of macrophages and neutrophils in capillaries and interstitium graded. The presence of endothelitis in small vessels evaluated. Patients analyzed for the development of CAV via angiography.
Results: Endothelitis, apoptotic cell death of myocytes, interstitial and capillary macrophage and neutrophil infiltration were significantly higher in cases with MR compared to cases with ACR and AMR ($p < .01$).Ki-67 proliferation index was also found to be higher in cases with MR than patients with ACR and AMR ($p < .001$). Compared to patients with ACR and AMR, recipients with MR showed higher degrees of myocyte DR expression and lower degrees of capillary DR expression which means higher degrees of capillary destruction ($p < .01$).The mean time of the development of CAV found significantly early in recipients with MR (22 ± 12) than patients with ACR (78 ± 13) and AMR (50 ± 21) ($p < .001$).Overall 10-year patient survival was 100%, 75% and 54% for ACR, AHR, and MR respectively ($p < .001$).
Conclusion: MR occurred within 3-months after transplant and should be recognized because of its worse outcomes. MR reflects a complex interplay between cellular and humoral processes, which varies with rejection severity. Another point that we must underline is the endothelitis of small arteries and capillary destruction which may be a sign of severe rejection.

BOS260 THE ASSOCIATION BETWEEN CYTOMEGALOVIRUS INFECTION AND CARDIAC ALLOGRAFT VASCULOPATHY IN THE ERA OF ANTIVIRAL VALGANCICLOVIR PROPHYLAXIS

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Background: Previous studies have reported association between cytomegalovirus (CMV) infection/disease and cardiac allograft vasculopathy (CAV). However, these reports are based on heart transplant (HTx) recipients, most of whom received neither valganciclovir (VGCV) prophylaxis nor mycophenolate mofetil. The aim of our study is to evaluate the impact of CMV infection on CAV in HTx recipients treated according to current regimens.
Methods: This single-center retrospective study included adult patients that underwent HTx between 1st Jan 2000 – 31st May 2018. CMV infection was defined as either CMV plasma DNAemia $\geq$ 1000 copies/ml $\pm$ clinical symptoms or < 1000 copies/ml + symptoms. Coronary angiography was performed at 1 and 4 years post-HTx and additionally if indicated. The primary endpoint was first manifestation of CAV of any grade according to ISHLT, including CAV-related death. Death due to all other causes was regarded as competing risk. For statistical analysis the cause-specific hazard regression model was applied, with CMV infection and CMV DNAemia as time-dependent covariates.
Results: In total, 260 patients were included in the analysis. The median (IQR) follow up was 7.88 (4.21–12.04) years. All the donor(D) + /recipient(R)-patients received prophylaxis with VGCV (n = 57;80%) or human anti-CMV immunoglobulin (n = 14;20%; HTx before 2003). Over the follow-up, CMV infection was diagnosed in 96 (37%) patients, CAV in 149 (57%) patients and 64 (25%) patients died. In the multivariate regression analysis, factors that significantly increased the risk of CAV were: number of rejection episodes (cause-specific hazard ratio, CSHR (95% CI) 1.14 (1.01–1.29), $p = 0.03$) and hypertension (1.92 (1.33–2.77), $p < 0.001$). However, we did not observe any significant association between CMV DNAemia or infection and CAV.
Conclusion: In the era of contemporary immunosuppression and VGCV prophylaxis, we observed no impact of CMV infection on the risk of CAV among HTx recipients.

BOS261 IMPACT OF CYTOMEGALOVIRUS STATUS ON LONG TERM SURVIVAL, CARDIOVASCULAR EVENTS AND CELLULAR REJECTION FOLLOWING HEART TRANSPLANTATION

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Wythenshawe Hospital

Introduction: Cytomegalovirus (CMV) infection following heart transplant (htx) is associated with significant morbidity and mortality. CMV prophylaxis is recommended for high risk recipients, however no randomised trials have evaluated its efficacy. Our institution uses a pre-emptive approach to managing CMV following htx – no drug prophylaxis, frequent monitoring and prompt treatment after CMV detection. We assessed the impact of CMV status and early CMV activation (CMVA) on rejection rates, cardiac events and survival.
Methods: Patients receiving htx at our institution between 1987 and 2018 were included. We compared survival between 4 groups according to CMV status (D+/R-; D+/R+; D-/R+; D-/R-), adjusted for recipient/donor age, recipient BMI, donor cause of death, gender, and heart failure aetiology. A sub-study of patients tx between 2010 and 2016 assessed the rate of CMVA within 3 months of tx, its effect on rejection rates, cardiac events and survival. Data was compared using Kaplan Meier curves and Log Rank.
Results: 646 patients were included; D+R- 119 (18.4%), D+R + 162 (25%), D-R + 206 (31.8%), D-R- 159 (24.6%). Overall median survival was 11.6 years; highest in D-R- at 12 years, vs 10.5 in D+R- ($p = 0.05$),8.9 D+R+ (0.03),10.9 D-R+ (0.32).

In the sub-study 59/121 pts had CMVA (48.7%). D+R+ had highest CMVA 25/28(89%) vs 13/27(48) D+R-, 21/30(70), D-R+, 0/36(0) D-R-.The risk of cellular rejection $\geq$ 2R was 32% in 30 days after CMVA vs 6.2% in any other 30 day period within 6/12 of htx. Cardiac event rates were 10.1% in CMVA vs 4.8% ($p = 0.16$). Adjusted mortality was higher in CMVA group (HR2.92 $p = 0.012$).
Conclusion: CMV status has a significant impact on survival following htx. Interestingly, D+R+ patients had highest CMVA rates and lowest survival. Traditionally considered intermediate risk, our novel findings suggest they are at high risk of activation and graft related complications. Patients should be closely monitored for cellular rejection following CMVA.

BOS262 TETRAHYDROBIOPTERIN – A NEW PLAYER IN THE FIELD OF TOLERANCE INDUCTION?

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Background: The vitamin-like compound tetrahydrobiopterin (BH4) has been shown to attenuate acute cellular rejection in a murine model of heart transplantation independently from its cofactor activity on nitric oxide synthases. The underlying mechanisms are still unknown. Herein, we wanted to shed more light on the immunosuppressive property of BH4.
Methods/Materials: A fully MHC mismatched (C3H/He to C57BL/6) mouse heart transplantation model was used. Recipients were treated with BH4 (50 mg/kg b.w.) or Cyclosporine A (CsA, 15 mg/kg b.w.) for six days. Syngeneic transplants and untreated allograft recipients served as controls. Six days post transplantation the graft function was assessed. The degree of acute rejection was assessed by histopathological analysis according to the ISHLT score and splenocytes were analysed by flow cytometry.
Results: The median graft functioning score at day six was significantly higher in BH4 treated compared to untreated animals ($p < 0.01$), and was comparable with CsA treated (p = ns) as well as with syngeneic animals (p = ns). Histopathological analyses showed consistently severe rejection in untreated allografts and mild rejection in CsA treated as well as syngeneic grafts ($p < 0.01$ and $p < 0.03$, respectively). BH4 treated grafts ranged from mild to severe lymphocytic infiltrates (p = ns). In the secondary lymphoid organs of control, CsA treated and BH4 treated animals, dendritic cells and NK cells were characterized by comparable frequencies (p = ns). However, BH4 treated animals showed a substantial increase in cytotoxic T cells ($p < 0.05$) but displayed lower CD28 expression ($p < 0.05$). Of note, mast cells and regulatory T cells were significantly increased in BH4 treated animals compared to control and CsA treated animals ($p < 0.05$).
Conclusion: The increased mobilization of mast cells as well as regulatory T-cells which are known to create a functional tolerogenic unit points to BH4 as a potential new agent for tolerance induction.

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BOS264 THE LEVEL OF CHRONIC ILLNESS MANAGEMENT IN TWO SWISS HEART TRANSPLANT CENTERS: A SECONDARY DATA ANALYSIS OF THE CROSS-SECTIONAL BRIGHT STUDY

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Background: The level of chronic illness management (CIM) in follow-up care can differ among heart transplant (HTx) centers. CIM is a system factor that has shown to be associated with clinical outcome.
Aims of the study: To compare the level of CIM, relevant structural characteristics and CIM practice patterns between 2 Swiss heart transplant centers.
Methods: This secondary data analysis used data from the cross-sectional BRIGHT study. Relevant structural factors, level of CIM and practice patterns related to CIM were assessed with established or investigator developed questionnaires filled out by transplant director (N = 2), heart transplant clinician (CIM by CIMI BRIGHT) (N = 6) and transplant patients (CIM by PACIC) (N = 47) about equally divided between the 2 centers. Data were compared using appropriate inferential statistics.
Results: Centers differed significantly in view of competencies for HTx team in regard of CIM ($\chi 2$ (1, $N = 6$) = 3.86, $p = 0.0495$).There was no significant difference found between both centers in view of the level of CIM from patient's – (t(44) = 0.650, $p = 0.519$) and clinician's perspective ($\chi 2$(1, $N = 6$) = 0.05, $p = 0.8273$), preparedness of the HTx team in view of CIM ($\chi 2$ (1, $N = 6$) = 0.222, $p = 0.6374$).
Conclusions: Although no difference in the level of CIM was found, we detected a difference in a relevant practice pattern related to CIM between the 2 Swiss HTx centers. Enhancing level of CIM by investing in relevant structural factors as well as practice patterns related to CIM has shown to be a systems pathway to improve outcomes in renal transplantation and could also be applied in heart transplantation.

BOS265 SERVICE EVALUATION OF AN INTEGRATED PHARMACIST-LED MEDICATION REVIEW SERVICE TO SUPPORT OUTPATIENT CARE OF CARDIAC TRANSPLANT PATIENTS

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Background: Post cardiac transplantation, patients must manage complex drug regimens for the remainder of their lives. Poor drug adherence, particularly immunosuppressants, is associated with adverse outcomes. A pharmacist-led medication review service was initiated in January 2017 as part of the long-term multi-disciplinary team (MDT) follow-up.
Methods: A retrospective analysis of 10 months experience following the establishment of this service was performed from August 2017 to identify the pharmaceutical interventions in this patient group. A validated patient experience questionnaire (PEQ) was prospectively conducted for 2 months from April 2018.
Results: The median age of patients seen was 54 (17–89) years. The median time post-transplant was 16 (0–32) years. 543 medication reviews were performed in 401 patients. A total number of 1282 interventions were made.

Type of Intervention	Number of Interventions n (%)
Medication knowledge/education	334 (26.1%)
Review of immunosuppression and prophylactic medications against protocol	123 (9.6%)
Managing drug interactions	73 (5.7%)
Non-adherence identification	44 (3.4%)
Medicines supply queries	174 (13.6%)
Medicines reconciliation	39 (3.0%)
Adverse effects management	78 (6.1%)
Blood pressure management	141 (11.0%)
Cholesterol management	49 (3.8%)
Electrolyte management	47 (3.7%)
Renal dose adjustments	8 (0.6%)
Referral to other services	32 (2.5%)
Advice re over-the-counter medicines	36 (2.8%)
Other	104 (8.1%)

The PEQ showed predominantly positive results (>3, scale 1–5) with median values ranging from 3.5/5 for overall outcome to 4.75/5 for positive emotions post consultation. The PEQ (n = 45) indicated a negative correlation between consultation outcome and time since transplantation, r = -0.245 ($p = 0.02$).
Conclusion: These results support the role of a pharmacist providing medication optimization reviews to cardiac transplant patients within the multidisciplinary outpatient setting. Further studies will determine the impact of the interventions made.

Level of Chronic Illness Management	Scoring/value	Total N; mean ± SD	Center 1 N; mean ± SD	Center 2 N; mean ± SD	p values*
Patient?s perspective of CIM (PACIC) °	Scoring from 11 to 55 1 Missing	46;38.2 ± 11.0 1	23;39.3 ± 10.6	23;37.1 ± 11.5 1	0.5190
Healthcare workers perspective of CIM(CIMI-BRIGHT)	1 (strongly disagree)-5 (strongly agree) 1	2.8	2.9 ± 0.2	2.7 ± 0.3	0.8273

Note: * = t-test or $\chi 2$ test CIM = Chronic Illness Management, SD= Standard deviation PACIC = Patient Assessment of Chron
PACIC = Patient Assessment of Chronic Illness Care
CIMI-BRIGHT = CIM Implementation?Building Research Initiative Group: CIM and Adherence in Transplantation
° = patient questionnaire, ? = clinician questionnaire
1 Higher scores correspond to higher level of implemented chronic illness management

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BOS266 HEART TRANSPLANTATION IN CARDIAC AMYLOIDOSIS: AN ITALIAN SINGLE CENTRE EXPERIENCE

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Azienda Sanitaria Universitaria Integrata di Udine

Background: Systemic amyloidosis is a rare haematologic disorder where misfolded proteins acquire a b-pleated sheet conformation, form amyloid fibrils and begin to infiltrate tissues leading to organ failure. The stage and prognosis of the disease is strictly determined by the cardiac involvement. New frontline treatment includes heart transplantation (HTx) followed by autologous stem cell transplantation (ASCT). The aim is to describe the early and late outcome of cardiac amyloidosis patients that underwent HTx in our Cardiothoracic Department.

Methods: A total of 35 patients affected by systemic amyloidosis has been referred to our Centre for complete evaluation from November 2009 to July 2018. Of these, 11 (31%) had 1 or 2 organ involvement; while, 6 (17%) had 3 or more organ involvement. A total of 8 (45%) patients underwent Htx: 6 due to cardiac immunoglobulin light-chain (AL) amyloidosis and 2 due to senile systemic amyloidosis (SSA). ASCT was performed in 4 (50%) patients after Htx.

Results: The median HTx waiting list time was 93 days (range 2 – 330 days). No patients died while actively listed for HTx. Median age at the time of amyloidosis diagnosis was 54 years (range 45–64); 5 (62%) were male and 3 (38%) female. The median ICU stay after HTx was 7.25 days (range 3 – 15 days). The most common short-term complication after HTx was renal failure (37%) and acute rejection (37%). The median waiting time after HTx for ASCT was 20 months (15 – 27 months). The most common short-term complication after ASCT was acute rejection (75%) and organ relapse (37%). After a median follow-up of 1273 days (184 –3337 days), 75% of all patients with cardiac amyloidosis were alive after HTx. Two patients died due to gastrointestinal relapse at 36 months and sepsis at 7 months after HTx, respectively.

Conclusion: In highly selected patients with isolated non-systemic advanced cardiac amyloidosis HTx followed by ASCT is a feasible procedure.

	PATIENT 1	PATIENT 2	PATIENT 3	PATIENT 4	PATIENT 5	PATIENT 6	PATIENT 7	PATIENT 8
Age at HTx	46	53	65	50	65	58	66	46
Type	AL	AL	AL	AL	SSA	AL	SSA	AL
Monoclonal component	λ light chain	λ light chain	λ light chain	λ light chain	NO	k light chain	NO	λ light chain
ASCT	1	1	1	0	0	1	0	0
TX-ASCT (months)	21	20	27	-	-	15	-	-
Relapse	0	1	1	1	0	0	0	0
Rejection	1	1	1	0	1	1	1	0
Death	0	0	1	1	0	0	0	0

BOS267 CHAGAS DISEASE AND ORGAN TRANSPLANTATION: A MULTICENTER EXPERIENCE

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In Argentina, 5% of the patients on waiting list for organ transplantation (SOT) and 1% of deceased donors (D) have chronic Chagas disease. Transmission has been shown to occur through transplanted organs. Nowadays, molecular technics allow early diagnosis of parasitemia (p).

Aims of this study: Evaluate the worth of nuclear acid testing monitoring as a tool for preemptive strategies. To compare the outcome between de novo infection (DNI) vs reactivarion (r) in the different types of SOT.

Data from 5 centers between 01/07/14 and 31/07/18 were retrospectively analyzed. All SOT recipients(R) and D with 2 different pre SOT positive Chagas serological tests were included. Minimum follow up (fu) was 6 months. Antiparasitic prophylaxis was not given. For search of p, our protocol (pr) was : Strout and standardized quantitative Real Time PCR(qPCR) tests performed weekly during the first 3 months, every other week the next 6 months, and monthly until 1-year post-transplant. Strout or qPCR shift to positive results were diagnostic for r and DNI. Treatment (Tr) was :(BDZ) for 60 days (d).

Total (T) number of R: 69 (28 Kidney (KT), 22 liver (LT), 13 heart (HT), 3 lung (LuT) and 3 kidney and liver KLT. Mean age: 60 y, F 27/M 12, Timoglobulin induction (Ti):29 R: R+/D-: 42, D+/R-: 25, D+/R+: 2.Basal immunosupression was standard.

Adherence to follow-up protocol: 64%

r:24/42 (57%) median: 26.5 (d) (3–454), (DNI) :7/25 (28%) median: 46 (d) (30–79)

6 r were not treated (low parasitic load).

Clinical disease (cd): Two R, both with panniculitis and received BDZ with good outcome. There were no attributable graft losses nor deaths.

There were no differences in the outcome between different type of SOT nor between r and DNI.

Detection of low grade p and close adherence to our pr could explain low incidence of cd.

SOT of chagasic R and from + D was a safe option in our experience, using preemtive tr guided by qPCR.

	KT(n:28)		LT (n:22)		HT (n:13)		LuT (n:3)		KLT (n:3)		T
	T	Tr	T	Tr	T	Tr	T	Tr	T	Tr	
r	8/12 (67%)	7/8	4/13 (31%)	3/4	9/13 (69%)	7/9	2/3 (67%)	1/2	1/1 (100%)	0/1	24/42(57%)
DNI	2/14 (14%)	2/2	4/9 (44%)	4/4	-	-	-	-	1/2 (50%)	1/1	7/25(28%)

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BOS268 EFFECTIVENESS IN REVERSING PHYSICAL FRAILTY IN WAITING LIST PATIENTS FOR HEART TRANSPLANTATION WITH SACUBITRIL-VALSARTAN

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Objective: To investigate the effect of sacubitril/valsartan on physical frailty (PF) in advanced HF patients in waiting list for heart transplant (HT) in a two years follow-up study.
Background: Treatment with sacubitril/valsartan improved quality of life and survival in HF.
Methods: We treated 42 consecutive patients with advanced HF with sacubitril/valsartan.

PF was assessed using an adapted version of Fried's Frailty Phenotype. Patients were followed up until HT, device implant, or last follow-up visit.
Results: At baseline, mean NYHA class was 3.1 ± 0.4, with 5.4% NYHA 2, 59.5% NYHA 3 and 35.1% NYHA 3B. LVEF was 23.5 ± 5.8, VO2 max (ml/Kg/min) was 10.3 ± 2.3, cardiac index (L/min/m 2) was 2.4 ± 0.6, and NT-pro BNP (pg/ml) was 4943.0 ± 5326.8. After a mean follow-up 17.1 ± 4.4 months there were no deaths, NYHA class improved significantly, with 2.7% NYHA 1, 54.1% NYHA 2, 40.5% NYHA 3 and 2.7% NYHA 3B ($p < 0.001$). PF decreased (3.35 ± 1.0 vs 1.54 ± 1.3; $p < 0.000$) with a significant reduction in all domain of PF (Figure 1).

VO2 max consumption, Six Minute Walking Test increased while pulmonary systolic blood pressure, VE/VCO2 slope, and NT-pro BNP, decreased. No differences were observed during follow-up for LVEF, E/E', TAPSE, IVC. A significant reduction in furosemide dosage was observed (102.7 ± 69.4 mg to 78.7 ± 66.3 mg; $p = 0.040$). These improvements occurred from the first month of treatment and were persistent during follow up.
Conclusions: Our study shows an improvement in PH in patients with advanced HF in waiting list for HT after therapy with sacubitril/valsartan. These changes seem to appear very early after introduction of the treatment and to be maintained over time. The improvement in all physical domain was paralleled by VO2 max and 6-minute walking test increase. The NT-pro BNP reduction was significant in the first month of treatment and this positive effect remained stable in the follow-up.

BOS269 AN UNUSUAL APPEARANCE OF INFECTION AFTER HEART TRANSPLANT

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Semmelweis University

Introduction: Generalized immunosuppression caused by the immunosuppressive drugs is a major etiological factor in infectious disease morbidity and mortality after heart transplant.

Body: We present the case of a 59-year-old man who underwent heart transplant in April 2018. In November 2018 a routine cardiac MRI, as part of the close follow-up, revealed a nodule of 17 × 22 mm in the right lung; thus, we also performed a chest-abdomen-pelvis CT scan. Beside the pulmonary consolidation in the right S10 segment, it confirmed 2 solid masses in the retroperitoneal space, too.

The lesions of questionable dignity could correspond to either necrotic tumors or to abscesses. After bronchoscopy and aspiration of pus from the involved segment, the cytological examination ruled out malignancy. Abscess was suspected and as Aspergillus antigen was verified, we initiated voriconazole therapy. Considering that both voriconazole and the anti-rejection agent tacrolimus are metabolised by CYP3A4 enzyme, the tacrolimus blood level had to be optimized and strictly monitored.

As we reduced the doses of the immunosuppressant mycophenolic acid and methylprednisolone due to the infection, repeated echocardiographic examinations were carried out for the early detection of an eventual allograft rejection. We also performed an abdominal MRI scan for the exact characterization of the retroperitoneal lesions, which suspected the presence of abscesses but neither atypical necrotic tumors could be excluded. Following a CT-guided puncture and drainage, microbiological analysis of the collected specimen detected voriconazole-susceptible Aspergillus fumigatus. We removed the drain after 6 days and the patient was discharged on day 22 with adjusted oral antifungal medication.
Conclusion: Having a well-determined health surveillance protocol, which grants regular and thorough examinations, is indispensable for the early recognition of infectious pathologies and for a better outcome after heart transplant.

BOS270 HEART-ASSOCIATED CYTOKINE AND ENDOTHELIAL PATTERNS DOMINATE THE ISCHEMIA/REPERFUSION RESPONSE IN RECIPIENTS OF COMBINED HEART/LUNG TRANSPLANTATION IN COMPARISON TO LUNG TRANSPLANTATION

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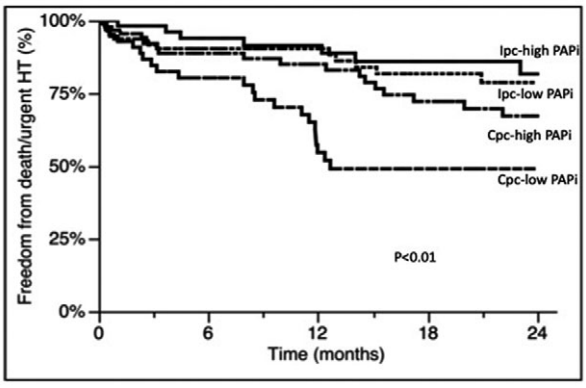
Objectives: Organ-specific differences are discussed for ischemia/reperfusion injury (IRI) in solid organ transplantation but rarely compared directly in a clinical setting. Therefore, we compared a cohort of combined heart/lung transplants (HLTx) with 2 cohorts of heart (HTx) or lung transplantations (LTx), with respect to cytokines and endothelial markers in recipient blood and perfusates. Despite the evident clinical differences, our aim was to determine differences in the microenvironment between HLTx patients and HTx vs. LTx patients.
Methods: Blood plasma pre Tx, at T0, T24 and perfusion solutions of 5 HLTx, 24 HTx and 26 LTx patients were analysed for cytokines and soluble endothelial markers using multiplex assays.
Results: Early after transplantation at T0 and T24, plasma levels of IL-6, CXCL8/IL-8, Ang-2, PAI-1, IGFBP-1, (all $p < 0.01$) were significantly higher in HLTX and HTx recipients compared to LTx recipients and returned to baseline levels after 3 weeks. Identical kinetics with minor changes were detected in the three groups for TNF, EGF, PLGF, sFasL Unsupervised cluster and principal component analyses clearly grouped HLTx and HTx patients together, separating LTx recipients apart with IGFBP-1, Ang-2, and PAI-1 as lead parameters. Similar patterns were seen for perfusates supporting a heart-dominated ischemia/reperfusion impact during combined heart/lung preservation.
Conclusion: A direct comparison of combined heart/lung with isolated heart or lung transplantation revealed that the early systemic IRI response of HLTx recipients is dominated by heart-associated endothelial markers like IGFPB-1, Ang-2, and PAI-1 which groups them together with HTx patients. Since the same pattern was seen in perfusates, we provide evidence for an organ-specific impact on IRI with strong heart- vs lung-associated signatures

BOS271 PLAYING WITH HEMODYNAMICS AMONG HEART TRANSPLANT CANDIDATES: IS THE NEW PH CLASSIFICATION USEFUL? THE EVIL IS IN THE DETAILS

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Background: Guidelines for pulmonary hypertension (PH) have introduced diastolic transpulmonary gradient (DPG) to differentiate combined (CpC) and isolated (IpC) post-capillary PH. We analyzed its prognostic role and its interplay with RV function and diuretic therapy in pts with advanced heart failure referred for HT.
Methods: We included all pts evaluated for HT in our Center (2002–16) undergoing to a right heart cath (RHC), collecting data at first evaluation. We created 3 groups: no PH (mPAP < 25 mmHg), IpC-PH (mean PAP > 25 mmHg, PVR < 3 WU), CpC-PH (mean PAP > 25 mmHg, PVR ³3 WU and/or DPG ≥ 7 mmHg). Pulmonary artery pulsatility index (PAPi) was analyzed as a marker of RV function; high dose diuretics (HDD) was considered as oral furosemide > 125 mg/day or i.v. diuretics/dialysis. The



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study endpoint was the combined survival from death or need for urgent HT at 2-yrs.
Results: Among 458 pts (53 ± 11 yrs, 82.6 %M), 57.9 % had PH: 30.8% IpC-PH, 27.1% CpC-PH. 8 pts (0.2%) had DPG ≥ 7, one with PVR < 3. Prevalence of HDD differed according to PH classes (44.6% vs 56.3% vs 68.3%, $p < 0.01$). While pts with CpC-PH had the worst prognosis, DPG ≥ 7 did not predict the primary endpoint. At multivariate analysis, PVR ³3 WU (HR:16.7), PAPi < 3.8 (median value, HR: 4.1), HDD (HR:5.6), IABP (HR: 19.0, $p < 0.01$) independently predicted the endpoint ($p < 0.04$ for all), even adjusting for clinical variables. A lower PAPi carried an higher risk in both IpC and CpC PH groups (81.6 ± 6.6% vs 78.6 ± 5.7% vs 67.3 ± 6.7% vs 49.1 ± 7.9% respectively, $p < 0.001$) (Figure).
Conclusions: Even if current definition of type 2 PH predicts the need of urgent HT, DPG > 7 is epidemiologically irrelevant and doesn't increase accuracy, whereas combining an indirect marker of RV function (PAPi) with PVR assessment, even correcting for diuretic therapy, could help to better stratify the need of a rare resource like HT.

BOS272 RENAL REPLACEMENT THERAPY AS BRIDGE THERAPY IN RENAL SURVIVAL OF HEART TRANSPLANT RECIPIENTS

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Background: Deterioration of renal function by cardiorenal syndrome required renal replacement therapy (RRT) in heart transplant recipients (HTRs). Renal outcomes of acute kidney injury during heart transplantation (HT) was little known. We compared the clinical outcomes of patients based on modalities of RRT at the time of HT.
Methods: A total of 20 HTRs underwent from January 1995 to October 2018 in a single center. We reviewed data including the cause of heart failure, cardiac function before HT and renal function during HT from electronic patient records. The patients was divided as HTRs who underwent perioperative RRT (RRT group, n = 6) and HTRs who did not receive RRT (non-RRT group, n = 14). Renal function were analyzed at baseline, 3 months, 6 months and 12 months from HT.
Results: The most common cause of HT was dilated cardiomyopathy (n = 9, 45%), then followed by ischemic cardiomyopathy (n = 7, 35%). The left ventricular ejection fraction (LVEF) before HT in the RRT group was significantly lower than that of the non-RRT group (LVEF 12.8 % vs 24.8%, P = 0.007, respectively). In the RRT group, four patients (20%) underwent RRT before HT, with including three patients of continuous RRT and a patient of peritoneal dialysis. Finally, six patients (30%) received RRT after HT, including three patients who initiated RRT prior to transplantation. After 3 months post-transplantation, the renal function of RRT group were significantly lower levels than that of non-RRT patients (eGFR 34.37 ml/min/1.73 m^2 vs 68.83 ml/min/1.73 m^2, $p = 0.017$, respectively). However, the difference of renal function dissipated after 6 months and 12 months after HT. All the patients in the RRT group halted RRT after transplantation.
Conclusion: RRT at the perioperative period in the HTRs will be a good bridge therapy for recovery of renal function in the cases with a high risk of cardiorenal AKI with low LVEF.

BOS19 – IMMUNOLOGICAL CHALLENGES IN LIVER TRANSPLANT

BOS273 LOW ADHERENCE TO IMMUNOSUPPRESSANTS IS ASSOCIATED WITH ALCOHOL DRINKING AMONG LIVER TRANSPLANT RECIPIENTS

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Purpose: Non-adherence to immunosuppressants after LT has been known to be a major cause of graft rejection, graft failure, and poor patient outcomes. Among the various risk factors for non-adherence, drinking of alcohol and smoking can trigger non-adherence, thereby influencing the motivation of LT recipients to comply with their medication regimens. However, the relationship between alcohol and adherence to immunosuppressants is still poorly understood. Hence, this study was conducted to investigate this relationship in LT recipients.
Materials and Methods: A total of 200 LT recipients (143 men and 57 women) on an immunosuppressant regimen who were followed up after transplantation participated in this study. Data were collected through a self-reported questionnaire survey (alcohol, smoking, and medication adherence) and medical record review. Adherence was measured using a Modified Medication Adherence Scale-8 (MMAS-8), ranged from 0 to 8, with low adherence defined as a score of < 6, medium adherence defined as a score of 6 to 7, and high adherence defined as a score of 8.
Results: Of the 200 LT recipients, 30 (15%) recipients were classified as low-adherent group; 80 (40%) recipients medium-adherent group; and 90 (45%) recipients high-adherent group. Low-adherent recipients were identified to have younger age and alcohol drinking experience. However, the post LT smoking experiences were not related to adherence. To compare the pre-LT with Post-LT for smoking and alcohol drinking experience, a chi-squared test was performed. As expected, results of this study indicate that the likelihood of alcohol relapse was higher among patients who drink alcohol before LT. In addition, patients who smoke before LT were more likely to smoke after LT. Moreover, patients who drink alcohol were more likely to smoke after LT.
Conclusion: In this study, we reported that age and alcohol drinking experience were associated with low adherence to immunosuppressants among LT recipients.

BOS274 LONG-TERM OUTCOMES OF COMBINED LIVER AND KIDNEY TRANSPLANTATION: A SINGLE CENTER EXPERIENCE

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Background: Combined liver and kidney transplantation (CLKT) is an effective therapeutic option for patients with end-stage liver and kidney disease butfactors impacting patients and grafts survival are already unclear. The aim of this retrospective study was to identify the immunological and non-immunological risk factors in CLKT recipients.
Methods: In our center, from 1999 to 2016, 69 adult patients underwent CLKT and were included in the study. A survival analysis was performed by Kaplan Mayer method with log rank test and Cox's regression model.
Results: 69 CLKT recipients were included (66.7% male, mean age of 52.5 ± 11.7 yrs), liver cirrhosis was reported in 79.7% (n = 55) with a median MELD-score of 21 ± 6.6, and polycystic liver disease was reported in 21.2% (n = 14). Chronic renal failure was due to: anticalcineurin inhibitors toxicity 22.7%(n = 15), unknown end-stage renal disease 36.9%(n = 24); dialysis was performed in 43.6% (n = 32) of patients before transplantation and 23.2% (n = 16) have been previously liver-transplanted. Sensitized patients with the presence of anti-HLA antibodies were 43.5% (n = 30): HLA-class I antibodies 37.7% (n = 26), HLA-class II antibodies 32.8% (n = 21), 54.5% (n = 18) of them were preformed-DSA. The median follow-up was 37 months. A 1 and 5 years patients survival was of 79.5% and 64.7%, liver graft survival censored for death was 92.0% and 76.7% at 1 and 5 years and kidney graft survival censored for death was 92.0% at 1 year and 83.0% at 5 years. Kidney but not liver graft survival seems to be influenced by immunization status (HLA-class I antibodies $p = 0.036$, DSA $p = 0.07$) but only with univariate analysis.
Conclusion: This retrospective and unicentric study, revealed a good 1 and 5 years patients and grafts survival in a cohort of 69 CLKT. The immunization status was not a risk factor for patients and grafts survival. Future investigations, with more patients, are needed to explore risk factors and immunosuppression strategy in this contexst.

BOS275 SILENT ALLOGRAFT FIBROSIS IN 10-YEAR POST-TRANSPLANTATION HISTOLOGY OF PEDIATRIC LIVER TRANSPLANTATION: IS IT REALLY SILENT?

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Background: This study sought to analyze factors related to long-term allograft fibrosis in clinically stable pediatric liver transplantation patients.
Methods: Pediatric patients who underwent liver transplantation at Samsung Medical Center from January 1997 to January 2008 were reviewed. Ten-year protocol biopsies were examined by an expert pathologist specializing in liver transplantation. The degrees of inflammation and fibrosis were classified based on Banff criteria and the METAVIR system, respectively. Analysis of risk factors for allograft fibrosis was performed using logistic regression.
Results: Sixty-six clinically silent pediatric patients who underwent 10-year post-transplantation biopsy were included. Protocol biopsy revealed nine cases (13.6%) with a rejection activity index ≥ 3 based on Banff classification and 31 cases (47.0%) with METAVIR fibrosis stage ≥F1. All the characteristics among the patients were similar except for experience of rejection when classified by Banff criteria (29.4% in normal, 60.9% in indeterminant, and 55.6% in mild rejection, P = 0.039) and METAVIR staging (34.3% in F0, 36.8% in F1, and

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83.3% in F2, P = 0.009). More than three events with aminotransferase level elevated above 50U/L was the only significant factor for METAVIR ≥F1 (OR = 3.351, CI 1.160–9.643, P = 0.026) However, mean total bilirubin ≥ 1.0 mg/dL during the entire period (OR = 10.388, CI 1.414–76.322, P = 0.021) and experience of rejection (OR = 10.403, CI 1.788–60.531, P = 0.009) were significant risk factors for METAVIR stage F2.
Conclusion: Even in clinically silent pediatric liver transplantation patients, long-term fibrosis occurs frequently, and repeated elevation of aminotransferases was related to METAVIR stages ≥F1, while experience of rejection and elevated mean total bilirubin ≥ 1.0 mg/dL were related to METAVIR stage F2.

BOS276 ENDOTHELIAL CELL CYTOSKELETON REARRANGEMENT (ECCSKR) AND ENDOTHELIAL TO MESENCHYMAL TRANSITION (ENDOMT) IN LIVER ALLOGRAFTS FOLLOWING ACUTE REJECTION: IT'S SIGNIFICANCE ON THE LIVER FIBROSIS

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Background: Endothelial cell (EC) cytoskeleton is critical for EC adhesion and permeability. CSKR will initiate permeability and influx of leukocytes which in turn leads to increased cytokine expression that stimulates EndoMT. We aimed to evaluate first the impact of acute rejection (AR) on the development of ECCSKR and EndoMT, and second to show the influence of them on the development of liver fibrosis (LF).
Methods: Total 66 patients included in the study. Of 66 recipients 37 had AR episodes (Group 1) while 29 did not have AR (Group 2). To show the presence of CSKR and the development of EndoMT in ECs, paxillin, CD31, α-SMA, and TGF-βstudied. The intensity of leukocytes and macrophages graded and highlighted with CD68, TNF-α, and TGF-β. Follow-up biopsiesanalyzed for the development of LF during 18 months after biopsy.
Results: The development of ECCSKR and EndoMT was found higher in Group 1 than Group 2 ($p < 0.01$). Compared to patients without ECCSKR (0.5 ± 0.4) and EndoMT (0.6 ± 0.5) , the mean number of AR episodes was found higher in recipients with ECCSKR (1.3 ± 1.1) and EndoMT (1.1 ± 0.8) ($p < 0.01$). Patients who developed ECCSKR (90.3%) and EndoMT (86%) showed a higher incidence of LF than recipients who did not develop ECCSKR (23%) and EndoMT (16.7%) ($p < 0.001$). Both TNF-α and TGF-β expression showed a positive correlation with the ECCSKR and EndoMT ($p < 0.001$). Overall 10-year graft survival for patients with ECCSKR and EndoMT were 71% and 75% respectively, while it was 94% and 93% respectively for recipients without ECCSKR and EndoMT ($p < 0.01$).
Conclusion: EC activation during AR induces the ECCSKR and EndoMT. With the development of ECCSKR, EC barrier may disrupt and permit leukocyte infiltration with large amounts of cytokines. ECCSKR and the mesenchymal transition of ECs with increased cytokines together induce graft loss due to the early development of LF.

BOS278 TACROLIMUS TROUGH CONCENTRATION/DAILY DOSE RATIO DOES NOT CORRELATE WITH MEASURED RENAL FUNCTION AFTER LIVER TRANSPLANTATION

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Background: The variable pharmacokinetics of tacrolimus (TAC) is implicated in its nephrotoxic effects. Fast metabolizers of TAC may, despite low trough levels, have high peak levels, which can be harmful for the kidneys. The TAC trough concentration/daily dose (C/D) ratio is proposed as a simple tool to identify fast metabolizers and help individualize immunosuppression.

We analysed the correlation between the C/D ratio and measured glomerular filtration rate (mGFR), the golden standard method to evaluate renal function.
Patients and Methods: Retrospectively, 154 adult patients liver transplanted (LT) 2000–2017 in Gothenburg, Sweden, were included. Seventy-one % were men, and the mean age 52 (SD ± 13) years with a mean MELD at listing of 16 (SD ± 8). The mean mGFR at 3 and 12 months post-LT was 61 (SD ± 24) and 65 (SD ± 23) mL/min/1.73 m^2, respectively. Most frequent indications were PSC (20%), HCV (16%), HCC (16%), and alcohol (10%).

We analysed the C/D ratio at 3 and 12 months and Spearman correlations between the C/D ratio and mGFR (chrome-EDTA- or iohexol clearance) at 3, 12, and 36 months post-LT.
Results: There was a correlation between the C/D-ratio at 3 and 12 months (coefficient 0.7, $p < 0.0001$), but no correlations between the C/D-ratio and mGFR at different time-points or the C/D ratio and change in mGFR over time (see Table). Furthermore, there were no significant differences in mGFR at 3 or 12 months between fast and slow metabolizers stratified by a C/D ratio of 1.05. In addition, we found no correlations between the C/D ratio and mGFR in subgroups based on steroid use, once-daily versus twice-daily TAC, or baseline mGFR (< vs > 60 mL/min) (all coefficients < 0.3, p=n.s.)
Conclusion: We found no correlation between the TAC C/D ratio and renal function at different time-points after LT. This suggests low applicability of the C/D ratio in clinical practice.

	C/D ratio 3 mo Correlation coefficient (P-value)	C/D ration 12 mo Correlation coefficient (P-value)
mGFR at 3 mo	0.0003 (0.99)	
mGFR at 12 mo	0.074 (0.398)	0.06 (0.55)
mGFR at 36 mo	-0.12 (0.23)	-0.10 (0.35)
Delta-GFR pre-LT – 3 mo	-0.13 (0.17)	
Delta-GFR 3 – 12 mo	-0.17 (0.056)	
Delta-GFR 12 – 36 mo		-0.3 (0.005)

BOS279 CLINICAL FEATURES AND PROGNOSIS OF DIHBS (DIFFUSE INTRAHEPATIC BILIARY STRICTURE) AFTER ADULT ABO-INCOMPATIBLE LIVING DONOR LIVER TRANSPLANTATION

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Introduction: Despite the advancement in desensitization protocol, diffuse intrahepatic biliary stricture (DIHBS), an attenuated form of antibody mediated rejection (AMR), remains an unresolved problem. As a high-volume LT center, we retrospectively review clinical outcome and prognosis of recipients who developed DIHBS after ABOi LDLT.
Method: From November 2008 to December 2017, total of 497 cases of ABO incompatible LDLT were performed at Asan Medical Center. Among them, twenty-four patients (4.83%) developed DIHBS. Retrospective review of medical records of these patients was carried out.
Result: Median time of diagnosis for DIHBS after ABOi LDLT was 2.8 months. In patients with DIHBS, the 3-year patient survival rate was 69.9%. Causes of patient death in nine patients were recurrent HCC in four patients, biliary sepsis in two patients, graft failure (not associated with AMR) in one patient, post-operative bleeding after re-LT in one patient, and pneumonia in one patient. Nine patients (37.5%) received re-transplantation. Graft survival rates at 3-year was 40.6%. Both patient survival and graft survival rates were significantly lower than ABOi LDLT recipients without DIHBS (both $p < 0.001$). Between ABOi LDLT patients with or without DIHBS, there were no significant differences in pre-operative isoagglutinin (IA) titer, post-operative peak bilirubin, AST, ALT, IA titer, and pre- and post-operative frequency of total plasma exchange (TPE).

Among the other fifteen patients who are alive, five patients got re-LT, three patients presented mild graft dysfunction with well-functioning PTBD, three patients showed resolution of DIHBS and removed biliary drainage, and four patients demonstrate normal graft function with well-maintained biliary drainage.
Conclusion: DIHBS developed usually before 3 months after ABOi LDLT. DIHBS significantly affects short and long-term outcome in ABOi LDLT. In patients who demonstrated DIHBS, over half of the patient progress

BOS280 EFFICACY AND SAFETY OF EARLY USE OF REDUCED TACROLIMUS IN COMBINATION WITH EVEROLIMUS VS STANDARD TACROLIMUS IN DE NOVO LIVERTRANSPLANT RECIPIENTS: HEPHAISTOS STUDY 12 MONTHS DATA

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Purpose: Preservation of kidney function by tacrolimus [TAC] minimization is the goal of current immunosuppressive strategies after liver transplantation [LTx]. In the HEPHAISTOS study efficacy and safety of early use of everolimus [EVR] in combination with reduced TAC [rTAC] was compared with standard TAC regimen [TAC-C] in *de novo* LTx recipients.
Methods: In this 12 months [M] prospective, open-label, multi-center study 333 patients [pts] were randomized 1:1 to receive either EVR(3–8 ng/

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ml) + rTAC(<5 ng/ml), or TAC-C(6–10 ng/ml), all with steroids until M6. Here we report M12 efficacy and safety results.
Results: 169 and 164 pts were randomized on average 15 days after LTx to receive EVR+rTAC or TAC-C, respectively. Efficacy was comparable in both groups. Incidence of biopsy-proven acute rejection (BPAR) at M12 was 8.9% in the EVR+rTAC and 6.7% in the TAC-C group and there were no differences in BPAR severity (mild: 9 vs 7; moderate/severe: in total 8 vs 7). Under treatment, no graft loss vs 3 graft losses and 2 vs 3 deaths occurred in the EVR+rTAC or TAC-C arm, respectively. Both groups showed a similar safety profile. Incidences of adverse events leading to study drug discontinuation were 23.7% in EVR+rTAC, vs 23.2% in TAC-C arm with renal and urinary disorders (1.2% vs 7.3%) and leukopenia (2.4% vs 0.0%) being the main reasons for discontinuation. During the study, no new safety signals were identified.
Conclusion: HEPHAISTOS confirmed that early use of EVR in combination with rTAC in *de novo* LTx recipients is feasible and safe with good efficacy outcomes.

BOS281 THE EXPERIENCE OF MORE THAN 100 ABO-INCOMPATIBLE LIVING DONOR LIVER TRANSPLANTATION IN CHILDREN

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Background: Liver transplantation is the only possible treatment for patients with end-stage liver disease. ABO-incompatible (ABOi) living donor liver transplantation (LDLT) is a valuable option for children without ABO-compatible (ABOc) living donors. The aim of the study was to describe the outcome of ABOi LDLT in 111 children.
Methods: We have started pediatric ABOi LDLT in 2010. 111 patients (57 boys and 54 girls) ≤ 12 years old have passed primary ABOi LDLT. Median age: 19.7 (3–144) months, median weight: 9.26 (5–37.5) kg.
Results: In 56 patients initial anti-ABO were ≤ 1:8, no special preparation was performed. 21 children with anti-ABO 1:16–1:128 and without urgent indications for transplantation received only transfusion of AB(IV) fresh frozen plasma. 34 patients with anti-ABO up to 1:256 passed plasmapheresis; 16 also received rituximab. In 11 cases splenectomy was performed during LDLT. 2 patients got splenic artery embolization.

Basic immunosuppressive protocol included basiliximab, tacrolimus and steroids; in 45 patients MMF was added, and in child with hepatocellular carcinoma everolimus was added.

In 103 of 111 children anti-ABO completely disappeared postoperatively. The rest 8 needed plasmapheresis after LDLT.

12 patients (10.8%) died during first year after LDLT due to different non-immunological reasons. 4 children were retransplanted due to biliary complications. 5 patients died more than 1 year after LDLT due to intercurrent infections. Other 90 patients are alive with good graft function. The max. follow-up is 103 months. Acute rejection occured in 7 (6.3%) patients, in 4 it was successfully treated by steroid pulse therapy, in 3 – in combination with plasmapheresis. The patient and graft survival and the incidence of rejection and complications were similar to those in ABOc LDLT.
Conclusion: ABOi LDLT is a safety and effective method of treatment for children with end-stage liver disease. Good results can be achieved with monitoring and correcting anti-ABO titres.

BOS282 IMPACT OF THE BASELINE ANTI-A/B IGG TITER ON THE CLINICAL OUTCOME IN ABO-INCOMPATIBLE LIVER TRANSPLANTATION

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Backgrounds: The use of ABO incompatible (ABOi) living donors is an attractive solution for expanding the liver donor pool. We investigated the impact of the baseline anti-A/B IgG titer on the transplant outcomes in ABOi liver transplantation (LT).
Methods: We analyzed 394 adult patients who underwent living donor LT (303 ABO compatible LT and 91 ABOi LT) between 2012 and 2018. ABOi LT patients were categorized by baseline IgG titer: low IgG titer (≤ 1:64, n = 51) versus high IgG titer (≥ 1:128, n = 40). All ABOi LT patients received desensitization therapy including rituximab and plasmapheresis.
Results: Patients with high IgG titer experienced antibody rebound (≥ 1:64) more frequently than those with low IgG titer during the first month after LT (35.0% vs. 15.7%, $p = 0.033$). Patient survival rates for ABO compatible, low IgG titer, and high IgG titer were 85.0%, 91.5%, and 74.4%, respectively, at 3 years post-transplantation ($p = 0.006$). High IgG titer (HR, 2.76; 95% CI, 1.39–5.48; $p = 0.004$) and MELD score of > 20 (HR, 2.32; 95% CI, 1.22–4.41; $p = 0.010$) were independent risk factors for mortality. Infection was the leading causes of death in all groups, but the proportion was significantly higher in high IgG titer group than in other groups (81.8% vs. 30.8% vs. 33.3%).
Conclusion: Patients with high IgG titer (≥ 1:128) are associated with a higher risk of death after ABOi LT than those with low IgG titer (≤ 1:64). Thus, ABOi LT patients with high IgG titer should be managed with great care.

BOS284 TYPE OF INDUCTION DOES NOT IMPACT PATIENT BUT NOT KIDNEY ALLOGRAFT SURVIVAL IN SIMULTANEOUS LIVER AND KIDNEY TRANSPLANT RECIPIENTS IN THE UNITED STATES

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Background: Induction practices vary widely in the United States for patients undergoing simultaneous liver and kidney (SLK) transplantation. We examined the impact of induction type on patient and kidney allograft survival utilizing the Scientific Registry of Transplant Recipients (SRTR) database.
Methods: We examined adult primary SLK transplants from October 2001 to December 2015. Patients were grouped according to type of induction regimen used: cyto-depletional agents, non-depletional agents and steroids only. Patients who received both depletional and non-depletional induction regimens, or non-standard regimens, were excluded. Kaplan-Meier survival curves and Cox proportional hazards models (with transplant center as a random effect and censored at 1 year) were used to deterime the impact of induction on patient survival and death-censored kidney allograft survival.
Results: 3388 patients received primary SLK transplant over the study period. Kaplan-Meier curves showedno difference in patient survival or death-censored kidney graft survival with regard to type of induction regimen used. Multivariate Cox proportional hazards model for patient survival at one year showed no effect for type of induction regimen used. Donor age, donor height, recipient mismatch status and recipient ICU status at time of transplant were predictive of patient survival at 1 year. Non-depletional induction (vs. depletional) was associated with a 39% decrease in the risk of death-censored graft loss (HR 0.61, 95% CI 0.39–0.97, p 0.037). Recipient BMI, dialysis status, ICU status at transplant, donor age, sex and height were also predictive of kidney graft loss at 1-year.
Conclusion: The type of induction did not influence patient survival in SLK transplant recipients. Non-depletional induction was associated with improved death-censored Kidney graft survival. Non-depletional regimens should be the preferred choice in SLK recipients.

Figure 1 - Patient Survival by Kidney Induction

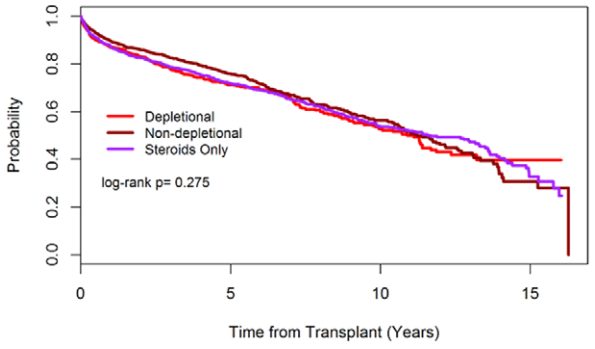
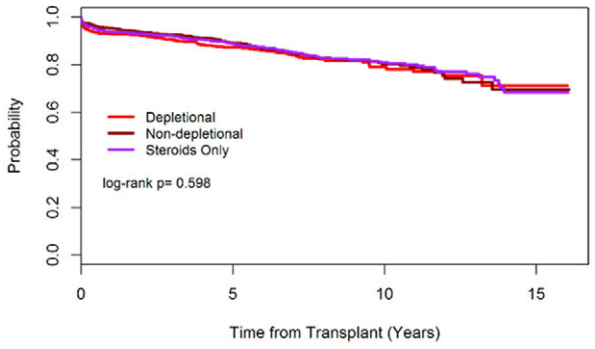


Figure 2 - Death Censored Kidney Graft Survival by Kidney Induction



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BOS285 HIGH PREVALENCE OF DE NOVO DONOR-SPECIFIC ANTIBODIES DURING REJECTION AFTER LIVER TRANSPLANTATION

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Background: The prevalence of dnDSA in LT recipients with active alloimmune injury (ALO).
Methods: Case-control cross-sectional study to investigate the prevalence of dnDSA in LT patients with ALO, non-ALO and LT recipients without liver injury (CONT). ALO: biopsy-proven T-cell or antibody mediated rejection. Non-ALO: active liver injury other than ALO. CONTROL: normal liver tests and elastography, no rejection within 6 months. Screening Luminex and Single Antigen Assay in those with positive screening. Results expressed as median (IQR).
Results: The cohort consisted of 84 LT patients: 21 ALO, 16 non-ALO and 37 CONT who were screened for dnDSA 30 (300) months after LT (33% <1 year, 41% 1–5 years, 26% >5 years). The median age was 57 (47), 29% were female. The pretransplant disease was alcohol-related (33%), viral (29%), cholestasic/autoimmune (21%) . The immunosupression at DSA assessment was calcineurin inhibitor ± MMF/steroids in 95% and 37% had experienced previous rejection. No significant differences in age, gender or time since LT between groups were found. ALO patients, compared to non-ALO or CONT, had previous rejection more frequently (61% vs 45% vs 20%; $p = 0.11$), higher ALT (168 (426) vs 138 (471) vs 23 (20) UI/ml), $p = 0.025$) and higher liver stiffness [8.2(12) vs 4.9(8) vs 5.5(8) kPa; $p = 0.010$). The prevalence of positive dnDSA class II in ALO vs non-ALO vs CONT was 48% vs 20% vs 8%, respectively ($p = 0.015$). All dnDSA in the ALO group targeted the DQ locus. The median MFI in ALO patients was 9445 (23026) compared to non-ALO and CONT [6026 (19978) vs 1500 (16840, $p = 0.067$)]. The prevalence of dnDSA class I was 4.7% vs 5 vs 6.3% % in ALO vs non-ALO-vs CONT. ALO-dnDSA + patients had previcenular plasma cell infiltration in 75% compared to 25% in ALO dnDSA- patients ($p = 0.092$).
Conclusions: High titers of class II dnDSA are common in LT recipients with active alloinmune injury.

BOS287 RENAL, EFFICACY AND SAFETY OUTCOMES USING AN EVEROLIMUS (EVR)-BASED CALCINEURIN INHIBITOR (CNI)-FREE REGIMEN VS STANDARD TACROLIMUS (TAC) AFTER LIVER TRANSPLANT (LTX): THREE-YEAR FINDINGS FROM CERTITUDE

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Background: EVR-based CNI-free therapy may preserve renal function and reduce CNI-related complications after Ltx but long-term data are sparse.
Methods: The prospective CERTITUDE trial follows Ltx patients [pts] to 5 years post-Ltx after completing the 6-month [M] SIMCER study, in which deceased-donor pts were randomized at M1 post-Ltx to (i) EVR + TAC withdrawn by M4 or (ii) standard TAC, both with basiliximab induction, mycophenolic acid ±steroids to compare the glomerular filtration rate (GFR) after Ltx.
Results: 143 of the 188 pts randomized in SIMCER entered in CERTITUDE with 132 pts followed to M36 post-transplantation (62 EVR, 70 TAC). The leading indications for Ltx were alcoholic cirrhosis (75/143) and hepatocellular carcinoma [HCC] (35/143). Adjusted means (SEM) change in estimated GFR (eGFR; MDRD) from SIMCER randomization to M36 after adjusting from baseline, eGFR was -13.4 (2.9) mL/min/1.73 m^2 with EVR and -18.7 (2.6) mL/min/1.73 m^2 with TAC ($p = 0.177$). Observed mean (SD) eGFR at M36 was 77.3 ± 27.8 *vs* 69.2 ± 22.7 mL/min/1.73 m^2 with EVR *vs* TAC ($p = 0.070$). Treated biopsy-proven acute rejection affected 4 EVR-treated pts and 2 TAC-treated pts during M6–36. Major adverse cardiovascular events (MACE) occurred in 3.1% and 5.1% of EVR and TAC pts, respectively ($p = 0.689$). No patients on EVR experienced a recurrence of liver cancer whereas 5.1% on TAC had HCC recurrence. Other neoplasms occurred in 3 (4.6%) EVR pts and in 1 (1.3%) TAC pts ($p = 0.330$). Three pts died in the EVR-treatment group and 5 in the TAC-treatment group. There was 1 graft was lost in the TAC group. Study drug was discontinued due to adverse events in 23.1% of EVR pts and 11.5% of TAC pts.
Conclusions: EVR with early TAC withdrawal tends to preserve renal function to M36 post-Ltx without increased risk of rejection. MACE, malignancies and HCC recurrence were numerically less frequent in the EVR group.

BOS288 QUANTITATIVE AND FUNCTIONAL IMPAIRMENT OF HUMAN MUCOSAL ASSOCIATED INVARIANT T- (MAIT-) CELLS IN LIVER TRANSPLANT RECIPIENTS

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MAIT cellsconstitute an unconventional T cell population characterized by expression of the TCR Vα7.2 chain specifically recognizing bacterial vitamin B metabolites presented by the MHC-I related molecule MR1. Being equally responsive to inflammatory cytokines, MAIT cells bridge innate and adaptive immunity, exhibit a proinflammatory Th1 + 17 phenotype and seem to play a crucial role in mammalian host protection. So far, the impact of immunosuppressive drugs (ISD) on MAIT cell biology has not been thoroughly investigated.

Phenotypic and functional properties of peripheral MAIT cells in the presence of common ISD were assessed by multicolor FACS in healthy donors *in vitro* and in immunosuppressed and tolerant individuals after liver transplantation *ex vivo*.

MAIT cells of healthy individuals showed a functional impairment in the presence of ISD *in vitro*; whereas activation by cytokines was predominantly inhibited by corticosteroids, antigen specific stimulation was dampened by corticosteroids and calcineurin inhibitors. Regardless of the type of ISD regimen, liver transplanted patients exhibited significantly reduced frequencies of MAIT cells as compared to healthy controls *ex vivo*, characterized by an activated HLA-DR^+CD38^+, exhausted $PD1^+$ phenotype. Of note, these features were partially shared with tolerant patients not receiving ISD for > 6 months. Upon innate cytokine stimulation, we detected a differential impairment of effector molecule production depending on the ISD regimen, accompanied by a drop in polyfunctional MAIT cells. Towards antigen specific stimulation, $IFN\gamma^+$ MAIT cells were significantly reduced in liver transplant recipients whereas production of other cytokines was unaffected.

As MAIT cells serve important surveillance tasks at barrier tissues, our data paves way towards understanding of how their impairment contributes to development of opportunistic infections in patients due to immunosuppressive therapy or organ transplantation per se.

BOS20 – SURGICAL TECHNIQUE KIDNEY: ROBOTS, TRANSPLANTS AND OUTCOMES

BOS289 UPSIDE DOWN KIDNEY TRANSPLANTATION- WE ARE ON RIGHT

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Aim: To evaluate the outcomes of upside down transplanted kidney.

Materials and Method: From Aug 2013 to Dec 2018, total 287 living related kidney transplantation were done in Department of Urology and Kidney Transplantation Surgery TU Teaching Hospital and Grande International Hospital, Kathmandu Nepal. Out of them 57 upside down kidney transplantation was performed using single suture single knot technique. In this study their demography, early and late postoperative complications and overall outcome was evaluated.
Results: Our study showed no difference in overall outcome between upside down and standard kidney transplantation and even less surgical complications in upside down group.
Conclusion: There should be no hesitation to perform upside down kidney transplantation.
Key words: upside down kidney transplantation, single suture single knot, complications

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BOS290 KIDNEY TRANSPLANTATION (KT) WITH MULTIPLE RENAL ARTERIES (MRA): OUTCOMES AND SURGICAL CHALENGES

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Introduction: KT is the treatment of choice for major ESRD patients. Anomalous arterial anatomy, such as the presence of MRA , occurs in up to 30% of donated kidneys . KT with MRA may have drawbacks, including prolonged warm ischemia time (WIT), an increased incidence of delayed graft function (DGF) and possible impaired graft and patients outcomes .
Methods: Retrospective analysis of patients with KT with MRA between 08/2010 and 12/2018 in our center. End points were vascular and ureteral complications , graft function and survival and patients' survival.
Results: 57 patients underwent KT with MRA – deceased donors (DD, 23) or living donor (LD, 33) grafts. Average age was 51.3 years (28–70) . 1 patient was lost of follow up.

47 grafts had 2, and 10 – 3 arteries.

91 % of arteries were reconstructed with average warm ischemic time 29.76 ± 11 minutes.

Mortality occured in 1 patient (1.75%) 9 days after operation d/t extended myocardial infarction with functional graft.

Grafts lost occurred in 3 patients (2 -acute humoral rejection and 1 never functioning graft).

No graft was lost d/t vascular or ureteral complications during the study period.

DGF occurred in 11 patients (2 LD and 9 DD) with average creatinine levels 3.74 ± 2.1 mg/dl at discharge, 1.98 ± 0.82 at 1 month and 1.7 ± 0.79 and 1.6 ± 0.5 at 6 and 12 months post KT. Other patients had average creatinine levels 1.5 ± 0.7 at discharge, 1.3 ± 0.48 at 1 month and 1.3 ± 0.5 and 1.22 ± 0.6 at 6 and 12 months post KT .

Ureteral complications occurred in 4 patients (7%): one early urinary leak (required reoperation 7 days after KT), 3 later anastomotic strictures (all treated successfully by the endo-urology).
Conclusions: MRA kidney grafts may be safely use for KT and are associated with a relatively higher risk of delayed graft function and ureteral complications. However , the graft and patient survival were good.

BOS292 LEARNING CURVE IN THE UK'S FIRST SERVICE FOR TOTAL RETROPERITONEOSCOPIC LIVE DONOR NEPHRECTOMY

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Background: Total retroperitoneoscopic live donor nephrectomy (TRLDN) is a relatively new procedure in the United Kingdom and was introduced in 201. Learning curves are well recognised in all aspects of surgery, and recognition of them for any technique is important to minimise potential morbidity during the learning phase. To date this has not been analysed in the context of TRLDN. This study analyses the first UK service to offer TRLDN.
Methods: Consecutive TRLDN performed between June 2011 and June 2016 underwent retrospective case review. In total 130 patients underwent TRLDN (121 left, 9 right, mean age 50.8 ± 13.6, median ASA 1).
Results: Overall morbidity was low, conversion to open (n = 1, 0.8%), mortality (n = 0). Length of stay (LOS) did not vary significantly throughout the study period (average LOS 3.47 days ± 1.3). With increased operator experience the median operative duration, complication, and conversion rates significantly improved. Analysis of median operative duration and consecutive TRLDN showed a negative correlation with operating time in the first quarter of the study period significantly improved compared to the final quarter (R2 – 0.5731, p***<0.001). CUSUM analysis of operative time identified the achievement of the learning phase after 60 cases.
Conclusion: We present a multi-dimensional learning curve analysis for the first UK TRLDN service taking into account operating time, LOS, intraoperative and post-operative complications. Importantly, this approach does not dispose patients to significantly increased complication during the early phase of learning in TRLDN. However, there does exist a learning curve which is important to recognise for any service wanting to implement TRLDN.

BOS293 UROLOGIC COMPLICATIONS AFTER RENAL TRANSPLANTATION: SINGLE CENTER EXPERIENCE

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Urologic complications after kidney transplantation are associated with significant morbidity, mortality and prolonged hospital stay.
Material and Methods: Totally 191 adult kidney transplantations were performed since January 2006 at Gazi University Transplantation Center, Ankara, Turkey. All data collected from patient charts and surgery files retrospectively. Modified Lich-Gregoire with The Haberal's corner saving technique was used for ureteroneocystostomy anastomosis. We routinely use double J stent (DJS) during surgery. The DJS was removed with cystoscopy by Urology in an out-patient clinic under sedation by postoperative 4th weeks.
Results: Source of the donor was 67% in living related and 36% in deceased donor. The mean age of the recipients were 36.6 ± 12 years old (median: 34 years old; range 18 – 67). Mean donor age was 44 ± 14.4 and median age was 46 years old. We focused on 3 specific urologic complications: urine leak, ureteric stenosis and symptomatic vesicoureteral reflux(VUR) in this study. Totally 9 (4.7%) urologic complications were encountered: urine leak(n = 3), distal ureter stenosis(n = 5) and distal ureter necrosis(n = 1). We have not seen any VUR in this study group. Three urine leaks and three patients with distal ureter stenosis have been treated successfully by conventional radiology. Surgical revision was done to one patient with the distal ureter necrosis and two patients with distal ureter stenosis cases. We have lost neither patient, nor graft due to urologic complications.
Conclusion: The routine use of ureteral stent with Modified Lich-Gregoire with The Haberal's corner saving technique was used for ureteroneocystostomy anastomosis seems to decrease risk of urologic complications.

BOS294 SURGICAL OUTCOME OF DISEASED DONOR KIDNEY TRANSPLANTS

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Renal transplantation from cadaver donors is a widely accepted treatment option for end-stage renal disease patients.
Material and Methods: A total of 65 adult diseased donor renal transplants were performed at Gazi University Transplantation Center, Ankara between January 2006–2019. In this study, we retrospectively analyzed the surgical results as urinary, vasculature and others.

Findings: Among 65 diseased donor renal transplant recipients 34 were females and 31 were males subject. The mean age of donors and recipients were 29.44 ± 14.1 and 41.7 ± 15.1 respectively. A total of 10 (9%) surgical complications were detected. These were vascular (n = 2), urological (n = 2) and other (n = 6). As vascular: renal artery and venous thrombosis, as urological the urine leakage (n = 2) and as others: bleeding (n = 3), primer non-functioning (n = 1) and incisional hernia (n = 2) have been founds. One of the post-operative bleeds needed to second-look, but others' did not require surgical intervention, spontaneously regressing. One of the urine leak was treated with interventional radiology, the other one needed to the ureter revision operation. All incisional hernias (PO 8 months, 2 years, 3 years) were surgically repaired with mesh. A total of 4 grafts were surgically lost. Renal artery thrombosis (n = 1), renal vein thrombosis (n = 1), primer non-functioning (n = 1) and adult dual renal transplantation from pediatric donor (n = 1). Post-operative median follow-up is 62 weeks (3–121 weeks). Patient and graft survival rates for 1, 2 and 5 years are 100%, 100%, 97.3% and 97.3%, 94.7%, 88.8% respectively.
Conclusion: Cadaveric renal transplantation is successfully performed in our center in accordance with the developed centers of the world. Renal transplantation is still the best treatment option for children and adults with end-stage renal disease.

BOS295 OUTCOMES OF THE THIRD KIDNEY TRANSPLANTATIONS. A SINGLE CENTER EXPERIENCE

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Background: 13.4% of the kidney transplantations is a repeat procedure in the Eurotransplant. The third transplants are significantly more complex than first and second ones because of the consequences of the previous medical and surgical history.
Materials and methods: Aim: analyse and compare our third vs. first transplant results.

Between 2011 and 2016 we performed 779 deceased donor adult kidney transplantations, out of them 14.2% were second, 2.6% (20) third, and 0.3%

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fourth. We prospectively collected the pre-, intra-, and postoperative data, kidney function and survival rate.
Results: Both the donors *(47.4 vs 52.0 ns.)* and the recipients of the third transplant were younger *(47.3 vs. 53.4 p = 0.016)*. HCV infection *(20% vs 2.1%, p = 0.001)* rate is higher. Operation time is longer, *(140 vs. 130 min, p = 0.02)* and delayed graft function (DGF) is much more frequent, *(60% vs. 22.4%, p = 0.000)*. Mean of PRA is higher *34.4% vs. 2.5 % p: 0.00*. Induction therapy was given in *100% vs. 7.9%*. More perirenal hematoma has been observed *(35% vs. 16.6%, p:0.03)* and hospital stay is longer *(16 vs. 12 days, p:0.003*). Kidney function is significantly inferior to the end of the first year. Patient survival is *90% vs. 96.9%* at one, *84.7% vs. 96%* at three years (*p*: 0.03), graft survival is *75.1% vs 93.1%* at one, and *75% vs 91.1%* at three years (*p*:0.02). There were no significant differences in recipient BMI, CIT, acute rejection, wound healing, lymphocele, arterial-venous thrombosis, ureter complications.
Conclusion: In a third transplant the younger recipient receives a younger kidney and still both graft and patient survival is significantly inferior to the primer ones. DGF rate is much higher and induction therapy is essential to keep the acute rejection rate on the same level. Third kidney transplantation remains a surgical and immunological challenge. Careful selection is required to minimize the patient's risk and graft loss.

BOS296 LONGTERM RESULTS OF CRESCENTIC INCISION FOR DONOR NEPHRECTOMY

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Background: Living kidney donation helps to avoid or reduce the time period of dialysis and on waiting lists in patients requiring a new organ. We believe the new crescentic incision donor nephrectomy is an effective and less invasive modification of classic open donor nephrectomy (CODN). Our aim was to compare the outcomes and quality of life of donors following traditional flank incision and new crescentic incision in fifteen CODN.
Methods: Since September 2015 we have performed 85 donor nephrectomies with crescentic incision at our center. We prospectively analyzed these 85 consecutive crescentic incision donor nephrectomies and compared them to 85 retrospectively analyzed classical incision donor nephrectomies performed in our center. Surgical time, warm ischemia time, intraoperative complications, time until hospital discharge, quality of life, presence of infection, bleeding, the need for a second operation, and death were analyzed.
Results: The mean operative time for crescentic incision donor nephrectomy of 53.9 min (range, 40–75 min) was significantly shorter than the 93.7 min (range, 75–140 min) for CODN. There was no significant difference in the pain scores, warm ischemia time, intraoperative complications, time until hospital discharge, presence of infection graft function, or quality of life between the two groups. However, this incision increased the patient's comfort and the ability of the surgeon to manipulate during surgery
Conclusion: The use of the new crescentic incision is both safe and similar to conventional techniques previously described in the literature, and increases the comfort of both the patient and the surgeon during surgery.

BOS297 THE RELATIONSHIP BETWEEN SURGICAL COMPLICATIONS AND GRAFT OUTCOMES AFTER KIDNEY TRANSPLANTATION

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The improvement of surgical techniques has reduced the frequency of postoperative complications in kidney transplant recipients. We investigated the frequency of intra- and post-operative surgical complications in kidney transplant patients and the effects of these developing complications on patient and graft survival in early period.
Materials and Methods: This retrospective study conducted in consecutive patients (213 females, 285 males) who underwent kidney transplant surgery at our center between December 2005 and October 2015.
Results: We performed 225 living and 273 deceased donor transplantations. Donor age was 48.6 ± 14.3 years, cold ischemic time was 11.3 ± 6.1 hours, surgery time was 4.9 ± 1.2 hours. The frequencies of intra- and post-operative surgical complications were 9.9% and 43.8%, respectively. The intra-operative surgical complications were reanastomosis (3.8%), double renal artery (2.5%), accessory renal artery (1.6%), bleeding (1.1%). Post-operative surgical complications were lymphocele (24.6%), hematoma (8.5%), urinary leak (4.7%), bleeding (%4.7). When compared with patients without complication, donor ages and living donor ratios were significantly higher in patients with intra-operative surgical complications ($p = 0.007$ and $p = 0.017$, respectively). In the group of patients who had post-operative surgical complications, the duration of operation was statistically higher than those of patients without complication ($p = 0.018$). In the group of patients with delayed graft function, the post-operative surgical complication ratios was lower ($p = 0.028$). High donor age ($p = 0.026$) was independent risk factor for intra-operative complications. The mean graft and patient survival times in patients with post-operative surgical complications was significantly lower than in those who did not (Figure 1 and Figure 2).
Conclusion: As a result, we concluded that surgical complications were common and that these complications could affect patient and graft survivals.

Fig 1. Post-operative surgery complication on graft survival (p=0.008)

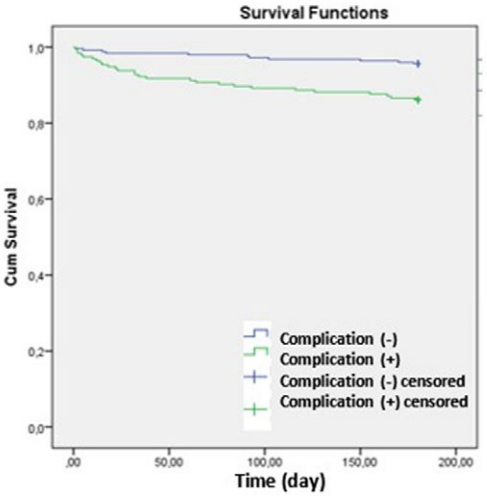
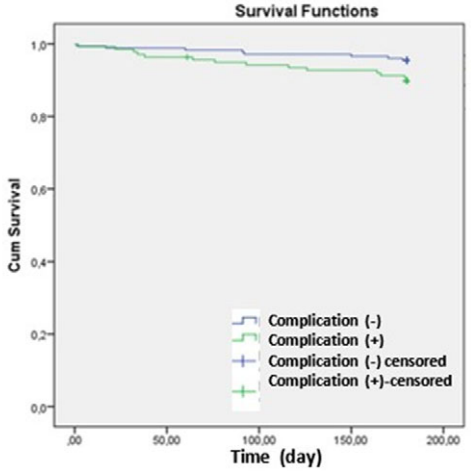


Fig 2. Post-operative surgery complication on patient survival (p=0.047)



BOS298 LIVING-DONOR RENAL TRANSPLANTATION: COMPARISON OF SEQUENTIAL AND SIMULTANEOUS SURGICAL ORGANIZATIONS

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Introduction: Living-donor renal transplantations (LDRT) present better results in terms of long-term patient- and graft- survival compared to kidney

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transplantations from deceased donors, in particular by reducing cold ischemia time (CIT). Few studies compared living-donor renal transplantation performed either simultaneously, with shorter CIT, or sequentially, leading to extend CIT.

The aim of this multicentric study is to compare LDRT performed either simultaneously or sequentially.

Material and Methods: LDRT were performed in three French university centers. In the first one (C1), LDRT were performed in a sequential manner (Sequential group) and in C2 and C3, LDRT were performed in a simultaneous manner (Simultaneous group).

Results: From March 1st 2010 to March 31th 2014, 324 LDRT were performed: 176 LDRT in Sequential group and 148 LDRT in Simultaneous group. Living-donor and recipients characteristics are equivalent in both groups, except for left nephrectomy side, ABO mismatch, HLA mismatch and previous renal transplantation rate, that were statistically higher in Sequential group. Regarding living-donor nephrectomy, operative time and surgical conversion rate were statistically lower in Sequential group. At 1-year of follow up, serum creatinine level was equivalent in Sequential and Simultaneous groups. Regarding renal transplantation, cold ischemia time (CIT), rewarming time (RT), transfusion rate and delayed graft function rate (DGF) were statistically higher in Sequential group. 1-year, 5-years serum creatinine levels and graft loss, at 5-years of follow up, were similar in both groups

Conclusion: Our results indicate that a moderate extension of cold ischemia time does not influence transplant outcomes in the short to medium term. DGF was higher for LDRT performed sequentially but graft loss, with 5-years of follow up, were similar between these two types of transplant organizations.

BOS300 MULTIPLE ARTERY ANASTOMOSIS IN KIDNEY TRANSPLANTATION; INTERNAL ILIAC ARTERY INTERPOSITION GRAFT

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Background: Anastomosis of multiple renal arteries in kidney transplantation is technically demanding. Previously this condition was considered a relative contraindication to use of the donor, due to an increased risk of vascular and urologic complications.

Methods/Materials: Between August 1990 and November 2018, we have performed 700 renal transplants, among which 108 patients (15.4%) of the multiple donor arteries were encountered and total 117 cases of procedure was done. We reviewed these cases for the type of vascular reconstruction and outcome of 16 interposition graft cases using branched internal iliac artery.

Results: The type of reconstruction were illustrated as follows ; ligation of an upper polar artery in 36 cases, double barrel anastomosis in 39 cases, end to side anastomosis between a polar artery and main renal artery in 12 cases, separate anastomosis of two renal arteries to the branch of the internal iliac artery in 1 case, use of the inferior epigastric artery of the recipient for end to end anastomosis to lower polar artery in 13 cases, interposition graft using branched internal iliac artery in 16 cases.

We reviewed the 16 cases of the internal iliac artery interposition. Anastomosis between donor renal artery and recipient's interposed internal iliac artery was done at bench extracorporeal technique. By use of this technique, warm ischemic time was not prolonged and postoperative course was good without vascular and urologic complications.

Conclusion: Our method enables to select an appropriate recipient's interposed arterial branch to be anastomosed that is compatible with donor's multiple renal artery and is easy to perform. Anastomotic arterial pseudoaneurysm formation or rupture is thought to be possibly low compared with that of the double barrel anastomosis. And multiple arterial anastomosis are conducted in cold extracorporeal environment and a simple end to end arterial anastomosis is done in recipient's body. This technique would reduced warm ischemic time, therefore renal damage could be diminished.

BOS301 ROBOTIC DONOR NEPHRECTOMU

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Robotic donor nephrectomy is a well-established technique to open surgery in living donors for kidney transplantation.

Material and Methods: Da-Vinci Robotic System became available in our institution for donor nephrectomy on September 2013. Since then, we have performed 73 cases.

Results: There were 46 female and 27 male donors and a median body mass index of 28 kg/m^2 (range, 19–32).Median age of the donors was 43.5 years (range, 19–65). Median operating time was 134 minutes (range 123–278 min).Ten out of 45 right and 35 were left kidneys. Table 1 mentions other donor features. Mean warm ischemia time was 3.5 minutes (range, 3.1–5.2 min). Only 1 patient required conversion to open due to bleeding and required intraoperative blood cell transfusion (2U ES). Median blood loss was found 55 ml (range, 45–145 ml). Four patients required total of 7 U blood cell transfusions after surgery. No case of graft loss occurred among the recipients. Rapid graft function was observed from all recipients. One surgical complication encountered after surgery: This patient required LAP exploration on PO9 due to prolonged ileus. In the exploration acute appendicitis was found. Lap appendectomy was performed. He discharged 5 days after letter procedure. Right pneumothorax occurred in one donor early after surgery and resolved spontaneously without any further intervention within 2 days. In one donor, rhabdomyolysis developed after right donor nephrectomy. The operation time was 184 min. His BMI was 32 kg/m^2. He required antidiuretic therapy and hydration. His kidney responds well to medical treatment. He discharged 15th post-operative day without any problem. He has been doing well since then.

Conclusion: Our experience confirmed about the feasibility of robotic nephrectomy for living-donor kidney transplantation. It is a safe and effective procedure. The cost of this procedure remains the only significant disadvantage.

Median donor age (y)	43.5
Sex (F/M)	46/27
Median Body mass index (kg/m^2)	28
Previous abdominal surgery	9
Patients with comorbidity	1
Left donor nephrectomy	63
Right donor nephrectomy	10
Patient with >1 renal artery	3
Patient with >1 renal vein	4
Patient with double ureter	2

BOS302 SAFETY AND EFFICACY OF ROBOT-ASSISTED KIDNEY TRANSPLANTATION

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Background: Robot-assisted kidney transplantation (RAKT) offers the potential benefits of faster recovery and fewer wound complications than open kidney transplantation (OKT), and may ultimately improve access to transplantation for patients with a high body mass index (BMI). We began our RAKT programme two years ago, and have the largest series in the U.K. We aimed to evaluate the safety and efficacy of this new procedure.

Methods: We compared RAKT and OKT recipients in a 1:2 ratio. Primary outcome measure was estimated glomerular filtration rate (eGFR) at 3, 6 and 12 months post-transplantation. Secondary outcomes were implantation time, operative time, re-operation, wound infection rate and length of stay (LOS).

Results: We have performed RAKT in 12 patients and compared these with 24 consecutive OKT performed by the same surgeon. All patients received a live donor graft with single vessels. RAKT recipients had a higher median BMI (27.0 vs 24.8 kg/m^2, $p = 0.04$). Implantation (67.5 vs. 27.5 mins, $p = 0.0001$) and operative (299.5 vs. 175.0 mins, $p = 0.0001$) times were longer in the RAKT group. All grafts experienced primary function, with no difference between the groups in eGFR (mls/min/1.73 m^2) at 3 months (55.0 vs 59.5, $p = 0.58$), 6 months (60.0 vs 59.5, $p = 0.57$) or at 12 months (53.5 vs 56.0, $p = 0.60$). One patient in each group underwent re-operation. There were no wound infections, and there was no difference in LOS (5.5 vs. 6.0 days, $p = 0.54$) between the two groups.

Conclusion: RAKT is a technically challenging procedure with a steep learning curve, resulting in longer implantation and operative times. Mentorship and training, co-operation between the multi-disciplinary team, and the use of intra-corporeal ice for graft cooling allows safe progress through this learning curve, resulting in equivalent outcomes to those from OKT. In the future, we aim to demonstrate the benefits of RAKT in patients with a high BMI, including those deemed unsuitable for OKT due to their size.

BOS303 ROBOT ASSISTED RETROPERITONEOSCOPIC DONOR NEPHRECTOMY: INTRODUCTORY CASES OF A TECHNIQUE OFFERING BETTER SAFETY

Emin Baris Akin, Ilhami Soykan Barlas
Demiroglu Bilim University Sisli Florence Nightingale Hospital

With our experience of more than 800 cases, we adopted hand assisted retroperitoneoscopic donor nephrectomy (RPDN) in order to avoid intrabdominal complications. We introduced robot assisted laparoscopic donor nephrectomy (RALDN) recently with the aim of preventing hand assistance, especially in low BMI donors. Our experience in retroperitoneal access combined with improved ability to operate in tight spaces with robotic assistance allowed us to perform retroperitoneoscopic access, after experience with 12 cases with

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RALDN. We present our initial three consequitive cases with robotic assisted retroperitoneoscopic donor nephrectomy (RARPDN). To our knowledge, RARPDN was not mentioned in the literature before.

We performed two successful left sided and one right sided donor nephrectomies within October and December 2018. The follow up period was three months. There was one male, two female donors with ages 63.56, and 28 years, respectively. After placing the patient in lateral decubitus position, a 7 cm. Pfannenstiel incision was performed for dissection of retroperitoneal space as well as for introducing 12 mm Robotic Camera trocar at 3 cm. lateral from the umbilicus followed by two additional 8 mm trocars for robotic arms (Maryland and Hook Cautery). We used an extra 12 mm assistant trocar through the hand port. Then, the robotic cart was docked. The kidney was extracted through the Pfannenstiel incision. Skin incision to kidney removal times(T) were 198,168, and 157 minutes and surgical console T were 165,110, and 145 minutes. The warm ischemia T were 178, 182, and 264 seconds. The donors had no complications and the mean hospitalization was 3,7 days. The recipients had immediate kidney function with mean creatinine of 1.2 mg/dl at the end of the third month.

We introduced non-HARPDN technique by switching to RALDN, followed by RARPDN. RARPDN may offer increased safety compared to full endoscopy while initiating retroperitoneal donor nephrectomy without hand-assistance

BOS21 – CANCER

BOS305 MALIGNANCY TRANSMISSION FROM ORGAN DONOR TO RECIPIENT – ORGAN VIGILANCE IN GERMANY

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[1]Deutsche Stiftung Organtransplantation (DSO); [2]German Foundation for Organtransplantation (DSO)

Introduction: Vigilance monitoring after OT includes Serious Adverse Events (SAE) and Serious Adverse Reactions (SAR). *SAE* are findings in the donor after OT that pose a *risk of harm* to the already transplanted recipients of the donor, e.g. malignancies. *SAR* refer to *harm that has occurred* to one/ more recipients of the same donor and is suspected of being associated with the donor organ.
Methods: Analysis of all SAE/SAR related to malignant tumors (TU) from 7/ 2015–12/2017.
Results: 17 donor neoplasms (SAE) were found (table). 14 were detected in donor organs during preparation in the recipient center, after pathological exam of not transplanted organs/ donor autopsy. In 3 cases retrospective evaluation of donor history or imaging of the donor prior to death led to tumor diagnosis. 4 reported TU resulted in preventive or therapeutic organ removal or partial resection in the recipient. One pleuramesothelioma was transmitted to 2 recipients, both died.

11 SAR were reported 2 weeks -16 years after OT. 1 known donor glioblastoma was transmitted to one recipient. He died 28 months after OT.Donor origin of SAR was confirmed/probable for 10 recipient TU, possible for 2, excluded for 2 TU.

10 malignancy SAE/SARs related to foreign donors have been reported to the DSO, none of them resulted in transmission (table).
Conclusion: An occult donor pleuramesothelioma was transmitted to 2 recipients, a known donor glioblastoma to a third recipient, all died. Comprehensive, detailed reporting of SAE/SAR and international data collection are crucial for transmission risk assessment. These data are essential to minimize TU transmission in the future.
Table: TU entities:: *German donors:* n = 17 SAE: 5 RCC, 3 NET,2 lung can.,2 plasmocytoma ,breast ca.,lymphoma, melanoma metastases, pleuramesothelioma, history of thyroid ca.

n = 12 SAR:6 RCC,2 multiple lung lesions, angiosarcoma, glioblastoma, lung ca., liver metastases

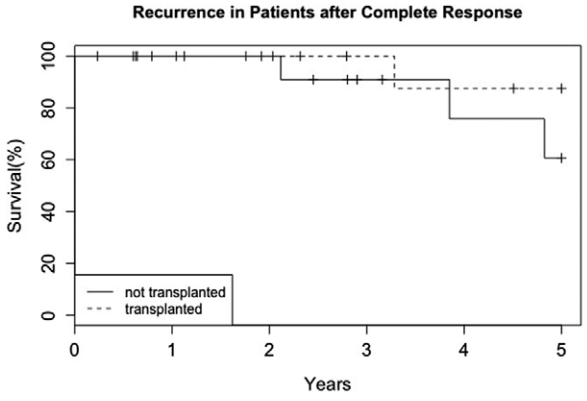
Foreign donors: n = 10 SAE/SAR:4 RCC,2 angiosarcoma, chorioca.,lymphoma, thyroid ca, NET

BOS306 LIVER TRANSPLANTATION VERSUS WATCHFUL WAITING IN WITHIN MILAN CRITERIA HEPATOCELLULAR CARCINOMA PATIENTS WITH COMPLETE RESPONSE TO BRIDGING THERAPY

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Introduction: During the waiting period for liver transplantatiuon (LT), patients with hepatocellular carcinoma (HCC) are at risk for tumor progression and therefore bridging therapy is recommended for patients with an estimated waiting time of ≥ 6 months. In some patients the treatment results in a long-lasting complete tumor response (CR). In these cases, the risk of tumor progression must be weighedagainst the risk of transplantation.

This observational study examines whetherHCC patients with preserved liver functionand complete response after bridging-therapy should be transplanted or managed by a watchful waiting strategy.
Material and Methods: We performed an intention-to-treatanalysis from the time of listing in this patient group. Patient data listed for transplantation from January 1st2007 until December 31st2018 was collected and analyzed. Bridging therapy included TACE and RFA as well as liver resection.
Results: Altogether 180 cases were reviewed in this retrospective analysis. In 34 (18.9%) patient CR could be achieved. 17 patients were not transplanted and 16 patients received liver transplantation despite CR. Overall Survival after listing was better for patients who were only observedthan patients who were transplanted (100% vs. 76.2%; $p = 0.08$). Recurrence free survival was lower in the group of patients without liver transplantation (60.6% vs. 87.5%; $p = 0.3$) (Figure 2). Of those four patients experiencing tumor recurrence after CR, two were listed for liver transplantation and one transplanted. One patient progressed beyond transplantability and another refused consent.
Conclusion: Wait-listed patients with preserved liver function and CR after LRT may benefitfrom a watchful waiting strategy, combined with a rescue transplant concept in case of tumor recurrence.



BOS307 THE DIAGNOSTIC VALUE OF SELECTED TUMOR MARKERS IN ORGAN DONORS

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Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University in Torun

Background: Organ transplantation is associated with a small but significant risk of unrecognized donor cancer and transferred to the recipient. The aim of the study was to determine the credibility of neoplasm markers in the decision-making process while qualifying for or disqualifying from organ donation, the appropriateness of routine marker measurement for all donors and the evaluation whether such treatment contributes to the detection and prevention of transmission, or on the contrary- leads to withdrawal from the procurement of the organ, which could have otherwise been safely transplanted.
Methods/Materials: The study was retrospective analysis of the registry data. It included a total of 2228 cadaveric organ donors registered in the Polish Register of Donors, Center for Coordination "Poltransplant" between 2011–2014.

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Results: In selected cases, elevated PSA and Ca19-9 markers led to the withdrawal from organ retrieval. Only 6.5% of the study group had both pathomorphological diagnosis and evaluation of tumor markers. Out of this group, 9 donors were most noteworthy: despite pathomorphological findings suggesting cancer such indication did not lead to the assessment of the cancer markers. In the case of 47 donors, whose pathomorphological examination did not show any tumor lesions, the elevated values of the markers could have suggested them. The study showed that only PSA is characterized by high sensitivity, high specificity is characterized only by AFP and β-HCG, while the high negative predictive value have: AFP, Ca19-9, Ca125, β-HCG.
Conclusion: Disqualification of an organ donor based solely on the elevated levels of neoplastic markers cannot be justified. False positive results may be the basis for unnecessary disqualification of donors and loss of organs that are otherwise suitable for transplantation.

BOS308 TUMOR MARKER-BASED RISK ASSESSMENT OF HEPATOCELLULAR CARCINOMA RECURRENCE AFTER LIVER TRANSPLANTATION

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Asan Medical Center

Background: We assessed the prognostic power of tumor markers in predicting risk of hepatocellular carcinoma (HCC) recurrence after liver transplantation (LT).
Methods: This study include 937 recipients who underwent LT for HCC between 2007 and 2013 and followed up until 2018. Tumor recurrence rate (TRR) and patient survival rate (PSR) were assessed according to pretransplant alpha-fetoprotein (AFP) and PIVKA-II.
Results: During follow-up, 174 patients (16.2%) showed HCC recurrence and 1-, 3- and 5-year TRRs were 10.8%, 17.0% and 18.8%, respectively. 1-, 3-, 5- and 10-year PSRs were 94.8%, 85.5%, 82.0% and 79.8%, respectively. AFP and PIVKA-II were multiplied to make AP score in log10 scale. 3-year TRR were 8.5% in 265 patients with AP score <=2log, 11.8% in 345 patients with AP score 2–3, 18.5% in 202 patients with AP score 3–4, 33.8% in 80 patients with AP score 4–5, and 72.3% in 45 patients with AP score > 5. 3-year TRRs were 10.4% in 610 patients with AP score <=2.5 log and 29.7% in 327 patients with AP score > 2.5log. 3-year TRRs were 10.4% in 610 patients with AP score <=2.5 log and 29.7% in 327 patients with AP score > 2.5log ($p < 0.001$). 3-year TRRs were 14.9% in 890 patients with low MoRAL score and 58.4% in 47 patients with high MoRAL score ($p < 0.001$).
Conclusions: Tumor maker-based prognostic cutoff should be determined by the balance between patient prevalence and prognostic contrast, thus AP score of 2.5log (or up to 4log) appears to be more widely applicable than MoRAL score.

BOS309 CHARACTERISTICS OF T/NK-CELL LYMPHOMAS AFTER RENAL TRANSPLANTATION: A FRENCH NATIONAL MULTICENTRIC RETROSPECTIVE STUDY

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Introduction: Post Transplant Lymphoproliferative Disorders (PTLD) encompass a spectrum of heterogeneous entities ranging from benign lymphocytic proliferations to high-grade malignant lymphomas. Because the vast majority of cases PTLD arise from B cells, available data on T/NK-cell PTLDare scarce, which limits the quality of the management of these patients.
Methods: All adult cases of PTLD diagnosed in the 35 kidney transplant centers in France were prospectively recorded in the national registry between 1998 and 2007. To ensure all cases of PTLD-T/NK were identified, registry data were cross-checked with those of 2 national independent databases: K-ViroGref and Tenomic.

Medical files of T/NK-cell PTLD were reviewed and data were compared with that of i) the 440 cases of B-cell PTLD from the registry, and of ii) a control cohort of 148 "conventional" T/NK-cell lymphomas.
Results: 58 cases of T/NK-cell PTLD were enrolled in the study. T/NK-cell PTLD occurred significantly later after transplantation and had a worse overall survival than B-cell PTLD ($p < 0.0001$). Depending on the clinical presentation, 2 subtypes of T/NK-cell PTLD could be distinguished: i) cutaneous (n = 16, 28%) and ii) systemic (n = 42, 72%), the latter being associated with a worse prognosis ($p < 0.0001$). Compared with systemic T/NK-cell lymphomas diagnosed in immunocompetent patients, overall survival of T/NK-cell PTLD was worse ($p < 0.0001$). This difference was neither entirely explained by the higher tumor mass at diagnosis, nor the more aggressive histological phenotype of systemic T/NK-cell PTLD, since multivariate analysis identified transplantation as an independent factor associated with death. Interestingly, transplanted patients were less intensively treated and responded less to immunochemotherapy than controls.
Conclusion: Systemict/NK-cell are rare type of PTLD with bleak prognosis, likely because of suboptimal treatment and/or the detrimental impact of therape

BOS310 DECREASING INCIDENCE OF DE NOVO KAPOSI SARCOMA AFTER KIDNEY TRANSPLANT IN ITALY AND ROLE OF MTORI: ITALY, 1997–2016

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Background: Solid organ transplant recipients have an augmented risk of developing several cancers, mainly those related to viral infection i.e. Kaposi sarcoma (KS), caused by human herpesvirus-8 (HHV8). We investigated the risk of KS in kidney transplant (KTX) recipients in the last 20 years (1997–2016).
Methods: Follow-up (fup) of 11,624 KTXs performed in 17 centres (1997–2013) was accrued from 30 days post-KTX to the date of KS, death or last fup up to Dec.'16 calculating patient-years (PYs) at risk. We calculated adjusted incidence rate ratios (IRR_{ad}) using Poisson regression adjusting for gender, current age, calendar period, area of origin, years post-KTX and use of mTOR-inhibitors (mTORi).
Results: In 85705 PYs 106 KS cases (73 M) were observed, of which 83 (78.3%) within 3-yrs post-KTX and 17 cases up to 5-yrs), with an overall incidence of 124 cases/10^5 PYs. Significantly augmented IRR were observed with increased age, and in pts born in Southern Italy or abroad (IRR_{ad}=3.5 vs those born in North/Central Italy), while a reduced risk was observed with increasing fup and in the latest period (2013 onwards vs. 1997–2000). Among mTORi users 15 KS were observed vs 91 in not users (IRR_{ad}=0.43, $p < 0.05$). In the first two periods (1997–2001 and 2002–05), mTORi users experienced a significantly decreased KS risk (IRR_{ad}=0.19 and 0.48 respectively), with comparable IRR in the latter periods. Considering only KS diagnosed within 3-yrs post-KTX, mTORi users had a reduced risk in the first two periods (IRR_{ad}= 0.13 and 0.34 respectively, $p < 0.05$), while no differences were observed after 3-yrs post-KTX.
Discussion: Our results confirmed a decreasing KS-incidence post-KTX over time with a relevant role of mTORi use mostly in the first years post-KTX. These findings underscore the need for appropriate models for monitoring KTX for KS risk, especially those at greater risk and, in particular, in the early postoperative period. For the Italian Transplant & Cancer Cohort Study.

BOS311 EPIDEMIOLOGY OF NON-CUTANEOUS CANCERS AFTER KIDNEY TRANSPLANTATION OBSERVED IN A PERIOD OF 50 YEARS

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Introduction: Cancer is the second leading cause of death in kidney transplant recipients. We examined the epidemiological pattern of non-cutaneous cancers arising in a population of 2,300 kidney transplant recipients observed for a median of 4,517 days in association with some relevant clinical variables.
Material and methods: Between 1968 and 2017, 159 recipients had a primary neoplastic event and 11 a second neoplastic event, for a total of 170 observed cancers, including those of hemopoietic derivation. The histotype, site, time of onset, post-transplant immunosuppressive therapy, sex and age of the patient, duration of dialysis, number of HLA mismatches, and the effect on survival of the patient were evaluated.
Results: The most frequent types of malignancies were lymphoproliferative diseases (23%), renal carcinomas (14%), mammary carcinomas (10%), colorectal (7%), prostate (6.5%), lung (6.5%) and gynecological ones (5%). The median time of post-transplantation onset was significantly shorter for lymphoproliferative forms, compared with carcinomas ($p = 0.003$) as well as patient survival ($p = 0.001$). The duration of exposure to immunosuppressive therapy and the type of neoplasia were the only variables associated with patient survival.
Conclusions: Malignancies of haematopoietic origin are the most frequent after renal transplantation, followed by those of renal origin (native kidneys), breast, prostate and colorectal. Lymphoproliferative disorders (PTLD) had the most severe prognosis. Monitoring of viremia for EBV, particularly in naife post-transplant recipients, together with extended neoplastic screening over time, are mandatory.

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BOS312 INCREASED NEED OF LOCOREGIONAL THERAPIES IS A SURROGATE OF TUMOR BIOLOGY IN PATIENTS UNDERGOING LIVER TRANSPLANTATION FOR HEPATOCELLULAR CARCINOMA

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Background: We hypothesized that an increased need for locoregional therapies (LRT) during the waiting time would be an independent predictor of cancer recurrence and poor survival after liver transplantation (LT) for hepatocellular carcinoma (HCC).
Methods: Patients with HCC listed for LT between 2000–2016 were included in an intention-to-treat analysis (ITT). Patients were divided according to the number of LRT prior to LT: 1, 2 or ≥ 3. Patients who did not receive LRT were excluded. Overall survival (OS) and the cumulative recurrence incidence (CRI) were assessed by the Kaplan-Meier method and compared with the log-rank test. Multivariable Cox regression with competing-risks was applied to identify predictors of post-LT HCC recurrence. The increased need of LRT was included in validated prediction scores and compared by Harrell's c-statistics.
Results: 1,005 patients with HCC were listed during the study period of which 621 (61.5%) were treated with LRT. OS was higher for patients who underwent only 1-LRT.

In a multivariable regression model, undergoing 2-LRT [HR = 1.54(95%CI 1.16–2.04)and ≥3-LRT[HR = 2.28 (95%CI 1.62–3.20)]was predictive of death on an ITT basis. Among the 481 patients who underwent LT, the actuarial 5-year CRI was 13.8%, 24.2% and 29.8% for patients with 1, 2 and ≥ 3-LRT, respectively ($p = 0.003$). The risk of recurrence was higher for patients who underwent 2-LRT [HR = 1.67 (95%CI 1.03–2.72) or ≥ 3-LRT [HR = 1.95 (95% CI 1.12–3.37)]. Other predictors of recurrence were serum AFP > 100 ng/mL and pre-transplant maximum tumor size. The AFP score's accuracy was 0.66 (95%CI 0.60–0.72) and the accuracy of Metroticket 2.0 was 0.65 (95%CI 0.58–0.72). The accuracy of both scores increased [0.69 (95%CI 0.63–0.75), $p = 0.03$, and 0.67 (95%CI 0.61–0.74), $p = 0.004$, respectively] after including the number of LRTs.
Conclusion: The increased need of LRT prior to LT is correlated with a poorer prognosis after LT independently from size and number of tumors.

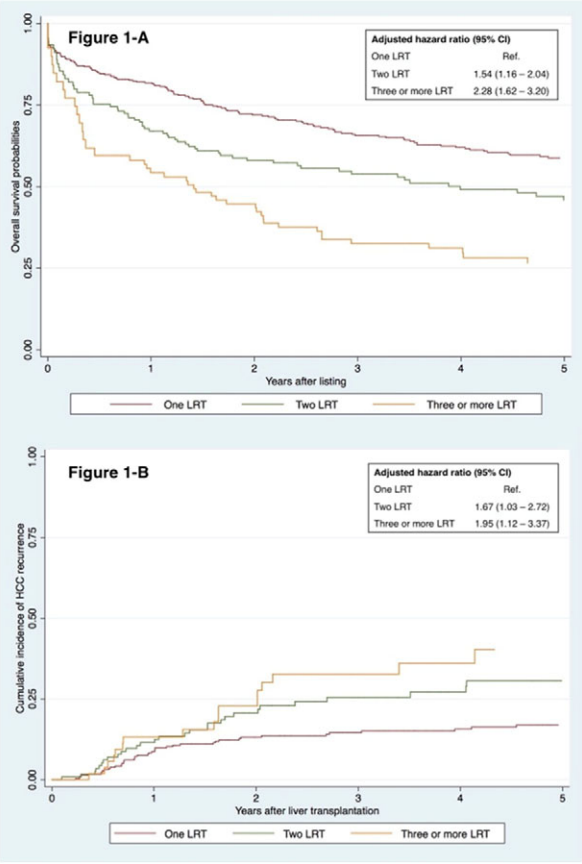


Table 1: Baseline characteristics of patients in study

Variables	Overall n = 621	Study groups			
		1 LRT n = 380	2 LRT n = 156	≥3 LRT n = 85	p
Gender, male (%)	505 (81.3)	307 (80.8)	126 (80.8)	72 (84.7)	0.69
Age (IQR)	59 (54 – 64)	58 (54 – 63)	59 (54 – 64)	61 (55 – 65)	0.17
Etiology (%)					0.16
HCV	322 (51.9)	206 (54.2)	73 (46/8)	43 (50.6)	
HBV	150 (24.2)	88 (23.2)	47 (30.1)	15 (17.6)	
Alcohol	64 (10.3)	42 (11.1)	12 (7.7)	10 (11.8)	
NASH	38 (5.6)	21 (5.5)	9 (5.8)	8 (9.4)	
Other	37 (5.5)	23 (6.1)	16 (9.7)	9 (10.6)	
MELD (IQR)	9 (7 – 12)	10 (8 – 12)	8 (7 – 11)	9 (7 – 11)	<0.001
Serum AFP, ng/mL (IQR)	12 (5 – 54)	11 (5 – 43)	14 (6 – 92)	15 (5 – 53)	0.05
Tumor size, cm (IQR)	2.9 (1.9 – 4.0)	2.9 (2.0 – 4.0)	2.9 (1.7 – 4.1)	2.8 (1.8 – 4.1)	0.98
Tumor number, lesion (IQR)	1 (1 -2)	1 (1 – 2)	1 (1 – 3)	1 (1 – 3)	0.02
Waiting time, months (IQR)	6.5 (3.6 – 10.2)	5.9 (3.3 – 9.7)	6.4 (3.6 – 9.6)	9.5 (6.1 – 14.1)	<0.001
Wait list dropout, yes (%)	481 (77.5)	304 (80.0)	120 (76.9)	57 (67.1)	0.03

BOS313 COMPARISON OF POST-TRANSPLANTATION LYMPHOPROLIFERATIVE DISORDER RISK AND PROGNOSTIC FACTORS BETWEEN KIDNEY AND LIVER TRANSPLANT RECIPIENT POPULATIONS

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Post-transplantation lymphoproliferative disorder [PTLD] is one of the major life-threatening complications after solid organ transplantation (SOT). Its development risk varies among different organ graft recipients and is the lowest in kidney transplant recipients [KTRs] and intermediate in liver transplant recipients [LTRs].

We enrolled 23 LTRs and 16 KTRs diagnosed with PTLD between 2002 and 2017 in our centre. Demographics, immunosuppression [IS] (induction, acute rejection), virologic and PTLD (type, treatment and outcomes) – related data were analysed.

The mean age at transplantation was 40.69 years (range 6–70). 61.5% of the patients were male, 38.5% female. Log-rank analysis of Kaplan-Meier curves for all 39 patients revealed that PTLD in LTRs was diagnosed earlier after transplantation than in KTRs ($p < .001$) (Figure 1).

We observed this also in patients above the median age of 45 years at SOT ($p = .002$), and in patients whose IS regimens contained tacrolimus [TAC] ($p < .001$) or did not contain cyclosporin [CsA] ($p = .031$). Among KTRs PTLD was diagnosed earlier in males ($p = .029$), patients aged over 45 years at transplantation ($p = .004$), and in recipients receiving TAC at diagnosis ($p = .002$). These factors were not significantly different in LTRs, in whom PTLD development was affected by the presence of MMF in IS regimens at diagnosis ($p = .034$). Moreover, patient survival was longer in recipients receiving MMF-containing IS regimens at the time of diagnosis ($p = .045$) and in LTRs younger than 45 years at transplantation ($p = .009$). Furthermore, LTRs were more likely to achieve complete remission than KTRs ($p = .039$).

Our results suggest that factors, such as gender, age at transplantation and TAC therapy may influence the development and course of PTLD differently in KTRs and LTRs and may serve as outcome predictors. Age at transplantation also has prognostic value for LTR survival.

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BOS314 TUMOR NECROSIS AS A RESULT TO PRE-TRANSPLANT BRIDGING TREATMENT FOR HEPATOCELLULAR CARCINOMA AND ITS EFFECT ON POST-TRANSPLANT OUTCOME

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Background: As a bridge to liver transplantation, locoregional treatments are commonly employed in hepatocellular carcinoma (HCC) patients to prevent waitlist drop-out. Objective of our study was to analyze the effect of complete pathologic response on post-transplant recurrence, and identify factors predicting the ability to achieve complete pathologic response.
Methods: We performed a retrospective review of all adult patients who underwent liver transplantation for HCC between January 2007 and December 2017 in our transplant center. Locoregional bridging therapies included radiofrequency ablation, TACE, radioembolization or a combination of the above.
Results: Complete pathologic tumor necrosis was achieved in 35.4% of patients. 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, but without statistical significance (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) were significantly less frequent in the complete response group. Patients with treatment response developed significantly less frequently recurrent HCC (3.2% vs. 23.5%, p 0.0005). Multivariate analysis detected tumor size / numbers and poor differentiation being individually associated with decreased odds of treatment response.
Conclusion: Successful bridging treatment leading to complete necrosis may facilitate successful liver transplantation in HCC patients. Treatment response is less likely achieved in tumors of large numbers or size and poor differentiation.

BOS315 WHOLE BODY CT IMAGING IN DECEASED DONOR SCREENING

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Introduction: To increase the number of suitable organs for transplantation, it is current practice to include extended criteria donors. By extending age criteria the risk of malignancy increases. Compared to standard radiologic screening by chest x-ray and abdominal ultrasound, extended screening by thoracic and abdominal CT-scan might detect more (possible) malignancies. Another possible advantage of screening by CT-scan is to enhance the pre-operative planning by providing additional information on (aberrant) anatomy to the procuring or transplanting surgeon. Our aim was to analyze the effect of a preoperative computed tomography (CT) scan on identifying malignancies.
Methods: We included all reported post-mortem organ donors in the Netherlands between January 2013 and December 2016. Donor reports were analyzed to identify results of radiologic investigations or (suspected) malignancies found during MOD procedures. We compared findings between the conventional donor screening protocol and screening including a CT-scan.
Results: Chest or abdominal CT-scans were performed in 17% and 18% of the 1375 reported donors respectively. Screening by chest CT-scan versus chest X-ray resulted in 1.5% and 0.0% thoracic malignancies found respectively. During MOD procedures no thoracic malignancies were found in patients screened by chest CT compared to 0.2% malignancies in the chest X-ray group. Screening by abdominal CT-scan resulted in 0.3% malignancies, compared to 0.1% in the abdominal ultrasound (US) group. During MOD procedures, 1.0% and 1.3% malignancies were found in the abdominal CT-scan and US groups respectively.
Conclusion: CT-scanning decreased the percentages of perioperative detection of tumors, from 0.2% to 0% for thoracic imaging and from 1.3% to 1.0% for abdominal imaging. The reimbursements for additional CT-scans will be around € 66.000. In conclusion, it could prevent about 2 unnecessary MOD procedures per year in the Netherlands.

BOS316 LIVER TRANSPLANTATION FOR UNRESECTABLE MALIGNANCIES: BEYOND HEPATOCELLULAR CARCINOMA

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Introduction: Indications for liver transplantation (LT) have expanded over the past few decades owing to improved outcomes and a better understanding of underlying pathologies. In particular, there have been considerable developments in the field of transplant oncology which have pushed the boundaries of malignant indications for LT beyond hepatocellular carcinoma (HCC).
Methods: We review and summarise the published data worldwide for LT in cholangiocarcinoma (CCA), colorectal liver metastases (CRLM) and neuroendocrine tumours (NET) in addition to rarer primary and metastatic liver malignancies and highlight ongoing clinical research in these areas. We also examine the current technical, immunological and oncological challenges that face LT in this growing field and explore novel therapies and strategies to overcome these barriers.
Results: Five-year overall survival (OS) rates post LT in a select subgroup of unresectable localised hilar CCA using the Mayo protocol range between 59–82% in recent literature, compared to the current 5-yr OS rates of 20–40% post liver resection. Similarly, 5-yr OS rates of 70–86% post-LT for advanced hepatoblastoma are currently achieved with SIOPEL-based protocols. Although historic results for LT in CRLM were poor (18% 5-yr OS), results from recent studies demonstrate 5-yr OS rates of 50–56%, and results from low risk subgroups are comparable to transplants for HCC within Milan criteria. Likewise, LT outcomes from NET liver metastases have improved with the identification of risk factors for survival and disease recurrence. Five-year OS rates for this indication range between 59–97%.
Conclusion: This review demonstrates that the era of transplant oncology has well and truly begun. Although many of the malignant indications for LT remain largely in the experimental phase in Europe, evidence for the feasibility and efficacy of LT in some of these indications continue to grow. Outcomes from future studies in this area will be eagerly.

BOS317 OUTCOME OF LIVER TRANSPLANTATION FOR HEPATOCELLULAR CARCINOMA WITHIN OR BEYOND MILAN AS DETERMINED BY HISTOLOGICAL EXAMINATION

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Background: The Milan criteria has been the benchmark for selection of hepatocellular carcinoma (HCC) patients for liver transplantation (LT). The effect of pretransplant treatment as well as clincal relevance of within and beyond Milan criteria is still open for discussion. The aim of this study was to investigate the effects of pretransplant treatment and pathological status to evaluate the outcome in a transplant center, having performed over 1200 LT and applying the Milan criteria for HCC patient selection.
Methods: A total 177 patients, who underwent LT for HCC between 2007 and 2018 at our institution, were retrospectively analyzed. Outcomes between patients with pretransplant treatment (group A, n = 155) or without (group B, n = 22) and between patients with explant pathology within Milan (group C, n = 142) or beyond (group D, n = 35) were compared. A multivariate analyses for patient survival and recurrence were conducted.
Results: Overall 5-year patient survival was 70.6% and 18 patients (10.2%) had a recurrence after a median follow-up of 2.9 years. As determined by explant pathology, 35 patients (20%) presented with HCC beyond the Milan criteria. No significant differences between pretreatment group A and non-pretreatment group B were found in 5-year patient survival (71.9% vs 60.5%, P = 0.13), recurrence rate (10.3% vs 9.1%, P = 0.86), and the incidence of explant pathology beyond Milan criteria (20.7% vs 13.6%, P = 0.42). Patients beyond the Milan critera (group D) had a significantly worse 5-year patient survival than those within (group C) (51.2% vs 74.8%, P = 0.039), but an equal recurrence rate (11.4% vs 9.8%, P = 0.79). Multivariate analysis did not demonstrate an effect of pretransplant treatment and pathological status beyond Milan on patient survival and recurrence after LT.
Conclusions: Pretransplant treatment and explant pathology beyond Milan criteria were not risk factors for the outcome in patients undergoing LT for HCC.

BOS319 CERVICAL ABNORMALITIES AND GYNECOLOGICAL NEOPLASMS IN HEART TRANSPLANTED RECIPIENTS

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Purpose: Cervical cancer is the most common gynecological cancer worlwide. Squamous intraepithelial lesions (SIL) are known precursors for carcinoma of uterine cèrvix and associated to infection by human papillomavirus (HPV). Several studies have shown an increased risk of malignant anogenital lesions in recipients of kidney and liver transplants compared to the general population, but there is less information in heart transplanted recipient
Methods: We conducted a retrospective unicentric study to analyze the prevalence of cervical abnormalities and gynecological neoplasms in cardiac transplant recipients
Results: From 1984 to 2017, 557 transplants were performed. 124 recipients were female. A total of 242 tumors have been registered in 129 patients. Of the 242 tumors 61% were cutaneous, 8% lymphoproliferative and 31% (75) were solid organ tumors. Of the 75 solid organ tumors, 19 have occurred in women; 3 were breast neoplasms and 10 were genital tumors; 2 located in the vulva and 8

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SIL. The age of the recipients was 36 ± 14 years, all of them affected by non-ischemic cardiomyopathy (2 hypertrophic, 1 lupus cardiomyopathy, 1 congenital heart disease and 6 dilated cardiomyopathies). Time from the transplant to the diagnosis of the tumor was 79 ± 33 months. In 6 of the 8 patients with SIL concomitant HPV infection was confirmed, in the remaining two this information was not available
Conclusion: In our serie, in female recipients of heart transplantation gynecological tumors represent 68% of solid organ tumors. SIL are the main gynecological tumor. Taking in account the association of SIL with HPV infection, vaccination of patients who are candidates for a heart transplant would be beneficial in the prevention of uterine cervix neoplasms

BOS320 HUMAN PAPILLOMAVIRUS (HPV)-RELATED ANOGENITAL PREMALIGNANCIES AND CANCER AMONG RENAL TRANSPLANT RECIPIENTS: A DANISH NATIONWIDE, REGISTRY-BASED COHORT STUDY

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Background: In this registry-based cohort study, we estimated the risk of human papillomavirus (HPV)-related anogenital premalignancies and cancer in renal transplant recipients (RTRs) compared with a non-transplanted comparison cohort.
Methods: We identified all first-time RTRs in Denmark during 1990–2015 in a nationwide nephrology registry. For each RTR, we randomly by risk set sampling selected 50 age- and sex-matched non-RTRs from the background population. The study population was followed for anogenital intraepithelial neoplasia grades 2–3 (IN2/3) and cancer for up to 27 years. We estimated hazard ratios (HRs) and 95% confidence intervals (CIs) of anogenital IN2/3 and cancer in RTRs versus non-RTRs by Cox regression separately for men and women using age as underlying timescale, while adjusting for income, education, HPV vaccination and immunocompromising conditions.
Results: We included 4,261 RTRs and 213,673 non-RTRs. RTRs had increased hazard of cervical (HR = 2.1, 95% CI: 1.7–2.8), vaginal (HR = 35.0, 95% CI: 13.9–87.7), vulvar (HR = 16.4, 95% CI: 10.4–25.8), penile (HR = 21.9, 95% CI: 11.1–43.5), and anal (women: HR = 51.1, 95% CI: 28.0–93.1; men: HR = 39.0, 95% CI: 16.7–91.1) IN2/3. The HRs of anogenital cancers were likewise increased at most sites.
Conclusions: RTRs had substantially higher risk of HPV-related anogenital premalignancies and cancer than non-RTRs.

BOS22 – FACTORS PREDICTING AND INFLUENCING OUTCOME OF PANCREAS TRANSPLANTATION

BOS321 ALEMTUZUMAB TREATMENT FOR STEROID RESISTANT ACUTE REJECTION – ONE SIZE FITS ALL? EXPERIENCE OF CAMPATH® USE IN KIDNEY, PANCREAS, BOWEL AND VASCULARISED COMPOSITE ALLOGRAFT TRANSPLANTATION

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Background: Steroid resistant rejection is a major cause of allograft loss in solid organ transplantation. It is associated with significant morbidity and mortality due the lack of effective treatment options. Alemtuzumab (Campath®) is a lymphodepleting anti-CD52 monoclonal antibody often used for induction immunosuppression that may be effective in salvaging these grafts.
Methods: We retrospectively reviewed our institution's experience of Alemtuzumab for steroid resistant allograft rejection over the last 10 years, identifying cases from our prospectively collected transplant data-base. Treatment failure in kidney was defined as lack of biochemical (<25% reduction in serum creatinine), and in Pancreas Transplant Alone (PTA)/Bowel Transplant/Vascular Composite Allograft (VCA) was defined as lack of clinical improvement or need for additional anti-rejection therapy) or graft loss. We also assessed infective and Alemtuzumab-related complications.
Results: 15 cases were identified: Kidney n = 10, PTA n = 3, Bowel n = 1, VCA n = 1. Overall, 7/15 (46.7%) of patients had a response to treatment, there were no infections but 2 re-admissions for Alemtuzumab-related complications. Antibody Mediated Rejection and Plasma Cell Rich Acute Rejection were reported in 5/8 (75.0%) and 1/8(12.5%) of the non-responders respectively. A total of 10/15 (66.7%) grafts were lost to rejection despite treatment. Of the responders, 4/7 (57.14%) had long term graft function ranging from 5 months to 5 years post treatment.
Discussion: Experience in our institution over the last 10 years suggests that Alemtuzumab is an acceptable [Office2] option for allograft salvage in steroid resistant acute rejection. It has a low complication rate and is well tolerated across different allograft categories. 7/15 (46.7%) of cases responded and 5/15 (33.3%) have preserved their graft function long term. Further clinical data is required to establish the relative efficacy of Alemtuzum.

BOS322 CHANGES IN ISLET COMPOSITION AFTER WHOLE-ORGAN HUMAN PANCREAS TRANSPLANTATION

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Background: It is unknown if the process of pancreas transplantation (PT) affects islets adversely. Graft loss after PT is not uncommon, particularly in the early post-operative period. We aimed to examine cellular and pathological changes in islets from functioning grafts (removed due to pancreatitis, thrombosis, enteric leak, or tumour) to examine PT-induced islet changes.

Methods: Explanted pancreatic specimens (n = 26), removed after 1–2802 days, were examined. Histological sections immunolabelled for insulin, glucagon and stained for islet amyloid (thioflavin S) were quantified by automated morphometry (25–50 islets per pancreas) for changes in beta cell, alpha cell, and islet amyloid as a percentage of islet area (%). Morphometry data was analysed against cold ischaemia time (CIT), reason for explant, and donor, recipient and explant variables.

Results: 21 patients were included in the preliminary analyses (5 excluded due to autolysis or failure prior to explant). Glucagon area % was correlated with longer CIT ($p < 0.05$), and insulin area % was correlated with donor age ($p < 0.05$). There were no significant differences between those explanted for graft pancreatitis compared with other reasons after short transplant time after adjusting for donor age. Islet amyloid (feature of Type 2 diabetes, T2DM) was present in 3/26 samples, two from non-diabetic subjects, and 2 explants showed marked alpha-cell proliferation. The single patient receiving diabetic therapy had islets containing largely glucagon-positive cells (insulin area 15.1%; glucagon area 35.3%).

Conclusion: The presence of increased alpha-cell population and islet amyloid implicates T2DM processes following PT. An effect of CIT on islet morphology suggests stress at retrieval; ischaemic reperfusion injury could have lasting effects on islets and contribute to early loss of insulin secretory capacity.

BOS323 CONTINUED IMPROVED OUTCOME AFTER SIMULTANEOUS PANCREAS KIDNEY TRANSPLANTATION DESPITE LOW CASE LOAD. A SINGLE CENTER COHORT

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Background: Simultaneous Pancreas Kidney Transplantation (SPK) is the treatment of choice in kidney transplant candidates with end stage renal failure and type 1 diabetes mellitus. With improvement of diabetes care, the number of pancreas transplantations has declined worldwide. This is worrying because reduced case load correlates with inferior outcome (Kopp et al. Transplantation 2017) and this might lead referring nephrologists/endocrinologists and patients to favor kidney transplantation alone instead of SPK.
Aim: Patient and graft survival after SPK in our center were reviewed.
Methods: Retrospective analysis on patients undergoing SPK between 01/1992–12/1996 (n = 31); 01/1997–12/2006 (n = 48); and 01/2007–11/2018 (n = 44). 3-Year patient, pancreas graft and kidney graft survival were analyzed, as well as pancreatectomy.
Results: Patient and graft survival steadily improved over time within our center: 3-year patient survival was 90%, 92%, and 100%; 3-y pancreas graft survival was 74%; 87%, and 93%; and kidney graft survival was 90%, 92%, and 100% between 1992-'96, 1997-'06, and 2007-'18, respectively. The hazard ratio (HR) for the effect of year of transplantation equaled 0.86 (CI: 0.74–0.99, $p = 0.049$), 0.92 (CI:0.86–0.99, $p = 0.029$) and 0.86 (CI:0.74–0.99, $p = 0.047$), respectively. Pancreatectomy was performed in 6/31 (19%), 7/48 (15%), and 1/44 (2%) of patients between 1992-'96, 1997-'06, and 2007-'18, respectively, with the HR for year of transplantation equal to 0.88 (CI:0.79–0.99, $p = 0.039$)

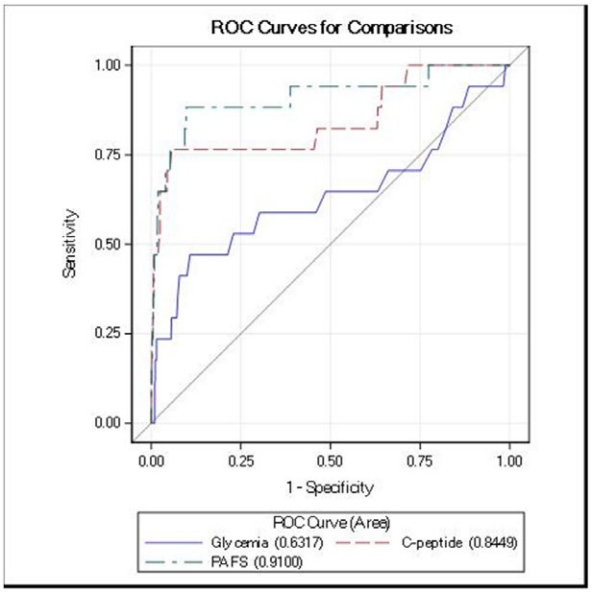
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Conclusions: Despite a low case load (~5 SPK/year), excellent patient and graft survival continue to be achieved after SPK at our center and compare favorably with international standards. Results have even improved in more recent years with minimization of early surgical graft loss. Patients and referring physicians should be aware that SPK remains the best treatment of end stage renal failure and type 1 diabetes. Access to SPK should be guaranteed for these patients.

BOS325 PAFS: A NEW SCORE TO PREDICT EARLY ALLOGRAFT FAILURE

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Background: Percentage of pancreas thrombosis still remains a major problem following transplantation with almost 10–20% of early failures despite standard use of anti-coagulation procedures. Since the beginning of our pancreas program in 1987, we routinely and daily monitored pancreas follow-up by plasma C-peptide. We therefore evaluated our post-transplant monitoring in patients with and without early allograft failure, trying to determine a possible predictor marker for thrombosis.
Methods: From 2000 to 2016, 384 pancreas transplantations with available biological monitoring within the first week were analysed. After evaluation of numerous parameters, we retrospectively constructed a new score which may predict accurately allograft failure. PAFS (Pancreas Allograft Failure Score) was calculated based on a formula including plasma C-peptide, glycemia and creatininemia. AUC for C-peptide, glucose and PAFS were evaluated to potentially detect very early allograft failure. Optimal cut-offs, sensibility and specificity were estimated according to the Youden Index.
Results: AUC of blood glucose level, C-peptide and PAFS were respectively 0.63 (IC95% = [0.45; 0.80]), 0.84 (IC95% = [0.71; 0.97]) and 0.91 (IC95% = [0.81; 1.00]). Sensitivity and specificity to predict allograft failure within 24 h was 58% and 60% for blood glucose ?7 mmol/L, 76% and 82% for C-peptide < 2.5 ng/ml, and 87% and 90% for PAFS ?16. In addition, PAFS and C-peptide AUC curves significantly differed from that of blood glucose (see figure below).
Conclusion: Monitoring PAFS during the first week following pancreas transplantation may be of great interest to predict thrombosis and allow pre-emptive diagnosis (i.e. CT scan) and potential therapeutic rescue of a not yet completed thrombosis.



BOS327 EX-SITU HYPOTHERMIC PERFUSION OF NON-HUMAN PRIMATES PANCREAS: AN EXPERIMENTAL MODEL

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Pancreas transplantation remains only definitive treatment for unstable insulin dependent diabetes mellitus. Static cold storage of pancreas transplants remained conservation reference method. The main objective was to evaluate feasibility of hypothermic perfusion of non-human primates pancreases for future potential organ transplantation. The secondary objective of this study was to evaluate quality of non-human primates pancreases after 24-h of hypothermic perfusion.

Seven non-human primates pancreases, arised from baboons used in other study of the laboratory, approved by French Research Ministry, were used. Two groups, comparing static cold storage (SCS) and hypothermic perfusion (HP) of baboons pancreas, were defined: control group (CG) (n = 2) where pancreases were preserved under conventional SCS for 24-h and perfusion group (PG) (n = 5) where pancreases were perfused during 24-h at different systolic pressure (15 mmHg (n = 3), 20 mmHg (n = 1), 25 mmHg (n = 1)). Pancreatic resistance index was continuously monitored; pancreas and duodenum histology and immunohistochemical was evaluated every 6-h.

In CG, after 6-h of static cold storage, focal congestion appeared in islets in one of the pancreases. After 24-h of SCS, ischemic necrosis and multifocal congestion occurred in both pancreas. In PG, at 15 mmHg perfusion pressure, focal and multifocal congestion were present in islets after 6-h of perfusion. After 24-h of perfusion, multifocal necrosis in exocrine tissue and multifocal congestion in islets appeared in all pancreases. At 20 mmHg perfusion pressure, no ischemic necrosis was found in islets after 6-h of HP. After 12-h and 24-h of perfusion, focal congestion appeared in islets. At 25 mmHg perfusion pressure, ischemic necrosis of duodenum, and not of the pancreas, appeared after 24-h. Focal congestion of islets appeared after 12-h.

Experimental non-human primates pancreas hypothermic perfusion are feasible. Compared to SCS, HP is not deleterious for pancreas.

BOS328 THE IMPACT OF DONOR ORGAN EXTRACTION TIME ON PANCREAS GRAFT SURVIVAL

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Background: Prolonged cold and warm ischemia are known to have a deleterious effect on pancreas graft survival. Recently published evidence suggests that donor organ extraction time, defined as time from the initial phase of organ cooling directly after cross clamping until organ recovery from the abdominal cavity, might impact early graft function after liver and kidney transplantation. Whether this period has an adverse effect on pancreas function is not known.
Methods: In this multicenter retrospective study, the effect of donor pancreas extraction time on short- and long-term graft survival was evaluated. All recipients from pancreas transplants performed between 1996 and 2018 at the University Medical Center Groningen, the Netherlands, and the Medical University Innsbruck, Austria, were included provided the pancreas extraction time was available. Graft survival was analyzed in both univariate and multivariable analysis and Kaplan-Meier analysis.
Results: A total of 317 patients were included, of which 305 (96.2%) received a pancreas graft from a Donation after Brain Death (DBD) donor and 12 (3.8%) from a Donation after Circulatory Death (DCD) donor. Median extraction time (IQR) was 64 minutes (52–79). 1-, 5-, and 10-year death censored graft survival was 85.7%, 76.7% and 61.9% respectively. Donor pancreas extraction time did not influence graft- and patient survival at 3 months, 1, 5 and 10 years. In addition to pancreas extraction time, the following significant factors in univariate analysis were added to a multivariable analysis: donor age, donor sex, Pancreas Donor Risk Index (PDRI), transplant type, first or re-transplantation. Multivariable analysis showed that donor age, PDRI and transplant type had a significant independent effect on pancreas graft survival, but not pancreas extraction time.
Conclusion: Our data suggest that donor extraction time does not influence pancreas graft survival in this large multicenter analysis.

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BOS329 PROLONGED ANTI-FUNGAL PROPHYLAXIS IS NOT NECESSARY IN PANCREAS TRANSPLANTATION

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Background: Pancreas transplantation, usually performed simultaneously with kidney transplantation, is associated with high risk of fungal infection. Most common invasive fungal infections (IFI) are caused by Candida spp, responsible for over 50% of infections in solid organ transplantation. There are antifungal guideline standards for kidney and liver transplantations suggesting prolonged pre-emptive treatment.
Methods: Our data includes 24 consecutive transplants (20 simultaneous pancreas-kidney, 4 pancreas transplantation alone) performed from January 2016 till the end of September 2018. Perioperative prophylaxis and pre-emptive treatment based on center experience and patient's clinical condition included intravenous fluconazole and oral nystatin. Single dose iv prophylaxis was given to 6 patients (25%), remaining 18 received 4–24 days of treatment.
Results: Four duodenal swabs (16.7%) and 6 bronchial tree aspirates (25%) from the donors were positive (all showed Candida albicans). Seven recipients had positive duodenum cultures. None of the preservation solutions contained any fungal strains. Of 3 patients with abdominal abscess, 2 developed jejuno-duodenal anastomosis leak and both had positive cultures from the peritoneum on reoperation. One patient had positive preoperative urine culture. He was asymptomatic in post-op course and no intervention was made. Of the 6 patients with single dose prophylaxis only one (16.7%) developed fistula-related abscess. In remaining 18, 1 graft was lost from venous thrombosis and 2 abdominal abscesses required surgical intervention (16.7% of severe complications). There was no mortality observed. Kidney function was normal in all cases.
Conclusions: Despite lack of hard evidence, antifungal prophylaxis is universally given in pancreas transplantation. Our small study shows no rationale for and no benefit of prolonged prophylaxis. Single preoperative dose of fluconazole facilitates tacrolimus dosing and seems sufficient.

BOS331 LATE PANCREAS ALLOGRAFT FAILURE DUE TO DIABETES RECURRENCE FOLLOWING SIMULTANEOUS PANCREAS AND KIDNEY TRANSPLANTATION

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Type 1 diabetes recurrence (T1DR) is not frequent following pancreas transplantation and is generally considered to cause irreversible allograft failure. We report a case of temporary remission following rescue treatment and discuss the impact of pancreas retransplantation. A 35-year-old woman experienced severe hyperglycaemia 6 years following a simultaneous pancreas and kidney (SPK) transplantation. After exclusion of rejection and thrombosis, we concluded to T1DR. Pancreatic biopsy showed an islet without insulitis and negative insulin immune staining. Anti-IA2 and anti-ZnT8 antibodies were strongly positive 1 year before the onset of hyperglycemia, whilst undetectable at transplantation. We treated this T1DR with strong immunosuppressive therapy. Insulin was stopped 1 month after treatment. Anti-ZnT8 autoantibodies decreased. After 6 months, hyperglycaemia recurred. New attempt to treat was unsuccessful. Because of persistent insulin need, the patient received a second pancreatic transplant 2 years after T1DR. C-peptide was still positive around 0.5 ng/mL. 6 months after retransplantation, there is no insulin need. First pancreas transplant histology has been studied after transplantectomy. There were signs of mild chronic rejection with vasculopathy and mild interstitial fibrosis with mild focal septal leukocyte infiltration. Islet architecture and insulin staining were normal. Clear evidence for T1DR was present in this case. Mild chronic rejection was present on whole transplant histology and may participate in function degradation. The positive insulin staining was in favour of the efficacy of our immunosuppressive treatment following T1DR diagnosis and explained the persistence of C-peptide. T1DR may be an underestimated cause of pancreas allograft failure. Temporary remission and persistent insulin secretion after T1DR could in fact be obtained. Systematic screening of auto-antibodies needs to be evaluated, as well as indication of retransplantation.

BOS332 PEDIATRIC (17 MONTHS OF AGE AND 9 KG) DONOR FOR PANCREAS AFTER KIDNEY TRANSPLANTATION

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Pancreas and Kidney Transplantation Center – Pisa City and University Hospital – Pisa, Italy

Introduction: It does not currently exist unanimous consent about limits of pancreas pediatric donor age and weight.
Case Report: We present a case of pancreas after kidney transplantation (PAK) from very small and young pediatric cadaveric donor: 17 months-old male (weight 9 kg, height 80 cm), dead for post-anoxic encephalopathy. Donor arterial iliac graft, for arterial reconstruction was unusable due to a potentially contaminated harvesting procedure and any other donor arterial segments were unavailable. Recipient was a 39-years-old type 1 diabetic female, who received a living donor (mother) kidney three years before. To obtain a valid arterial supply, her right internal iliac artery was fully mobilized and resected preserving its terminal bifurcation. An on-site reconstruction was performed connecting the graft splenic artery with the right vesical artery and the graft superior mesenteric artery with umbilical artery. PAK was completed with systemic venous drainage (graft portal vein drained in right common iliac vein) and enteric exocrine drainage (graft duodenum anastomosed to Roux-en-Y jejunal loop). Cold ischemia time lasted 14 hours and ten minutes and warm ischemia time 32 minutes. Induction immunosuppression was Thymoglobuline and maintenance tacrolimus bid, micophenolic acid and low dose steroids. Anticoagulation was started at the end of surgical procedure with progressive intravenous heparin dose from POD 0 to 7 combined with aspirin from POD 4 and sodium warfarin from POD 6. Recipient underwent reintervention on POD 2 due to bleeding with a peri-graft hematoma. The following postoperative period was uneventful. Euglycemic insulin independence was obtained since POD1. Patient was discharged in POD 18, euglycemic, C-peptide 2.2 ng/dl, tacrolimus through level 8.3 ng/dl, serum creatinine 1.4 mg/dl.
Conclusion: Pancreas transplantation from very young and low weight pediatric donors can be performed safely obtaining a good β-cell function.

BOS334 KIDNEY FUNCTION AND METABOLIC PARAMETERS AFTER SIMULTANEOUS PANCREAS AND KIDNEY TRANSPLANTATION: RESULTS OF A PROSPECTIVE AND RANDOMIZED STUDY COMPARING TACROLIMUS VERSUS SIROLIMUS

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Background: Current maintenance immunosuppression (IS) after simultaneous pancreas and kidney (SPK) transplantation combines tacrolimus (TAC), an antimetabolite and steroids. TAC is a nephrotoxic and diabetogenic drug. Mammalian target of rapamycine inhibitors such as sirolimus (SRL) have been used in SPK in combination with TAC but never as cornerstone therapy. We hypothesized that a SRL based-regimen could spare TAC and avoid potential nephrotoxic and pro-diabetogenic effects.
Methods: We performed a randomized controlled trial comparing TAC versus SRL as cornerstone IS after SPK. All patients received TAC, mycophenolate mofetil (MMF) and steroids during the first 3 months. Thereafter, patients were divided in 2 arms: TAC/MMF or SRL/MMF, without steroids. Biological parameters (creatininemia, proteinuria, C-peptide, glycated haemoglobin, oral glucose tolerance test (OGTT), lipids) were assessed every year.
Results: Mean creatininemia 1 year posttransplant in patients with a functioning allograft was 117 ± 52 μmol/L in the SRL group and 116 ± 31 μmol/L in the TAC group. At month 60, mean creatininemia was 134 ± 96 and 129 ± 63 μmol/L respectively. Proteinuria was not different between the 2 groups. In patients with a functioning pancreatic allograft, glycated haemoglobin and fasting C-peptide were not different between groups. OGTT showed a trend towards impaired glucose tolerance at month 6 in the TAC group, not afterwards. We observed no difference in LDL-cholesterol and triglycerides between groups. 34 patients (68 %) in the SRL group had a definitive SRL withdrawal, with a median time from transplantation to SRL discontinuation of 199 days.
Conclusion: We did not observe any difference in renal function, proteinuria, glucose tolerance and dyslipidemia between SRL and TAC treated patients. However, we can not conclude to the absence of a protective effect of SRL because most patients needed to be switched from SRL to TAC because of poor clinical tolerance.

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BOS336 QUALITY OF LIFE AFTER PANCREAS TRANSPLANTATION: A SYSTEMATIC REVIEW

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Background: Quality of Life (QOL) for individuals with Insulin Dependent Diabetes Mellitus (IDDM) can be severely impaired. Pancreas/Islet Transplantation (PT/IT) are therapeutic options to restore euglycaemia in this population, but their impact on QOL is not certain. This review aims to analyse the existing literature to clarify the effect of PT/IT on QOL.
Methods: The articles included were identified by scouting electronic databases (OVID MEDLINE, EMBASE, the Transplant and Cochrane Library) for primary studies and systematic reviews on QOL post PT/IT in adult IDDM patients. Search results were screened by 2 reviewers. Demographic details, outcomes and PROMs were analysed.
Results: Of the 2013 references, the text of 260 studies was reviewed, yielding to 140 publications meeting the inclusion criteria. PT QoL studies represented approximately 81.5% (114) of the references. Most manuscripts were based on small series (median 31.5 participants). The most frequent PROMs were: non validated questionnaires (54%) or validated generic QOL measures (42%). Disease specific instruments were adopted in as few as 5% (IDDM) and 7% (ESRF). We didn't identify any PT/IT specific PROMs. There is considerable variability in study designs with regards to: PROMs, cohorts, timing, follow up. No cost-effectiveness analysis based on validated QOL indexes was presented.
Conclusions: There is enough evidence in the literature to confirm that PT improves QOL. Comparative data suggests that most patients have an enhanced perception of health and increased vitality scores, however the small numbers of participants and the heterogeneity of study designs don't allow to clearly draw common conclusions on which domains improve the most.
In the absence of a PT specific QOL measure, future prospective studies should combine disease specific and generic PROMs to capture QOL nuances unique to this population, the trajectory of QOL changes after transplantation an allow cost effectiveness evaluations.

BOS23 – PUSHING THE LIMITS IN KIDNEY DONATION AND TRANSPLANTATION

BOS337 MACHINE PERFUSION ALLOWS USE OF HIGH KIDNEY DONOR PROFILE INDEX (KDPI) AND PROLONGED COLD ISCHEMIA TIME IN DECEASED DONOR KIDNEY TRANSPLANTS: A SINGLE CENTER EFFORT TO DECREASE DISCARD RATES

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University of Miami

Purpose: Discard rates of deceased donor kidney transplants(DDKT)rises as the KDPI increases.Pulsatile machine perfusion(MP)allows use of kidneys with prolonged cold ischemia times(CIT).We present our single center data using kidneys with KDPI > 85 and prolonged CIT and correlate with clinical outcomes of delayed graft function(DGF)and renal function.
Methods: We retrospectively analyzed outcomes from 01/2014 and 10/2018 of adult DDKTs.We correlated KDPI, CIT, local vs imported kidneys to DGF rates and renal outcome(scret).All kidneys were placed on MP with KPS-1 preservation solution.Kidney biopsies performed, pump pressures monitored and kidneys were transplanted if pathology was favorable, mean flow > 100 ml/min and resistance< 0.4
Results: 1070 recipients were analyzed.The median time to last follow up was 22.3 months (range 1.0 to 58.6). Mean KDPI increased overtime from 49% to 61% as did the % of accepted DDT with KDPI > 85.Table1.Mean CIT increased from 26 to 32 hrs, due to higher rate of imported kidneys.Overall DGF rates were 18.2%. Lowest DGF rate was for KDPI < 85% and CIT < 24 hrs, 3.6% for local and 0% for imported;highest DGF rates were among imported kidneys with KDPI > 85 and CIT > 24 hrs, at 33%. Logistic regression analysis identified predictors of DGF as CIT > 24 hrs ($p = 0.00002$) and KDPI > 85 ($p = 0.01$) whereas for scret at last follow up was KDPI > 85, import status and DGF but not CIT.Mean scret range from 1.09 to 1.85 mg/dl; mean scret from imported kidneys with KDPI > 85 and with DGF was 1.49 mg/dl. No cases of primary non function or thrombosis occurred in this cohort.Graft loss was 4.7% and patient death was 4.5%.
Conclusions: In an effort to decrease discard rates, especially with imported kidneys, the use of pulsatile MP increases the chances to transplant kidneys with KDPI > 85 and long CIT. Despite higher rates of DGF, the mean scret at last follow up was stable and supports continued acceptance of high risk kidneys in order to decrease discard rates.

Year	N	KDPI > 85%	%imported kidneys	% CIT > 24 hrs*	% CIT > 36 hrs*	% DGF	mean scret mg/dl
2014	214	22	26	82	36	11.3	1.25
2015	227	15	35	85	34	20.2	1.41
2016	182	20	45	87	34	14.7	1.17
2017	229	25	43	90	50	22.3	1.15
2018	218	32	63	93	50	21.6	1.27

*from imported kidneys

BOS339 IS DBD KIDNEYS ARE SUPERIOR TO DCD KIDNEYS; 4 × 4 SINGLE CENTRE STUDY

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Royal Liverpool University Hospital

Introduction: The shortage of deceased donor kidneys for transplantation has prompted the use of organs from donors deceased after cardiac death (DCD). Since then the number of DCD transplant is in the increase.
Aim of our study is to measure the differences in transplant outcomes for donor after cardiac death (DCD) and donor after brain death (DBD) transplants.
Methods: A retrospective chart review was performed of kidney transplant over four years from April 2010 with four years follow up. The patients were divided into DBD (n = 146) and DCD (n = 125) group. Rates of biopsy proven acute tubular necrosis (ATN), biopsy proven acute rejection (AR), patient survival, and graft survival were examined.
Results: The incidence of biopsy proven ATN was 16.5% and 27% in the DBD group and the DCD group, respectively ($p = .037$). The rate of AR was significantly higher in the DBD group than that in DCD group (20% vs 5.6%, $p = .0005$). Death censored graft survival (graft survival without death) was 88.36% and 90.2 % in the DBD group and the DCD group, respectively (p=ns). Patient survival at 4 years was 85.6% in DBD group versus 84% in DCD group (p=ns).
Conclusion: Our results showed there were no statistically significant differences between patient or graft survival when comparing DCD and DBD kidneys.

BOS341 LIVING ANONYMOUS RENAL DONORS DO NOT REGRET. INTERMEDIATE AND LONG-TERM FOLLOW-UP WITH A FOCUS ON MOTIVES AND PSYCHOSOCIAL OUTCOMES

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Background: Living anonymous donation (LAD) of kidneys was introduced in Sweden in 2004. This study reports on outcomes of Swedish LAD experiences from 2004–2016, focusing on donors' motives, the care they received, psychosocial aspects and medical status at follow-up.
Materials and Methods: Donor data was collected through a physician interview, medical check-up, review of medical charts, the Hospital Anxiety Depression Scale (HADS) and a routine national questionnaire. Of the 26 LADs during the study period, one donor died and one declined to participate, leaving a study population of 24.
Results: Half of the donors were male, which is a higher proportion than for directed living donors. Most LADs had donated blood or other tissues before. The major motive detected was altruism. Of the 24 LADs, 96% were very satisfied and would donate again if possible, 46% noted increased self-esteem and a third were happier after the donation. Sixty-two percent received anonymous information about the recipient and 40% would have liked to meet the recipient. HADS scores were normal. Two donors had antidepressant treatment, one of whom had received treatment before donation. Half mentioned that the pre-donation assessment took too long. At follow-up, mean eGFR was 62 ± 12 mL/min/1.73 m2, of which 16 in CKD II and 8 in CKD III. Four donors had developed hypertension, one of whom also developed type 2 diabetes.
Conclusion: Swedish LADs are very satisfied and medical outcomes are acceptable. We propose that the transplant community and National Board of Health and Welfare take a more active approach to informing the general public about LAD.

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BOS343 30 YEARS OF LIVING DONOR KIDNEY TRANSPLANTATION – A SINGLE-CENTER ANALYSIS

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Background: Living donor (LD) kidney transplantation provides the best option to maximize long-term transplant outcomes. We herein report our 30 years experience of LD kidney transplantation.
Methods: We retrospectively analyzed 333 LD kidney transplants performed at the Medical University of Innsbruck between 1985 and 2016. For descriptive statistical analysis, mean values, standard deviations, absolute and relative frequencies were calculated. Patient and graft survival was evaluated according to Kaplan Meier survival statistics.
Results: 87% of patients received their first kidney transplant, and 13% had a retransplant. Preemptive transplantation was performed in 35% of patients. 71% were living-related and 29% were living-unrelated kidney transplants. 3% of transplants were AB0 incompatible. The follow-up rate was 86.5 % with a mean follow-up of 9 years.

Patient survival was 97.6%, 92.2%, 83%, 72.6%, and 69.5% at 1, 5, 10, 20, and 25 years. Overall graft survival was 96.3%, 84.1%, 69.2%, 38.2% and 26.2% at 1, 5, 10, 20, and 25 years with a median allograft survival of 15 years. Delayed graft function occurred in 7.6% of patients. 34% of patients experienced an acute rejection episode. Postoperative morbidity included surgical complications in 11.1% and infectious complications in 12.6%. 9% of LD kidney transplants developed a post-transplant malignancy, excluding non-melanoma skin cancer.
Conclusion: Over a period of 30 years LD kidney transplantation yielded satisfactory long-term patient and graft survival rates. On the strength of stringent follow-up the study adds valuable evidence on the long-term outcomes after LD kidney transplantation.

BOS344 THE CZECH NATIONAL KIDNEY EXCHANGE TRANSPLANT PROGRAM – 7 YEARS OF EXPERIENCE

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Aim: Retrospective analysis of the Kindey paired exchange program in IKEM, Prague.
Background: Kidney paired exchange has been at first performed at our institution in 2003. Until 2011 only four 2-way exchanges were performed. Since 2011 the kidney exchange started at our institution as coordinated program. All the incompatible pairs are collected prospectively in the database. The matching run is performed every three months with on average 20 pairs included for matching.
Material and Methods: There were in total 76 paired live kidney transplants (KTx) performed in Czech since 2003, of those 68 since 2011 till the end of 2018, those we assessed. There were thirteen 2- way, three 3-way, two 4-way, two 5-way, two 6-way and one 7-way kidney paired exchanges including two 2-way and two 3-way cross-border kidney paired exchanges with Austria. Four altruistic donors entered the scheme, the last one triggered open chain. There were 11 cases of re-transplant, of those 9 second, one third and one fourth KTx. Five AB0 incompatible transplants were performed in this program. Three surgeons performed all the transplants.
Result: Mean recipient age was 46 years (SD 11), mean SCr one month after transplant was 124 umol/l (SD 41), equivalent of 1.4 mg/dl (SD 0.46). There was one case of delayed graft function due to early rejection observed.
Conclusion: Kidney paired exchange program can be run with success even at single institution, this limits some of the highly sensitised patients as well as blood group 0 recipients. Also, the bigger is the group for matching, the higher might be the number of transplants. Cooperation within European centres can help to treat more patients with the best treatment modality – live donor kidney transplantation.

BOS345 A VIRTUAL TRANSPLANT CO-ORDINATOR – A SYSTEM FOR SAFE AND TRANSPARENT CO-ORDINATION AND ALLOCATION

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Background: Co-ordination and allocation of a multiorgan donor includes a lot of medical and logistic data that have to be transferred and reported to several teams and units. Historically in Sweden this was done mostly orally by phone. With this IT-system all the medical and logistic data is handled with a high level of security and transparency for the approved users.
Methods/Materials: In 2012 at the Transplant Unit in Malmö a databased method was developed and introduced. This virtual co-ordinator system is now a standard. It is a client/server system and the client system, wTxApplet8©, is a Java based application with access via the internet. All communication is encrypted and user login is done with smart cards (SITHS). The system has in addition modules for recipient data, waiting lists, transplantation, follow up, statistics.
Results: Since 2016 this is an established working tool for the Transplant Co-ordinators at all five Transplant Units in Sweden. It involves the steps of the Critical Pathway for organ donation and makes it much safer to transfer data and information. The tool is divided in different tabs; donor data, different lab results, ICU parameters and treatments, allocation for every organ, the donation operation, transportations (teams, organs). It also has a "chat" for free text about different matters for involved colleges, surgeons, tissue type laboratories etc. The system can also e.g. store X-ray results, this for fast and safe evaluation in the allocation process.
Conclusion: The work method with the virtual co-ordinator system is now an established and well appreciated routine for the transplant co-ordinators in Sweden during the organ donation procedures. The transfer of data and information is safe, transparent and with direct access for the users who are involved in the process. The system also has the potential for wider use, collaboration with other systems and for new areas such as data input direct from ICU at the donor hospital.

BOS346 RENAL EDUCATION AND CHOICES @ HOME (REACH) – A HOME-BASED EDUCATION INITIATIVE TO OVERCOME BARRIERS TO LIVING DONOR KIDNEY TRANSPLANTATION

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Background: Lack of knowledge among patients is a barrier to access to living donor kidney transplantation (LDKT) and is linked to patient disempowerment, reluctance to broach the subject and a perceived lack of a suitable living donor (LD). The Netherlands has had success in overcoming this barrier by using home-based education to increase knowledge among patients and their social circle. REACH is a single UK centre 1-year pilot project aimed at developing a home education service as a way to overcome barriers to LDKT among UK patients.
Materials/Methods: Patients with an eGFR < 20mls/min who were likely to be suitable for transplant (but had no LD) were considered for REACH, which included a home visit, an assessment of baseline knowledge and attitudes as measured by a pre-session questionnaire and a post-session questionnaire, plus evaluation survey, 4–6 weeks after the initial visit. Patients were encouraged to invite friends/family members to attend the session.

Home education covered: living with renal disease, RRT options, benefits of pre-emptive LDKT, broaching the subject of LDKT with potential LDs and the LD assessment process. Post-visit support was offered to participants, by telephone/in person.
Results: 24 patients were visited between 01/12/18 and 28/2/19. 9 patients (37.5%) now have at least one potential LD undergoing assessment.

There was a clear improvement in RRT knowledge following the visits (Table 1).

Correct answers (out of 16 RRT knowledge questions)	Pre-session	Post-session
Range	7–16	9–16
Average	10	13
Median	8	12

Home visits have been, without exception, very well received with excellent feedback reported.
Conclusions: Home-based education increases RRT knowledge among patients and, importantly, their support networks in a way that provides excellent patient satisfaction.

Enquiries by potential LDs to the LD co-ordinators increased after participation in the REACH project.

Home education appears to contribute to overcoming identified barriers to LDKT, but further time is required to ascertain its overall impact.

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BOS347 WHAT SOURCES OF INFORMATION DO PATIENTS REPORT BEING MOST IMPORTANT IN DECISION MAKING? RESULTS FROM A MULTICENTRE QUESTIONNAIRE-BASED STUDY

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Background: People with advanced kidney disease have a number of different transplant and dialysis options to consider. This study aimed to identify which sources of information on these patients find most helpful.
Methods: We undertook a case-control study at 14 UK renal units. Cases were LDKT recipients and controls deceased donor kidney transplant (DDKT) recipients. We posted questionnaires to adults transplanted at the centres between 1/4/13–31/3/17. We collected patient demographics and data on which sources of information participants had found most important. Participants selected all deemed important from a list of 10 sources. Basic descriptive statistical tests were performed to look for differences in preference across different patient groups.
Results: 1239 questionnaires were returned (39% response). 93.8% of respondents reported that 'a discussion with a health care professional' was an important source of information. 63.6% found 'written information provided by a hospital' helpful, but more socioeconomically deprived participants found it less useful than people who were less deprived (p value for trend with deprivation quintile 0.003). 46.6% found 'a discussion with a friend or family member' was useful in making treatment decisions, but younger people found this more important than older (p value for trend 0.03). Only 33.4% of people found 'health related or other websites' useful, with younger people were more likely to find them useful compared to older respondents (p value for trend < 0.001).
Conclusions: Amongst kidney transplant recipients, face-to-face discussions with healthcare professionals are the most important source of information to patients. Only a minority of participants reported that online resources were important. Variation in source preference with age and socioeconomic position highlights the need for tailored personalised education. A renewed focus on healthcare communication rather than reliance on other resources is suggested.

BOS348 COST-EFFECTIVENESS OF A HOME-BASED EDUCATIONAL PROGRAMME ON RENAL REPLACEMENT THERAPIES: A PROOF-OF-PRINCIPLE STUDY

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Background: Living donor kidney transplantation (LDKT) is the optimal treatment for most patients with end-stage renal failure (ESRD). Unfortunately, a significant number of these patients cannot find a living donor kidney. Previous research showed that our home-based programme increases knowledge on renal replacement therapies, increases discussing this knowledge with the social network of the patients, and increases LDKT. In this pilot study effects and costs of this intervention are evaluated and compared to the baseline in a state-transition model: A proof-of-principle study.
Methods: The parameters used in the model are the intervention effects, transition probabilities, incidence rates, health-stage related costs and quality adjusted life years (QALYs). Costs and QALY-data were obtained from the literature. Costs of the educational programme at the out-patient transplantation clinic of the Erasmus Medical Center were estimated. Transition probabilities and incidence rates were estimated from the database of all ESRD-patients in the Netherlands from 1990–2007.
Results: The pilot data suggests that the home-based educational programme offers both better effects and lower costs for ESRD patients compared to standard care from the second year onwards: an incremental cost-effectiveness ratio (ICER) of -€27.163 after year 2, indicating that after two years €27.163 is saved for every QALY gained. After ten years the ICER is €-29.906.
Conclusion: This proof-of-principle study demonstrates that the home-based education programme is dominant in terms of cost-effectiveness compared to standard care; after two years there is a gain in overall health with lower costs. However, the data used in the model is outdated and more recent parameters are warranted. The programme is now nationally implemented to evaluate the cost-effectiveness. Based on this proof-of-principle pilot, cost-effectiveness will be assessed using programme effects, programme costs and QALYs of t

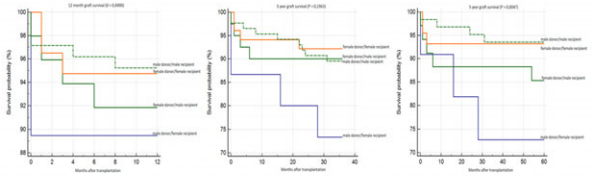
BOS349 KIDNEY TRANSPLANTATION AND "GENDER MISMATCH" – A 10-YEAR ONE-CENTER ANALYSIS

Karol Granak[1], Matej Vnucak[1], Skalova Petra[1], Juraj Miklusica[1], Lea Kovacikova[1], Marian Mokan[2], Ludovit Laca[1], Ivana Dedinska[1]
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The importance of H-Y antigen [male donor (MD) and female recipient (FR)] has not been unambiguously confirmed. The aim of the study was to determine the effect of gender mismatch between donors and recipients on function of the graft, graft and patient survival. Our retrospective analysis consists of 230 pairs of donor-recipient after primary kidney transplantation (KT).

The following independent risk factors (iRF) were found leading to deterioration of graft function (GF) (eGFR < 60 ml/min) in the 1st year after KT: donor eGFR in the time of kidney removal 30 – 59 ml/min [HR 0.1148; ($p = 0.0028$)], induction by IL-2 inhibitor [HR 0.5489; ($p = 0.0196$)] and acute rejection (AR) in the 1st year [HR 0.3421; ($p = 0.0229$)]. In the 3rd year after KT, iRF for deteriorated GF – combination of MD – FR [HR 0.1618; ($p = 0.0004$)]. This applies on the 5th year after KT [HR 0.1282; ($p < 0.0001$)]. Delayed GF [HR 1.9845; ($p = 0.0495$)] and combination of MD and FR [HR 1.8992; ($p = 0.0387$)] represent iRF in the occurrence of AR in the 1st year after KT. 5 year graft survival was significantly worse in the risk group MD-FR ($p = 0.0047$). By adjustment of results on age and induction, iRF were identified of significantly decreased GF (eGFR < 30 ml/min) combination of female donor – male recipient in the age of donors > 50 years old, recipients ≤ 45 years in the 1st year after KT [HR 2.0626; ($p = 0.0264$)], R3 [HR 3.0451; ($p = 0.0315$)] and in the 5th year [HR 5.8214; ($p = 0.0312$)]. Vice versa, the combination MD–FR is significantly risky in the age of donor ≤ 50 year old and recipient > 45 years in the 5th year [HR 11.1676; ($p = 0.0139$)] and age of donor ≤ 50 / recipient ≤ 45 years in the 3rd year [HR 1.2500; ($p = 0.0050$)] and also in the 5th year after KT [HR 8.1993; ($p = 0.0183$)]. The riskiest group, in cases of AR episode, in our study, is MD–FR.

Considering the insufficient amount of kidney donors, it is not possible to apply gender matching to daily practice routine, it is important to monitor risky groups.



Graft survival

BOS350 DONOR ALBUMINURIA: NO INFLUENCE ON SHORT-TERM ALLOGRAFT SURVIVAL OR FUNCTION IN DECEASED DONOR KIDNEY TRANSPLANTS

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Background: Urinalysis, including measurement of albuminuria, is a standard component of deceased organ donor assessment in the United Kingdom. However, the impact of donor albuminuria on renal allograft outcomes is not known. We assessed the effect of donor albuminuria on short-term allograft survival and function in deceased donor kidney transplant recipients in the UK.
Methods: We performed a cohort study using the UK transplant registry. We identified all adult deceased donor kidney transplant recipients between 1st January 2016 and 31st December 2017. We defined donor albuminuria as urine albumin concentration of greater than 100 mg/dL (2 + on dipstick testing). Our primary outcome was death-censored allograft failure. We used multivariable Cox regression to compare the rate of allograft failure, censored at one year, between transplants from donors with albuminuria and transplants from donors without albuminuria. In secondary analyses, we used multivariable linear regression to examine the relationship between donor albuminuria and 12-month estimated glomerular filtration rate (eGFR) in surviving allografts.
Results: Our cohort comprised 3.942 transplant recipients, of whom 654 (16.6%) received an allograft from a donor with albuminuria. One-year allograft survival was similar in organs from donors with albuminuria and organs from donors without albuminuria (94.8% vs. 94.0%, see Figure). After adjustment for confounders, there was no evidence of a difference in death-censored allograft failure between allografts from donors with albuminuria and allografts from

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donors without albuminuria (HR 0.90, 95% CI 0.61–1.33, $p = 0.59$). In surviving allografts, there was no evidence of a difference in 12-month eGFR between allografts from donors with albuminuria and allografts from donors without albuminuria (51.6 vs. 50.6 ml/min/1.73 m2, $p = 0.28$).
Conclusion: Donor albuminuria appears to have little short-term prognostic value in deceased donor kidney transplants in the UK.

BOS24 – SENSITISATION, EFFECT ON OUTCOME

BOS353 PREVALENCE AND CLINICAL IMPACT OF DE NOVO DONOR SPECIFIC ANTI-HLA ANTIBODIES (DN DSA) IN PEDIATRIC KIDNEY TRANSPLANTATION IN GREECE

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De novo HLA-DSA (dnDSA) post renal transplantation (RTx) effect and antibody mediated rejection are risk factors for graft loss. This study focuses on the incidence of dnDSAs in pediatric kidney transplant recipients and the risk of these antibodies for rejection, graft injury and loss.

The development of dnDSA was evaluated in a cohort of 96 pediatric RTx recipients, 50 males, mean age 11.2 years. The patients received a graft from a diseased (62%) or living donor, between 1998 until December 2017. All patients had a molecular HLA-A, -B, -C, -DR and -DQ typing. Pre- and post-transplant sera were tested for anti-HLA antibodies with CDC and Elisa methodology until 2005 where Luminex platform and single antigen bead analysis were added. According to antibody detection the patients were classified in dnDSA and non-DSA group. Biopsy proven acute rejection episodes, serum creatinine levels and graft survival were compared between both groups using kaplan-Meier method and the chi-square test.

Before transplantation, 84 patients (87.5%) had PRAs < 10%, 11 patients had PRAs 10%-69% and 2 patients had PRAs 70%-100%. Post Transplantation dnDSA were detected in 34 patients (39.1%). The incidence of acute rejection episodes was not statistically different between the two groups. Graft dysfunction with 50% increase of serum creatinine was significantly higher in dnDSA group (70.6%) as compared to non-DSA (32.5%), with $p = 0.008$. The overall mean graft survival was 7.4 years (SD ± 5.8). DnDSA group had significantly worse graft survival rates as compared to non-DSA: 63.6% vs 94.2% $p < 0.001$, 60.6% vs 94.2% $p < 0.001$, 57.6% vs 92.3% $p < 0.001$, 92.3% vs 48.5% $p < 0.001$, 84.6% vs 42.4% $p < 0.001$, in 1st, 2nd, 5th, 10th and 15th year post transplantation respectively.

We conclude that development of dnDSAs is associated with poor graft survival in pediatric RTx recipients. Effective strategies targeting humoral immune reactivity are needed to improve long-term pediatric kidney transplantation.

BOS354 LONG-TERM OUTCOME OF DECEASED DONOR KIDNEY TRANSPLANTATION IN HIGHLY SENSITIZED PATIENTS IN GREECE: A SINGLE CENTER EXPERIENCE

Maria Darema[1], Angeliki Vittoraki[2], Ioanna Tsoumpou[1], Christina Melexopoulou[1], Spyros Vernadakis[1], Smaragdi Marinaki[1], Aliki Iniotaki[2], Ioannis Boletis[1]
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Background: Highly sensitized patients(HSP) have a low chance to find a compatible kidney allograft. According to the kidney allocation program in Greece, HSP with panel reactive antibody-%PRA > 70 enter a priority list and proceed to crossmatch if the donor does not express unacceptable HLA-A,-B,-C,-DR,-DQ molecules. Patients with negative CDC and T/B Flow(FXM) crossmatches with the donor receive the graft. This study discuss the long term outcome of 96 highly sensitized renal transplant recipients.
Methods/Materials: Our high immunologic risk program included 96 HS*p* who received a graft between January 2004 and December 2016 in Laikon Hospital, Athens. Their characteristics were compared with a control group(CG) including 96 non sensitized patients(pts), transplanted in the same period. The HSP were divided into 2 groups: group A-34 pts(35.4%) transplanted with preformed donor specific antibodies (pDSA), with median MFI 3614(IQR:1935–5225) on day 0 and group B-62 pts(64.6%) without pDSA (MFI < 1000). All pts were transplanted with negative CDC and T/B FCM and received induction therapy with Basiliximab. Additionally, Rituximab was given in 24 pts of group A. Ten pts of group A also received 3 plasma-exchanges with low dose IVIG. Maintenance immunosuppression included MPA or mTORi/Tacrolimus/MP for HSP and MPA or mTORi/CNI/MP for CG.
Results: At the median follow up of 39 ± 21 months, patient survival rates were 94.8% in the HSP and 90.5% in the CG (Pearson's x^2 test, $p = 0.25$). Graft survival rates were 86.3% in the HSP and 92.6% in the CG (Pearson's x^2 test, $p = 0.15$). The HS*p* experienced an increased risk of biopsy proven acute rejection episodes (BPAR), as compared to CG. There was no significant difference between BPAR, infections, graft and patient survival in group A and group B pts.
Conclusion: We conclude that renal Tx in HSP with negative CDC and T/B FCM is safe with low immunological risk. Pretransplant DSA should not represent a barrier to renal transplant.

BOS355 EARLY OUTCOME OF SINGLE-KIDNEY TRANSPLANTED PATIENTS WITH PREFORMED CIRCULATING DONOR-SPECIFIC ANTI-HLA ANTIBODIES DETECTED BY SOLID-PHASE ASSAYS

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Background: The high sensitivity of solid phase assays has raised the number of unacceptable mismatches of an increasingly proportion of highly-sensitized patients, whose access to transplantation is almost impossible. In an attempt to improve their possibilities, other anti-HLA antibody properties have been examined. The aim of this study was to evaluate the early allograft outcome of a cohort of 12 single-kidney transplanted patients with preformed non-C1q-binding DSA.
Material and Methods: All transplants were ABO group compatible and were performed with a negative T+B complement-dependent cytotoxicity cross-match result. Patients' serum was analyzed before and after transplantation to detect anti-HLA antibodies, their ability to bind C1q and their IgG subclass profile. Kidney function was evaluated (serum creatinine, glomerular filtration and proteinuria) and allograft survival was compared using the log-rank test. Rejection episodes were identified according to Banff criteria. Twelve matched single-kidney transplanted patients without preformed DSA were selected as a control group.
Results: After transplantation, DSA profile remained invariable regarding the C1q-binding ability and the IgG subclass composition, or even became negative.Allograft survival up to 30 months was not significantly different regarding the control group ($p = 0.148$). We neither found significant differences in kidney function at any point throughout the follow-up time. Among the study cohort, 6 (50%) patients underwent biopsy. Histopathological findings suggested T-cell mediated rejection in 4 of them, with doubtful humoral component and minimum Cd4 deposition (<10%). Only 1 patient (8.3%) was diagnosed of antibody-mediated rejection and lost kidney allograft after 442 days.
Conclusions: Kidney transplantation with preformed non-C1q-binding DSA may be successfully performed. This procedure could be a feasible strategy to expand transplantation possibilities o

BOS356 ROLE OF HLA MISMATCH IN LOW RISK KIDNEY TRANSPLANT PATIENTS WITHOUT INDUCTION

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Objective: This retrospective study discuss the role of HLA mismatch in low immunological risk kidney transplant patients without induction therapy.
Material and Methods: Records of 80 adult kidney transplantation patients were reviewed with 3 years follow up. All patients had PRA < 20%, DSA 0% with their living donors. The patients were divided into 2 groups according to the HLA mismatch between donor and recipient. Fifty five patients had 3 or 4 HLA matching with their donors (Group I) and 25 patients had less than 3 HLA matching (Group II). The first endpoints were acute rejection rate and severity as well as graft function and survival at 3 years. The second endpoints were: rate and type of infections and surgical complications at 1 year as well as patient survival at 12 and 36 months after KT.
Results: Baseline demographics of all groups were similar, including: recipient gender, donor age, cause of the original kidney disease, CMV prophylaxis regimen and type of maintenance immunosuppression. However, there were significant differences between the 2 groups according to: recipient age, donor gender and dialysis duration. The rate, but not the severity, of acute rejection was higher in Group II patients as well as the rate of surgical complications at 1 year. These 2 factors did not have any effect on graft function as well as graft and patient survival at 3 years. The 1 year rate and type of infections were similar between the 2 groups as well as the rate of CMV

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disease. No difference in the hospital stay duration or the occurrence of DGF was noticed between the 2 groups.
Conclusion: Donor-to-recipient HLA matching is no more a factor of immunological risk in kidney transplant patients.

BOS357 PREVALENCE AND INCIDENCE OF DONORSPECIFIC HLA ANTIBODIES IN A COHORT OF KIDNEY TRANSPLANT PATIENTS FROM A SINGLE CENTER OUTPATIENT CLINIC FROM 2010 UNTIL 2016

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Successful functioning of kidney transplants depends on the absence of rejection and infection. The matching of HLA antigens and the development of HLA donor specific antibodies (DSA) seems to determine the longevity of the transplant.

In a retrospective single center study, the prevalence and incidence of HLA Abs and DSAs were determined for all post-transplant patients presenting regularly after kidney transplantation with a functioning organ, i.e. starting from the first outpatient visit through the maintenance long-term period during 2010 until 2016. Since 2010 HLA Ab screening according to the local recommendations (Dt. Gesellschaft für Immungenetik) was implemented and 641 cases with a full clinical and laboratory record were evaluated.

509 patients had no DSAs, 132 patients had a positive DSA assay: Thirty patients had a positive DSA before transplantation, 102 developed one or more DSAs after transplantation. 17 Patients developed DSAs shortly after transplantation (during their hospital stay), five patients during the first 6 months, and another seven patients during the second six months. Two to four years after transplantation 16, 8 and 12 patients newly developed DSA, thereafter the incidence shrank. Even 23 years after transplantation one patient developed a DSA.

Putative risk factors for the development of DSA, such as sensitization, renal disease, donor derived variables (mismatches, sex, age), mode and intensity of immunosuppression, rejection periods, infection (viral and bacterial), and comorbidity will be associated with the present data in order to find flashpoints for the development of DSAs after kidney transplantation.

Figure 1: Number of Patients newly developing donor specific HLA Ab after transplantation-given as incidence per year

BOS358 OUTCOMES AND COMPLICATIONS FOLLOWING ABO-INCOMPATIBLE KIDNEY TRANSPLANTATION PERFORMED AFTER DESENSITIZATION BY SEMI-SELECTIVE IMMUNOADSORPTION

Claudius Speer[1], Florian Kälble[1], Luiza Pego da Silva[1], Matthias Schaier[1], Christian Nusshag[1], Luis E Becker[1], Katrin Klein[1], Claudia Sommerer[1], Jörg Beimler[1], Albrecht Leo[2], Rüdiger Waldherr[3], Caner Süsal[4], Martin Zeier[1], Christian Morath[1]
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Background: Due to the current shortage of organs, ABO incompatible (ABOi) transplantations have been increasingly performed in recent years. The results seem comparable to those of compatible transplants, but there have also been reports of increased side effects of the desensitization therapy.
Methods: We compared the outcomes of 48 ABOi transplant recipients to outcomes of 96 matched ABO compatible (ABOc) controls transplanted within the same time period with a focus on infectious complications. ABOi transplant recipients were desensitized by semi-selective immunoadsorption devices together with a one-time administration of the anti-CD20 antibody rituximab.
Results: Over a follow-up period of 8 years, ABOi transplant recipients had comparable graft (log rank $p = 0.13$) and patient (log rank $p = 0.24$) survival as well as kidney graft function (eGFR, $p = 0.22$) compared to ABOc recipients. T cell-mediated (10% vs. 9%, $p = 1.00$) and antibody-mediated (2% vs. 3% $p = 1.00$) rejections were also not significantly different between groups. In ABOi transplant recipients, there was no general increase in the frequency of infectious complications, but severe infections such as urosepsis (21.2% vs. 8.5%; $p = 0.019$) and pneumonia with opportunistic pathogens (8.3% vs. 2.0%, $p = 0.025$) appeared more frequently compared to ABOc recipients. As a consequence, a significantly higher number of deaths from infection has been observed after ABOi transplantations (6.3% vs. 0%, $p = 0.010$). High-titer kidney transplant recipients (isoagglutinin titer of $\geq$ 1:256) showed a higher incidence of BK virus replication (44% vs. 13%; $p = 0.049$) and postoperative bleeding complications (44% vs. 8%; $p = 0.017$) than low-titer recipients (titer of $<$ 1:256).
Conclusions: Today, ABOi transplantations can be performed with results that are not significantly different from results after ABOc transplantations. However, in the aftercare of patients, an increased rate of serious infectious complications must be taken into account.

BOS359 HISTORICAL PEAK PRA, CURRENT PRA AND RESULTS OF KIDNEY TRANSPLANTATION

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Background: It is well known, that lower PRA score is associated with higher transplant survival rate. Sometimes a fall in PRA at the point of transplantation compared to the peak value may lead to an underestimation of the risk.
Materials: 144 recipients from the waiting list, with anti-HLA antibodies I, II or both classes (PRA > 5%) were included in the study. Patients were screened periodically to identify PRA and the specificity of antibodies. Of these recipients, 86 received a kidney transplant. At the point of the transplantation the patients had no donor specific antibodies. Antibodies were analysed/studied using the Luminex platform (single antigen-bead based assay).

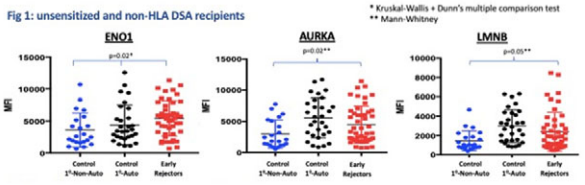
In the patients on the waiting list, the PRA, as well as MFI of circulating antibodies were not constant in time. Current PRA may decrease over time to 30–40% of the historical peak PRA. This is accompanied by a marked reduction in the MFI of some antibodies – sometimes below the lower threshold, which in this case was 1000. At times this may lead to an underestimation of the immunological risk.

In univariate model, the increase in current PRA, increase in historical peak PRA and a decrease in ΔPRA (difference between peak and current PRA) was associated with an increased risk of humoral rejection ($p < 0.0001$ each) and transplant loss ($p < 0.001$ each). ΔPRA is a very ambiguous measure. The inclusion of ΔPRA in the multivariate model of proportional Cox risks shows that an increase in current PRA is associated with increased risk of humoral rejection ($p < 0.001$), but not with transplant survival ($p = 0.067$). Whilst historical peak PRA remains a significant factor for both humoral rejection of the transplant ($p < 0.001$) and for its survival ($p < 0.001$).
Conclusion: In the selection of donor-recipient pairs it is necessary to consider the spectrum of antibodies at the point of the highest PRA. A reduction in this indicator may in some cases may hide the antibodies to a donor's antigens or certain epitopes.

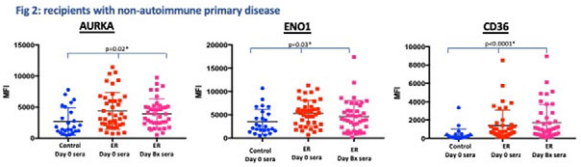
BOS360 CHARACTERISATION OF PREFORMED AUTOANTIBODIES IN RENAL TRANSPLANT RECIPIENTS WITH EARLY ACUTE REJECTION

Stephanie Chong[1], Raymond Fernando[2], Tom Hanna[1], Katie Butler[2], Henry Stephens[1], Ciara Magee[1], Mark Harber[1], Reza Motallebzadeh[1]
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Introduction: While donor-specific HLA antibodies (DSA) are recognised as a primary cause of rejection, there are also compelling data that antibodies to non-HLA antigens contribute thereto. We investigated the presence of pre-formed non-HLA antibodies in patients with early kidney allograft rejection using a solid-phase autoantigen multiplex-bead assay.
Methods: We screened serial pre-transplant crossmatch serum samples and samples taken 2 weeks post transplantation or on the day of the rejection biopsy using the One Lambda LABScreen Autoantibody Luminex assay that detects antibodies against 39 non-HLA targets. Bead fluorescence were measured using a LABScan 200TM Flow Cytometer.
Results: 60 patients who developed early rejection (ER; <14 days from transplant) were identified and compared with 2 control groups: non-rejecting recipients with non-immune mediated (Control 1; n = 25) and immune-mediated (Control 2; n = 30) primary kidney disease. 32 patients had mixed/antibody-mediated rejection in the ER group, of whom 12 had a low level preformed anti-HLA DSA and 5 had new or increased HLA DSA at the time of ER. Overall, in the 33 unsensitised ER patients, there were significantly higher levels of 3 autoantibodies *vs* the control 1 group: alpha-enolase (ENO1), aurora kinase-A interacting protein (ARUKA) and lamin-B1 (LMNB) (Fig 1). There was no difference between ER and control 2 (immune-mediated disease) groups. In individuals with non-immune mediated renal disease, the ER group also showed significantly higher levels of CD36 (Fig 2). None of the antibodies showed a significant increase at the time of ER. On ROC curve analysis, CD36 had an AUC of 0.85 (sensitivity 76%; specificity 80%). CD36 + ER patients had a lower 3-year eGFR compared to CD36- ER recipients.
Discussion: ENO1 & CD36, both expressed on endothelial cells, and AURKA pre-formed antibodies were consistently raised in non-sensitised patients with ER and may be targets for early non-HLA mediated rejection.



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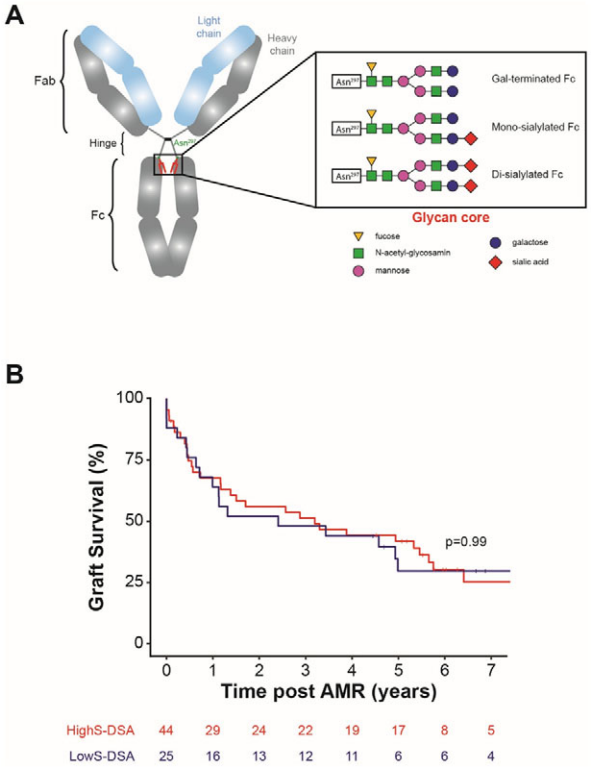


BOS361 HIGHLY VARIABLE SIALYLATION STATUS OF DONOR-SPECIFIC ANTIBODIES DOES NOT IMPACT HUMORAL REJECTION OUTCOMES

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Background: Clinical outcome in antibody-mediated rejection shows high inter-individual heterogeneity. Sialylation status of the Fc fragment of IgGs is variable (*Figure A*), which could modulate their ability to bind to C1q and/or Fc receptors. In this translational study we evaluated whether donor-specific antibodies (DSA) sialylation influence antibody-mediated rejection (AMR) outcomes.
Methods: Among 938 kidney transplant recipients for whom a graft biopsy was performed between 2004 and 2012 at Lyon University Hospitals, 69 fulfilled the diagnosis criteria for AMR and were enrolled. Sera banked at the time of the biopsy were screened for the presence of DSA by Luminex. The sialylation status of total IgG and DSA was quantified using *Sambucus nigra* agglutinin-based chromatography.
Result: All patients had similar levels of sialylation of serum IgGs (~2%). In contrast, the proportion of sialylated DSA were highly variable (median = 9%; range = 0–100%), allowing to distribute the patients in two groups: high DSA sialylation (n = 44; 64%) and low DSA sialylation (n = 25; 36%). The two groups differed neither on the intensity of rejection lesions (C4d, ptc and g; $p > 0.05$) nor on graft survival rates (Log rank test, $p = 0.99$, *Figure B*). *In vitro m*odels confirmed the lack of impact of Fc sialylation on the ability of a monoclonal antibody to trigger classical complement cascade and activate NK cells.
Conclusion: We conclude thatDSA sialylation status is highly variable but has not impact on DSA pathogenicity and AMR outcome.



BOS362 IS MORE INTENSIVE INDUCTION IMMUNOSUPPRESSION THERAPY FOR HIGHLY SENSITIZED KIDNEY TRANSPLANT RECIPIENTS BETTER?

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Induction immunosuppression for highly sensitized kidney recipients varies, in particular the use of plasma exchanges (PE) and rituximab following transplantation to prevent antibody-mediated rejection (ABMR) and increase graft survival. We compared 3 induction strategies for patients undergoing kidney transplantation with a high level (MFI > 3000) of pre-formed donor-specific antibody (DSA).

Our retrospective study included 50 kidney transplant recipients in 2 French centers, transplanted between 2012 and 2017. All patients had at least one pre-formed DSA (MFI > 3000) within 6 months before transplantation. Patients were divided in 3 groups according to the additional induction therapy they did or did not receive. All patients received anti-thymocyte globulin, a calcineurin inhibitor, mycophenolate mofetil and steroids on the day of transplantation. Patients of group A (n = 22) had 5 additional PE and 1 injection of rituximab (1000 mg). Patients of group B (n = 16) had no PE nor rituximab. Patients of group C (n = 12) received PE but no rituximab. The median follow-up was 3 ± 1.46 years after transplantation.

Comparing group A, B and C, recipients' age (48 ± 14 vs. 50 ± 10 vs. 50 ± 11 years in group A, B and C respectively), donor's age (54 ± 16 vs. 57 ± 15 vs. 61 ± 10 years), cold ischemia time (16 ± 6 vs. 18 ± 7 vs. 16 ± 6 hours) and MFI of the immunodominant DSA (8350 ± 4100 vs. 8200 ± 5925 vs. 9800 ± 5500) were similar (p=ns). There was no overall difference in the rate of biopsy-proven acute rejection at 1 year post-transplantation (n = 9, 36% in group A vs. n = 6, 31% in group B vs. n = 5, 41% in group C). There was no difference in graft survival rate at 1 year post-transplant (86% in group A, 87.5% in group B, 67% in group C, p=ns). Finally, the incidence of infectious, anaphylactic, thrombotic or hemorrhagic events was similar between the 3 groups.

Our study suggests that an intensive induction immunosuppressive therapy using PE and/or rituximab does not decrease ABMR incidence.

BOS364 IMPROVING IMMUNOSUPPRESSION DRUG ACCURACY THROUGH PHARMACY-DIRECTED MEDICATION RECONCILIATION

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Background: Accurate immunosuppression is key to reducing donor-specific antibodies, acute rejection, drug toxicity, and by extension, graft survival. Standard medication reconciliation practices are performed by the clinical care team, however, dedicated pharmacy resources may provide improved medication accuracy.
Methods: A prospective, randomized cohort study of adult post-kidney transplant patients was conducted and analyzed using statistical process control. 100 patient medication lists (10 medication lists per sample) from patient's electronic medical record (EMR) were cross-validated through patient and pharmacy interviews to determine baseline EMR error rates. "High" risk medications were defined as including immunosuppressants, anticoagulants, antiarrhythmics, insulins, opioids, or benzodiazepines. The intervention was a dedicated pharmacist who was randomly assigned to perform medication reconciliation exclusive of transplant team care. These 100 intervention samples were then cross-validated with the same methodology to determine accuracy of EMR medication lists post-intervention.
Results: Compared to the baseline samples, the pharmacy-directed intervention resulted in a reduction of EMR errors of "high" risk post-transplant medications from an average of 7.3 per sample (Phase 1;73%) to 0.09 per sample (Phase 2;0.9%) (Figure). Upper and lower control limits showed marked reduction in variation from sample to sample in the number of medication errors identified post-intervention (Phase 2). Two special cause tests (1and 2) show that the chances of this finding occurring by chance alone is less than 0.03%.
Conclusion: Pharmacist-directed medication reconciliation post-transplant significantly decreases the number of "high" risk medication errors, including immunosuppressives. Further studies are needed to evaluate the cost-effectiveness of this intervention.

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BOS365 DONOR HLA TYPES FROM GRAFT BIOPSES

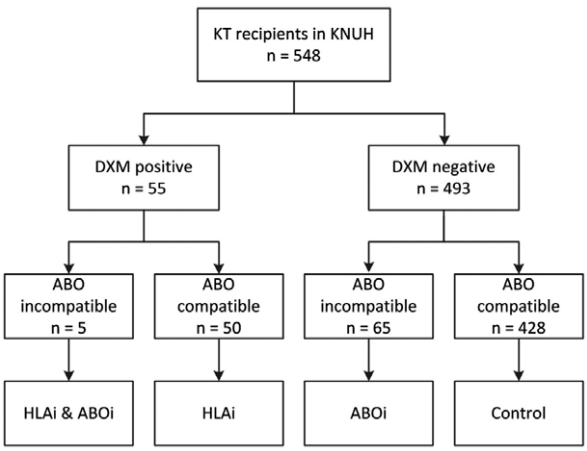
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Background: HLA-types of previous organ donors can be completely or partially unknown, due to either transplantations abroad or the inferior techniques applied at the time of transplantation. The clinical significance of detected HLA antibodies, as well as the risk of repeated incompatibility with a new donor, cannot be determined without a HLA type of the initial donor. Since historic samples from deceased donors cannot always be obtained and retrospective HLA-typing on donor samples is not always an option, determination of donor HLA-types from graft biopsies is desirable. Graft biopsies do not only contain donor cells, but also infiltrating lymphocytes from the patient, thus HLA-types deduced from graft biopsies will represent four haplotypes.
Methods: We tested mixtures of DNA from two donors with known HLA-type using Linkage qPCR kits and Suretyper software. Then ten allograft biopsies were analyzed; five from heart transplanted and five from kidney transplanted patients. The transplantations were performed between 8 and 44 years before the biopsy. By forcing known alleles of patient origin negative in the software we were able to detect unknown alleles of donor origin.
Results: In the DNA mixtures we were able to detect 40 out of 44 expected alleles. In the biopsies we detected from 2 to 12 HLA-A, B, C, DRB1, DQB1, DQA1 and DPB1 alleles of donor origin. Within our set of patients we did not observe a correlation between age of graft and number of detected alleles, whereas we detected more alleles in heart transplanted than in kidney transplanted consistent with lack of HLA matching in heart transplantation.
Conclusion: It is possible to determine multiple donor HLA types from biopsy material; this has enabled us to detect donor specific antibodies and to define unacceptable repeated mismatches before re-transplantation. The method does not detect all possible mismatches, and certaintyabout risk is only achieved when all four alleles of are detected.

BOS366 EXCELLENT OUTCOME AFTER DESENSITIZATION IN HIGH IMMUNOLOGIC RISK KIDNEY TRANSPLANTATION: EXPERIENCE OF SINGLE CENTER

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Introduction: HLA-incompatible (HLAi) and ABO-incompatible (ABOi) KTs have been on the increase over the last decade. However, there is a wide variation in outcome. This study evaluated the renal and patient outcomes in incompatible kidney transplantations (KT) and non-sensitized KT.
Methods: Patients who underwent KT from January 2012 to May 2018 were enrolled and reviewed. We divided KT recipients (KTRs) into 4 groups, as follows: HLAi (n = 50); ABOi (n = 65); HLAi & ABOi (n = 5); and control group (n = 428). We compared the risk of rejection, graft function, graft survival, and patient survival between incompatible KTRs and control KTRs.
Results: Incidence of biopsy-proven acute rejection (BPAR), graft failure, and patient death were not inferior to control group in all three incompatible KT groups (all $p > 0.05$). Graft function during study period was also similar between incompatible KTRs and control group ($p > 0.05$). In cox regression analysis, both HLAi and ABOi were not risk factors for graft failure. Some infectious diseases such as urinary tract infection and cytomegalovirus infection were more common in HLAi group than in control group ($p < 0.05$), but only one infection related death occurred in HLAi KTRs. Infection risk was similar in ABOi and HLAi & ABOi groups compared to control group.



Conclusion: Our results demonstrate favorable outcomes in incompatible KT after desensitization. Although desensitization therapy for incompatible KT has improved access to transplantation for KT candidates with high immunologic risk, more clinical experiences are clearly needed.

BOS367 POTENTIAL OF ORGAN IMMUNOMODIFYING THERAPIES

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Background: ImmunoCloak™ (IC) is applied to a renal allograft in an organ-specific manner pretransplantation that eliminates the need for systemic immunosuppression during early posttransplantation. It is a non-immunogenic and non-thrombogenic basement membrane applied to the vasculature of an allograft during warm perfusion. The efficacy of IC therapy is limited in terms of not providing long-term protection. We are now investigating the potential of using the window of protection the IC membrane provides to evaluate a more permanent therapy.
Methods/Materials: IC was applied to confluent monolayers of vascular endothelial cells using a microfluidic device. The competence of the IC membrane was evaluated using indirect immunofluorescence assays. Standard assays were used for the immunologic testing.
Results: We have identified IC mediated effects that prevent: 1. antigen presentation, 2. T cell activation, proliferative response and diapedesis into the graft during the early posttransplant period in the absence of systemic immunosuppression. The results of retention studies indicate that IC represents a temporary therapy that remains in a protective intact state for approximately 3-weeks posttransplant with rejection that occurs approximately 10 days later without systemic immunosuppression. The 3-week window of protection ImmunoCloak provides could make it feasible to produce donor-specific suppressor cells for clinical adaptive transfer.
Conclusions: Currently adoptive transfer that has successfully achieved in murine models is not feasible clinically because T cells are not available pretransplantation in the case of deceased donors. Now that we have established the IC membrane remains intact for a time course compatible with producing donor-specific T regulatory cells (Ti-Tregs) we will now evaluate the feasibility of preventing allo-immune responses for longer periods posttransplant without the requisite need for systemic immunosuppression.

BOS371 RISK FACTORS FOR ACUTE KIDNEY INJURY AFTER LIVER TRANSPLANTATION: SINGLE-CENTRE EXPERIENCE

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[1]Medical School University of Zagreb; [2]University Hospital Merkur; [3]University Hospital Merkur, Medical School University of Zagreb

Background: Acute kidney injury (AKI) is a significant complication after liver transplantation (LT), associated with increased mortality and the development of chronic kidney dysfunction. The aim of this study was to identify the frequency of AKI post-LT, to investigate its risk factors and its impact on early post-LT course.
Methods: Medical data of 208 adult patients who underwent first LT in the Merkur Transplant centre between 10/2014–10/2016 were retrospectively analysed. AKI was defined as increased serum creatinine of at least 26.5 μmol/L within first 7 days after LT. Multivariate logistic regression was used to determine risk factors independently associated with AKI and independent association of AKI with 30-day mortality.
Results: 28.73% of pts developed AKI within first 7 days after LT. AKI pts had significantly lower eGFR (57.15 ± 34.28 ml/min) and higher NaMELD scores (23.75 ± 9.64) before LT compared with eGFR (100.71 ± 44.53 ml/min ($p < 0.001$)) and NaMELD (17.82 ± 6.89 ($p < 0.001$)) in non-AKI pts. Pre-LT CKD, was also associated with increased risk for post-LT AKI (odds ratio 3.6, $p = 0.008$). In a multivariate logistic regression analysis, only decreased pre-LT eGFR was independently associated with development of AKI ($p < 0.0001$). Other preop. variables (age, BMI, liver disease etiology, tumor, DM) and intraop. noradrenaline support were not associated with AKI. 9.13% of pts died within first 30 days after LT. Significant risk factors for early mortality were number of intraop. transfusion of red blood cells ($p = 0.043$) and fresh-frozen plasma ($p = 0.0045$), whereas other variables including AKI post-LT were not identified as risk factors.
Conclusions: Almost one third of patients develop AKI within first 7 days after LT. Decreased kidney function before LT is independently associated with the development of AKI. The study showed that intraoperative blood losses are the risk factors the early mortality, however AKI is not associated with 30 day morality post LT.

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BOS372 OUTCOME OF RENAL TRANSPLANTATION IN PATIENTS WITH DIABETES MELLITUS: A SINGLE – CENTER EXPERIENCE

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Purpose: An increasing proportion of kidney recipients have diabetes mellitus (DM). Some concerns have been raised about the kidney transplantation results in diabetic patients. Therefore, we assessed the impact of DM on morbidity and mortality.
Methods: We retrospectively studied 126 adult patients with DM who underwent living donor transplantation from 2007 to 2016.
Results: Of 1536 transplant recipients 126 (8%) had DM (mean age 49.4 ± 11.8). The clinical parameters of renal transplant patients with diabetes are shown in Table-1. The patients had a mean follow-up after kidney transplantation 42.5 months (0.27–101.7 months). Only 3 patients had lost graft and 13 patient were exitus. Cardiac death (54.5%) was the most common cause of mortality. Patient survival at 101 months were 85%. Survival analysis and Kaplan-Meier graphic are shown in Table-2 and Figure-1 respectively.
Conclusions: Both infection and cardiac diseases increase morbidity and mortality in diabetic renal transplant patients.

Age (years)	49.4 ± 11.8
Male/Female (n/n)	88/38
Type of diabetes Type 1 DM (n, %) Type 2 DM (n, %)	41 (32.5 %) 85 (67.5 %)
Duration of dialysis (months)	16.9 ± 25.1
Follow-up months	43.7 ± 29.2
Preemptive renal transplantation (n, %)	34 (27.0 %)
Infection (n, %) Urinary tract infection (n, %) Pneumonia (n, %) Diabetic foot infe	41 (32.5 %) 17 (13.5 %) 12 (9.5 %) 4 (3.2 %) 2 (1.6 %) 6 (4.8 %)
BK Viruria (n,%)	8 (6.3%)
Acut rejection (n,%)	8 (6.3%)
Graft losses (n, %)	3 (2.4%)
Preoperative cardiac status Medical treatment (n, %) CABG (n, %) PTCA (n, %)	90 (71.4 %) 17 (13.5%) 19 (15.1%)
Exitus (N, %)	13 (10.3%

BOS373 CARDIOVASCULAR MORTALITY IN RENAL AND LIVER TRANSPLANT RECIPIENTS – WHO IS AT HIGHER RISK?

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Introduction: The presence of cardiovascular (CV) risk factors or established CV disease before transplantation is associated with increased adverse events in renal and liver transplant recipients. We compared those two groups according to pretransplant CV risk profile and established CV disease. Differences in early and late CV and non-CV outcomes were further studied.
Methods: We enrolled all 114 renal and 226 liver patients transplanted at Merkur University Hospital, Zagreb, Croatia in a period between March 2015 and May 2018. The data were collected from institutional computer system. Early outcomes were considered within 30 days of transplantation and late outcomes were considered beyond 30 days. CV outcomes were defined: CV death, myocardial infarction (MI), cerebrovascular insult (CVI) and heart failure (HF).
Results: Renal transplant recipients were younger (54.7 vs 59.3 years; $p = 0.014$) and showed higher prevalence of hypertension (81.6% vs 52.6%; $p < 0.001$) and hyperlipidemia (67.5% vs 43.8%; $p < 0.001$). Echocardiographic parameters revealed significantly reduced diastolic function ($p = 0.035$) in renal patients while liver patients had more tricuspid valve regurgitation (76.1% vs 53.6%; $p = 0.04$). Renal recipients had higher prevalence of previous MI (7.9% vs 3.1%; $p = 0.008$), percutaneous coronary intervention (9.6% vs 1.8; $p < 0.001$) and peripheral artery disease (21.9% vs 6.2; $p < 0.001$). No differences in CV mortality in liver and renal transplant recipients was found up to 30 days (3.2% vs 1.7%; $p = 0.67$) and beyond 30 days (0.4% vs 1.7%; $p = 0.56$) following transplantation. Further analysis of our data have showed significantly more early non CV mortality in liver transplant recipients (7.9% vs 0.9%, $p = 0.02$) while renal recipients have significantly more non fatal IM (5.3% vs 0.5%, $p = 0.01$) after transplantation.
Conclusion: Renal and liver transplant recipients differ significantly in pretransplant presence of CV risk factors, echocardiographic parameters and est.

BOS374 RUPTURING ARTERIAL ANASTOMOSIS PSEUDOANEURYM TREATED BY ENDOVASCULAR APPROACH IN SHORT POST LIVER TRANSPLANT MANAGEMENT

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[1]Medical University of Gdansk; [2]Medical University of Gdańsk

Background: Regardless of 50 years of history, liver transplant (LT) remains a challenging procedure in terms of both surgical technique and peri-operative management. Bleeding is still one of the main complications with treatment options ranging from transfusions to re-operations. Endovascular procedures in acute bleeds are in experimental phase.
Methods/Materials: We present a case of post-operative leakage from the arterial anastomosis pseudoaneurysm that was successfully managed via endovascular platinium coil embolization.
Results: The patient underwent deceased donor LT because of primary biliary cirrhosis and autoimmune hepatitis overlap syndrome. The 'piggy-back' method was used. On 11th day post surgery haemoglobin drop by 2.9 g/dl in 24 hours was observed. CT scan revealed fluid in abdominal cavity with density of blood. The patient underwent arteriography in which a rupturing pseudoaneurysm originating from the arterial anastomosis was found. A large heamatoma was causing impression on the hepatic artery disrupting graft blood supply. A endovascular micro-catether was introduced to the site of arterial anastomosis and through its wall into the lumen of pseudoaneurysm. Total of 5 coils were introduced into the lumen achieving its full occlusion. In the following days the stenosis due to heamatoma was slowly decreasing with good function of the graft. Patient was discharged three weeks later with no subsequent bleeds and no relevant hepatic artery stenosis.
Conclusion: The case shows promising result of endovascular treatment of vascular complication of LT. The chance to avoid re-operation can be relevant to increasing LT efficiency, but requires further analysis on large patient groups.

BOS375 ARTERIAL HYPERTENSION IN RENAL TRANSPLANT RECIPIENTS

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La Rabta Hospital

Introduction: Cardio vascular disease are known to be the first mortality cause in kidney transplantation (KT). Arterial hypertension (HT) is common in renal transplant recipients (RTRs) and it is reported to occur from 50% to 80 % of cases.

We report here the prevalence of HT in RTRs in our kidney transplantation center.
Materiel/Methods: Our study is about 78 RTRs from a living kidney donor in 97.5 % of cases in our kidney transplantation department from 2011 to 2018.
Resultat: This study is about 51 males and 27 females with a mean age of 34 ± 7 years.

After KT, HT was noted in 46 patients (59.7 %) and 32 patients were normotensive (41%). Amoung HT patients, HT was not controled in 22% of cases (based on target blood pressure levels under 130/80 mm Hg). All these patients had 2 or 3 anti hypertensive molecules.

In our report, some factors were noted: recipient HTprevious to KT in 40 patients (51.2%), diabetes in 6.4% of cases, dyslipidemia in 2% of cases, obesity and overweight in 24% of cases and donor HT in 7.6% of cases. Delayed graft function was noted in 2 cases (2.5 %) and immunosuppressive therapy was based on steroids in all cases and tacrolimus in 90 % of cases.
Conclusion: Our data show that HT had a high prevalence in kidney recipient (59.7%). However, the eviction of ciclosporin in our center leads to a relatively controlled prevalence of HT in our patients compared to some reports. In the other hand and despite the recommendations issued by scientific societies, blood pressure control in RTRs is not optimal and it remains far from the recommended target levels under 130/80 mm Hg.

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BOS376 CARDIOVASCULAR RISK FACTORS IN PATIENTS AFTER LIVER TRANSPLANTATION

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Background: Liver transplantation (LTx) is the only treatment of end-stage liver cirrhosis. Cardiovascular complications may worsen the long-term outcome in patients after LTx. The aim of this retrospective, single centre, clinical study was to estimate the prevalence of selected cardiovascular risk factors in LTx patients.
Methods/Materials: Medical records from 130 patients aged 49.3 ± 11.9 years (52F, 78M) before and 2 years after LTx were analysed. In patients after LTx the prevalence of diabetes mellitus, arterial hypertension, hypertriglyceridemia, hypercholesterolemia, obesity and cigarette smoking were estimated. The prevalence of these cardiovascular risk factors were compared before and 2 years after LTx. Among the studied population, 3 groups of the most common aetiology of liver cirrhosis (alcoholic, viral, autoimmune) were also separately analysed.
Results: The prevalence of diabetes mellitus before and 2 years after LTx was 18% and 48%, respectively ($p < 0.001$). Arterial hypertension – in 24% and in 70% ($p < 0.001$), hypertriglyceridemia – in 15% and in 38% ($p < 0.001$), hypercholesterolemia – in 16% and in 46% ($p < 0.001$) of patients were present before and 2 years after LTx, respectively. 13% and 18% of patients were obese ($p < 0.001$) and 24% and 10% were cigarette smoker ($p < 0.001$) before and 2 years after LTx, respectively. In patients with an autoimmune cause of liver cirrhosis in comparison to patients with alcoholic disease diabetes (38% vs 67%, $p = 0.02$), hypertriglyceridemia (19% vs 63%, $p < 0.001$), hypercholesterolemia (28% vs 67%, $p = 0.002$) and obesity (9% vs 33%, $p = 0.02$) occurred less frequent.
Conclusions: 1. Prevalence of arterial hypertension and abnormalities of glucose and lipid metabolism increase significantly after LTx. 2. The aetiology of liver cirrhosis before transplantation may influence the prevalence of cardiovascular risk factors in patients after LTx.

BOS378 EVALUATION OF THE "PICTORIAL REPRESENTATION OF ILLNESS AND SELF MEASURE" (PRISM) AS A NOVEL VISUAL TOOL FOR THE BURDEN OF SUFFERING IN PATIENTS AFTER LIVER TRANSPLANT

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Background: Improving survival rates considered, patients' wellbeing becomes a main parameter to determine the success of liver transplantation. The aim of this study was to validate the Pictorial Representation of Illness and Self Measure (PRISM) as a simple tool to assess the level of suffering in patients after liver transplantation and its association with the health-related quality of life (HQoL) as one important parameter of subjective well-being.
Material and Methods: Comparison of data collected from 101 patients using PRISM and SF36, a well-established tool to assess HQoL, between 10/2016 and 07/2017 at the university hospital Muenster.
Results: The burden of suffering as measured by PRISM has the highest predictive value for both physical ($p = 0.002$) as well as mental health summary scores ($p = 0.000$) as measured by SF-36, independent of sociodemographic factors.
Conclusion: PRISM has been shown to be a suitable instrument for measuringnthe perceived burden of disease and indirectly of HQoL, as both interact. The use of this simple visual tool in clinical routine seems easily possible as it is neither time consuming, nor does it require particular language or cognitive skills. Furthermore, this tool can easily be used to assess outcome in clinical trials with regard to patients' well-being.

BOS379 COMPARABLE POST-REPERFUSION BLOOD LOSS AND TRANSFUSION REQUIREMENTS DURING TRANSPLANTATIONS OF LIVERS FROM DONATION AFTER CIRCULATORY DEATH OR DONATION AFTER BRAIN DEATH DONORS

Shanice Karangwa, Jelle Adelmeijer, Fien von Meijenfeldt, Andrie Westerkamp, Ruben de Kleine, Koen Reyntjens, Aad van den Berg, Ton Lisman, Robert Porte, Marieke de Boer
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Background: The specific effect of donation after circulatory death (DCD) liver grafts on hemostasis, blood loss, and transfusion requirements after graft reperfusion is not well known. Aim of this was to investigate whether transplantation of DCD livers is accompanied by an elevated risk of hyperfibrinolysis, increased blood loss and transfusion requirements upon graft reperfusion, compared to livers donated after brain death (DBD).
Methods: Data from a consecutive series of 493 primary adult liver transplant recipients was analyzed. Recipient, donor, intraoperative and postoperative variables from DCD and DBD liver recipients were compared. Additionally, blood samples from 36 patients from this cohort were collected and analyzed to compare the intraoperative fibrinolytic state. Continuous data were expressed as median [interquartile range].
Results: DCD livers were used in 120 of the 493 (24%) transplant procedures. There were no significant differences in post-reperfusion blood loss (1.2 L [0.5 – 2.2] vs. 1.0 L [0.5 – 2.3]; $p = 0.836$), RBC transfusion (2 U [0 – 4] U vs. 1.1 U [0 – 3], $p = 0.093$), or FFP transfusion requirements (0 U [0 – 2.3]vs. 0 U [0 – 1.5]; $p = 0.294$) in DCD compared to DBD recipients, respectively. Plasma fibrinolytic potential and plasmin-antiplasmin complexes were comparable for the two groups.
Conclusion: Liver transplantation with a DCD liver does not result in higher intraoperative blood loss or more transfusion requirements, compared to DBD liver transplantation. In accordance to this, no evidence for increased hyperfibrinolysis upon reperfusion of DCD compared to DBD liver grafts was found.

BOS380 EFFICACY OF SELF-EXPANDABLE METALLIC STENT FOR HEPATIC VEIN STENOSIS AFTER LIVING DONOR LIVER TRANSPLANTATION

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Background: Hepatic vein (HV) stenosis is a serious complication after living donor liver transplantation (LDLT), because it can result in graft failure or life-threatening status. Balloon dilatation is a standard treatment for this complication. However, some cases would relapse stenosis even after several times of dilatations. In those cases, it has been debated that self-expandable metallic stent (SEMS) could be a radical treatment for HV stenosis.
Aim: In this study, we analyzed the outcome of the treatment for HV stenosis.
Patients and Methods: Of 325 cases of LDLT between 1998 and 2019, patients with HV stenosis were retrospectively analyzed, especially focusing on balloon dilatation and SEMS.
Results: HV stenosis after primary LDLT occurred in 12 patients (3.6%), of which 8 patients recovered only by balloon dilatation and the other 4 patients required placement of SEMS because of refractory HV stenosis which repeated after balloon dilatation.

In balloon dilatation group (n = 8), after 1.25 episodes of dilatation, the pressure gradient between inferior vena cava and HV could be improved to < 5 mmHg in all cases. The average recurrence-free time was 5.94 years (range. 2.5–9.5).

In SEMS group (n = 4), after 3.75 episodes of dilatation, the pressure gradient could not be improved to < 5 mmHg in all cases. The average period of HV-patent after balloon dilatation was 61 days (8–157 days). After the placement of SEMS, the pressure gradient could be improved to < 5 mmHg in all cases without any recurrence of HV stenosis.
Conclusions: SEMS could be a radical and an alternative option to balloon dilatation in cases with refractory and repeated HV stenosis.

BOS382 POSTOPERATIVE COMPLICATIONS AS A PREDICTOR FOR SURVIVAL AFTER LIVER TRANSPLANTATION – PROPOSITION OF A PROGNOSTIC SCORE

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Background: Liver transplantation is major surgery with a high risk of complications. Existing scoring systems for evaluating complications after surgery are not specific for liver transplantation. Nor are they designed to evaluate the relation to recipient survival or graft loss. We wished to uncover the relation between postoperative complications and one-year risk of death or retransplantation, and to develop a prognostic score for complications based on our findings.
Method: The study was a retrospective cohort study including 253 adult liver recipients. Thirty-days postoperative complications were registered using the Clavien-Dindo classification. A prognostic score was developed based on types, severity, and quantity of complications.
Results: A total of 1113 complications occurred in 233 (92.1%) of the patients. One-year mortality or graft loss was associated with graft, biliary, surgical, systemic, pulmonary, cardiovascular, renal, and infectious complication but not with neurologic or gastrointestinal complications. The developed score was more accurate in predicting the outcome than both the modified Clavien-Dindo score and the Comprehensive Complication Index.
Conclusion: Types, severity, and quantity of different postoperative complications after liver transplantation are not equally important. The proposed score

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may focus attention on treating or preventing complications with strong relation to recipient mortality or graft loss.

BOS383 PORTAL VEIN THROMBOSIS ON THE WAITING LIST FOR LIVER TRANSPLANTATION: A SINGLE CENTER COHORT STUDY

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Introduction: Portal vein thrombosis (PVT) is a well-recognized complication of end-stage liver disease. Literature is still inconclusive about its impact on the clinical course in liver transplant candidates.
Aim: Identify the prevalence of and the risk factors for PVT, assess the usefulness of anticoagulant therapy and determine the impact on postoperative outcomes.
Methods: We performed a single center retrospective study in an expert liver transplant unit. Patients receiving liver transplantation between January 2006 and June 2016 were included. Relevant demographic, clinical and outcome data were retrieved from the medical records. Univariate and multivariate logistic regression analysis and survival analysis were used.
Results: In 390 adult patients orthotopic liver transplantation was performed. PVT was diagnosed in 40 patients

(10.26%). In respectively 10 (2.56%), 7 (1.79%) and 23 (5.9%) patients, the thrombus was identified at time of evaluation for transplantation, during waiting time and at time of transplantation. In a multivariate analysis, body mass index ($p = 0.006$; OR 1.1; 95% CI:1,028–1,177), previous treatment of portal hypertension ($p = 0.001$; OR 3.59; 95% CI:1,681–7,671) and a history of encephalopathy ($p = 0.007$; OR 2.86; 95% CI = 1.332–6.142) were independently associated with the occurrence of PVT. A beneficial trend was present favouring the use of anticoagulation towards the accomplishment of recanalization (n = 3/7 versus 0/9; $p = 0.062$). Length of stay was increased ($p = 0.012$) in the presence of PVT. Patient and graft survival rates were similar between the groups with and without portal vein thrombosis after 5 year of follow up. However, 1-year patient survival was significantly lower ($p = 0.031$) in patients with PVT.
Conclusions: PVT occurred in 10% of patients awaiting liver transplantation and has a deleterious effect on 1 year post transplant survival. Anticoagulation is safe and is beneficial for recanalization of a PVT and for the one year survival rate.

BOS384 IMPACT OF INCORPORATION OF FIBRINOGEN CONCENTRATE IN BLOOD TRANSFUSION MANAGEMENT DURING LIVER TRANSPLANTATION: AN EARLY LOCAL (SINGLE CENTRE) EXPERIENCE

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Background: Orthotopic liver transplantation surgery is associated with major bleeding, requiring transfusions of blood products such as packed red cells, fresh frozen plasma, platelets and cryoprecipitate. Fibrinogen concentrate was made available in our institution in January 2017 and is increasingly being used as an alternative strategy to reduce transfusion requirements. Limited literature exists to show the effectiveness of fibrinogen concentrate on blood loss during liver transplantation surgery, as well as its impact on blood transfusion requirements.
Methods: This is a retrospective, observational study conducted at a single, large, tertiary centre in Singapore to evaluate the impact of incorporating fibrinogen concentrate on blood transfusion requirements during orthotopic liver transplantation surgery from January 2014 to December 2018. Patients who received fibrinogen concentrate during liver transplantation surgery were compared against those who did not receive fibrinogen concentrate.
Results: From January 2014 to December 2018, there were 54 liver transplants performed in our institution. Since the introduction of fibrinogen concentrate in January 2017, 14 patients who underwent liver transplantation received fibrinogen concentrate. There was a significant difference in the starting haemoglobin level of the patients, with a lower starting haemoglobin level in patients who received fibrinogen concentrate ($p = 0.039$). No significant difference was noted in the amount of blood loss during surgery in both groups of patients. Of note, patients who received fibrinogen concentrate had a significantly less amount of cryoprecipitate transfused. ($p = 0.002$)
Conclusion: The intraoperative use of fibrinogen concentrate made no difference in the amount of blood loss during surgery. However, the amount of cryoprecipitate used was significantly reduced with the introduction of fibrinogen concentrate.

BOS26 – METABOLIC COMPLICATIONS IN KIDNEY AND LIVER TRANSPLANTATION

BOS385 THE ROLE OF ALCOHOLIC LIVER DISEASE AS RISK FACTOR FOR THE DEVELOPMENT OF DE NOVO METABOLIC SYNDROME AFTER LIVER TRANSPLANTATION: A PROSPECTIVE LONGITUDINAL STUDY

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Background: *de novo* metabolic syndrome (MS) is an emerging complication after liver transplantation (LT), resulting in an increased cardiovascular morbidity and mortality. This prospective study aimed to assess the incidence of MS post-LT and its possible associated risk factors.
Methods: LT patients between April 2013 and October 2016 were prospectively included. Patients with pre-LT MS were excluded. General and metabolic variables were collected at LT and at 6 months, 1 and 2-years post-LT as well as donor variables. Post-LT MS was evaluated according to the modified NCEP-ATP III criteria.
Results: 42 liver transplanted patients were included. The most common indications to LT were HCV (38%) and alcoholic liver disease (ALD) (36%). Six-month, 1- and 2-year incidence of de novo MS was 43%, 57% and 71% respectively. The incidence of post-LT MS at 6 months, 1 and 2 years post-LT was significantly higher in patients transplanted for ALD compared to patients transplanted for other causes (80%, 86.7% and 93.3% vs. 22.2%, 40.7% and 59.3% respectively; $p < 0.001$). Considering the individual metabolic variables, patients transplanted for ALD presented a significantly higher incidence of obesity (33.3%, 46.7% and 53.3% vs. 0.3%, 14.8% and 18.5%; $p = 0.012$), hypertension (66.7%, 73.3% and 73.3% vs. 18.5%, 25.9% and 33.3%; $p = 0.006$) and hypercholesterolemia (40%, 60% and 66.7% vs. 18.5%, 29.6% and 33.3%; $p = 0.034$) compared to non-ALD liver transplanted patients, whereas no differences were found in the incidence of diabetes or hypertriglyceridemia. No differences were found in terms of anthropometric and metabolic variables pre-LT between these two groups. At multivariate analysis ALD remained a risk factor significantly associated with *de novo* MS (HR 2.35, 95% CI 1.06–5.19; $p = 0.035$).
Conclusion: *de novo* MS is a frequent complication post-LT showing a progressive increase overtime. A strict metabolic follow-up is mandatory particularly for patients transplanted for ALD.

BOS386 UTILIZATION OF HBA1C IN SCREENING LIVING KIDNEY DONORS WITH PREDIABETES

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Background: This study aimed to report the health outcomes of living kidney donors with prediabetes and evaluate the power of HbA1c in predicting adverse outcomes among these individuals.
Methods: Donors with both normal FPG and HbA1c results were included in the control donor group, whereas those with either an FPG or HbA1c result in the prediabetic range were included in the low-risk prediabetic donor group and those with both FPG and HbA1c results in the prediabetic range were included in the high-risk prediabetic donor group.
Results: Of the 93 donors included in the study, 46 (49.5%) were included in the control donor group, 31 (31.6%) in the low-risk prediabetic donor group, and 16 (16.3%) in the high-risk prediabetic donor group. The donors were followed for a mean of 75.9 ± 23.3 months. Age and baseline triglyceride and LDL-cholesterol levels were significantly lower in the control group compared to the other two groups. Estimated GFR was not significantly different at pre-donation or at any of the yearly follow-up visits across the three groups. Five of 16 (31.3%) donors in the high-risk group were diagnosed with T2DM at 70.9 ± 31.6 monthsafter donation compared to 2 of 31 (6.5%) donors in the low-risk group (at 79.5 months and 87.1 months post-donation, respectively) and 0 of 46 donors in the control group. The risk of being diagnosed with T2DM after donation therefore was significantly higher in the high-risk group compared to the other two groups. ($p < 0.001$) Log-rank test also confirmed that the high-risk group was significantly more likely to be diagnosed with T2DM after donation (high-risk versus low-risk, $p = 0.008$; high-risk versus control, $p < 0.001$; low-risk versus control, $p = 0.08$).

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Table 1. Post-donation development of DM, HTN, proteinuria, and status of IFG.

	Control donors (n=46)	Low-risk donors with prediabetes (n=31)	High-risk donors with prediabetes (n=16)	p-value
New-onset T2DM	**0 (0.0%)**	**2 (6.5%)**	**5 (31.3%)***	**<0.001****
New-onset HTN	2/45 (4.4%)	3/30 (10.0%)	1/13 (7.7%)	0.519**
Post-donation microproteinuria	3/41 (7.3%)	3/29 (10.3%)	0/16 (0.0%)	0.478**
New-onset IFG	**6/43 (14.0%)**	**20/31 (64.5%)**	**16/16 (100.0%)**	**<0.001**
IFG conversion to normal FPG		**4/7 (57.1%)**	**0/16 (100.0%)**	**<0.02****
New-onset IFG	**6/43 (14.0%)**	**16/24 (66.7%)**		**<0.001**

* The high-risk group was more likely to be diagnosed with T2DM after donation compared to the low-risk and control groups.

** The analysis was performed by Fisher's Exact Test.

FPG=fasting plasma glucose; HTN=hypertension; IFG=impaired fasting plasma glucose; T2DM=type 2 diabetes mellitus;

Conclusion: Donors with prediabetes are not at an increased risk during the immediate post-donation period. HbA1c in conjunction with FPG can stratify the risk of being diagnosed asT2DM during follow-up in prediabetic donors.

BOS387 EFFECT OF INTRAVENOUS FERRIC CARBOXYMALTOSE ON HEMOGLOBIN RESPONSE AMONG CRF PATIENTS FOLLOWING RENAL TRANSPLANTATION AT SINGLE INSTITUTION

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Background: ESRD patients are anemic due to diseased kidneys do not make enough EPO. As a result, the bone marrow makes fewer RBCs, causing anemia and when blood has fewer RBCs, it deprives the body of the oxygen. Other common cause of anemia is hemodialysis. When they receive renal transplantation, Hb levels are usually low and It is common after operation and negatively influences short and long-term outcomes. Also, HLA antibodies produced after transplantation are frequently measured in recipients, because they are strongly associated with humoral rejection and graft loss. However, antibodies can be induced by post-transplant blood transfusions rather than by the graft, casting doubts about the possible role of antibodies in a patient with graft dysfunction. So, to reduce the risk of graft dysfunction, normally blood transfusion after renal transplantation was the cause to be reluctant.
Method: To evaluate the efficacy and safety of ferric carboxymaltose to treat anemia of CRF patients after renal transplantation. Patients with a serum Hb level less than 11 g/dL after transplantation and 2 to 4 days later following renal transplantated patients are injected intravenous ferric carboxymaltose. We compared Hb changes with non-injected group after renal transplantation.
Results: There are significant difference between both groups and it is shown below.
Conclusion: Post-transplant blood transfusion can sensitize the patients which can lead to acute rejection. The results shows us the significant changes in Hb level of Ferinject injected group after renal transplantation and it is seems clear that injecting ferric carboxymaltose can solve the problems of acute rejection caused by transfusion after kidney transplantation. We conclude that injecting ferric carboxymalto did result in more rapid resolution of anemia compared with non-injected group. Ferric carboxymaltose is safe and effective in the management of post renal transplant anemia.

Table 1. Baseline demographics

Characteristic	Total	Ferinject (N=65)	Non-ferin (N=65)
Age (yr)	49.4±10.8	50.3±9.8	48.5±11.7
Sex(M/F)	83/47	42/23	41/24
Height	163.9±7.9	165±8.1	162.7±7.6
Body weight	61.3±10.6	62.7±10.3	59.9±10.9
BMI	22.7±3.1	22.9±3	22.5±3.1
Pre op Hb	11.4±1.4	11.2±1.5	11.5±1.3

BOS389 INCIDENCE OF POST-KIDNEY TRANSPLANT ERYTHROCYTOSIS AT THE NATIONAL KIDNEY AND TRANSPLANT INSTITUTE

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Background: Literature on the incidence as well as predisposing factors and treatment of post-transplant erythrocytosis (PTE) are present but mostly on Caucasian population. No study has yet been done to investigate PTE in Filipino kidney transplant (KT) recipients.
*Objectives:*To determine the incidence of PTE and describe the clinical profile of Filipino KT recipients who had PTE.
Methods: There were 415 patients, aged ≥ 19 years old, who underwent KT from January 1, 2013 to December 31, 2014 at National Kidney and Transplant Institute (NKTI). PTE was diagnosed as hemoglobin ≥ 17 gm/dl and/or hematocrit levels ≥ 51%. Patients were followed-up from time of KT to 36 months post-KT, noting the onset of PTE, treatment given and response to treatment. Results were presented using mean and standard deviation for continuous variables and percentage and frequency distribution for categorical variables.
Results: The incidence of PTE was 15.7% with mean onset at 16 months post-KT. Patients with PTE were mostly male and were significantly younger than those without (39.32 ± 13.09 vs 44.10 ± 12.82 years, *p*-value 0.005). Male gender was associated with PTE with *p*-value 0.0001. Around 89.2% had available charts for review of management: 74.1% were given treatment and 25.9% had no treatment. Simultaneous medical treatment with phlebotomy had higher response rate (71.4%) compared with either medication alone (45.5%) or phlebotomy alone (33.3%).
Conclusion: The incidence of PTE is comparable with other centers and generally develops in young, male post-KT patients. Simultaneous treatment with both medication and phlebotomy are favorable.
Keywords: High hemoglobin, high hematocrit, renal transplantation, thromboembolic complication

BOS391 SUCCESSFUL RENAL TRANSPLANTATION CAN BE ASSOCIATED WITH SUBSEQUENT WEIGHT REDUCTION

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Background: Renal transplantation is the optimal treatment for suitable patients with end stage renal disease (ESRD). However there is variation on the definition of 'suitable'. Surgical outcomes on patients with elevated body mass index (BMI) is associated with higher morbidity and mortality. In addition to wound infection and dehiscence, there is concern regarding weight gain if the early renal transplant period is successfully negotiated.

Weight reduction particularly for dialysis dependent patients is challenging and the risks associated with non-transplantation in terms of survival are notable. We reviewed the outcomes of renal transplantation in morbidly obese recipients in our region.
Methods: The records of all consecutive renal transplant recipients in this region from 01 January 2015 until 31 December 2018 were interrogated. Recipients with a BMI of > 40 kg/m2 were identified. Data were extracted from NI Renal Transplant Database and Electronic Care Record.
Results: There were 484 transplants in the study period, of whom 13 (2.7%) were in 12 recipients with a BMI > 40 kg/m2 (mean 42.5 kg/m2). There were 11 (85%) men. The mean age was 50 years, all bar 2 patients (38 yr. and 60 yr.) were 40–59 yr. One recipient was transplanted twice in the study period, it was the first transplant for all other recipients, except one for whom it was the fourth.

There was one early graft failure, due to vascular injury, and this patient was successfully transplanted 13 months later. One patient had a sudden cardiac death 5 weeks after an unremarkable transplant. All others are well with self-supporting renal function.

The majority patients have lost weight since transplantation (Table 1).
Conclusion: Successful renal transplantation in carefully selected morbidly obese individuals is possible. Freedom from the physical and time constraints of dialysis, contribute to a substantialreduction in weight after transplantation in many.

Transplant BMI (kg/m^2)	Weight change since transplant	Current BMI (kg/m^2)	Current creatinine (μmol/l)
40	−10	37	101
40	+8	43	150
40	−7	37	122
41	−10	37	228
41	+2	42	140
41	−7	39	109
43	+12	48	89
43	−40	31	96

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Continued

Transplant BMI (kg/m^2)	Weight change since transplant	Current BMI (kg/m^2)	Current creatinine (μmol/l)
45	−21	36	209
45	+50	60	107
45	−5	43	175

BOS392 LOW INCIDENCE OF ACUTE RENAL FAILURE WITH MINIMAL PROPHYLAXIS AFTER IODINATED-CONTRAST TC IN AMBULATORY RENAL TRANSPLANT PATIENTS

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Background: Kidney transplant patients are at risk of contrast-induced nephropathy. CT scan with contrast is a very common imaging test. Our objective is to study the incidence of acute kidney injury in ambulatory kidney allograft patients who are made a CT scan with contrast, with short prophylaxis.
Methods: Retrospective longitudinal study which includes patients with kidney transplant and a CT scan with hypoosmolar contrast, made between 2014 and 2016. All of the subjects received previous prophylaxis with saline solution, at a volume of 500–1000 ml during one or two hour depending on whether they had cardiology diseases or not respectively. Kidney function was analysed 5–7 days after the imaging test was made. Acute kidney injury was defined as an elevation in creatinine levels ≥ 0.3 mg/dl within 48 hours since the contrast was administered or as an increase of 150% from baseline values in 7 days not attributable to other causes.
Results: 4 in 61 patients had contrast-induced nephropathy (6.1%). This entity was more frequent in patients who were diagnosed of renal artery stenosis (p 0.027), and in those with a higher body mass index if they were on calcineurin inhibitors (p 0.043). 4 of 4 patients recovered their kidney function to previous baseline values. There was no association between contrast-induced nephropathy and diuretics, angiotensin-converting enzyme inhibitors, angiotensin II receptor blockers or consumption or levels of calcineurin inhibitors. None of the subjects who were taking mTOR inhibitors developed this nephropathy. Also, no correlation was described in relation to ischemic heart disease, diabetes, peripheral artery disease, baseline creatinine or proteinuria.
Conclusions: With the administered prophylaxis, the incidence of hypoosmolar contrast-induced nephropathy in our population was lower than previously described (6.1%). 100% of acute kidney injuries were reversible. These results suggest that the risk

BOS393 PERSISTENT HYPERPARATHYROIDISM AFTER LIVING DONOR KIDNEY TRANSPLANTATION RISK FACTOR AND OUTCOME

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Background: Problems associated with kidney transplantation were documented and this was an essential step towards improved graft function, Post-transplant hyperparathyroidism is one of these problems which need tobe evaluated to assess the effect of different levels of intact parathyroid hormone on the outcome of kidney transplantation. We aim to assess the risk factor and outcome of persistent hyperparathyroidism after kidney transplantation.
Methods: A single center study included 80 kidney transplant recipient who underwent renal transplantation at Mansoura urology and nephrology Centrebetween January 2014 and January 2017. The patients divided into 2main groups: 43 patients with iPTH > 65 pg/dl as study group and 37 patientswith iPTH < 65 pg/dl as control group. All those recipients were evaluated retrospectively as regard incidence and risk factors for persistent hyperparathyroidism occurrence, graft function, survival and patient survival.
Results: Both groups were comparable to each other regarding patient age and gender with mean age of 25 years and higher percentage of male recipients in both groups. Maintenance immunosuppression had no statistical significance difference between both groups. Regarding pre transplant mineral and bone profile, iPTH and alkaline phosphates had statisticallysignificant difference between both groups with no statistically significantdifference regarding the level of pre transplant phosphorus and calcium.

Post-transplant mineral and bone profile showed statistically significantdifference regarding level of alkaline phosphates between two group's withno statistically significant difference regarding the level phosphorus and calcium. Percentage of acute rejection was higher in control group.

Condition at last follow up was comparable in both groups.
Conclusions: Hyperparathyroidism may be persist for years after kidney transplantation and there are a lot of risk factors that result in it as long duration of dialysis, high iPTH before transplantation

BOS395 LIVER TRANSPLANTATION FOR UREA CYCLE DISORDERS IN SAUDI ARABIA

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Introduction: Urea cycle disorders (UCDs) are a group of monogenic inborn errors of hepatic metabolism that often result in life threatening hyperammonemia. Defects in the urea cycle pathway lead to a propensity for hyperammonemia and its consequent neurological damage. Ornithine transcarbamylase (OTC) deficiency is by far the most common UCD, followed by AL (Argininosuccinic Aciduria-ASA) and AS deficiencies (Citrullinemia-CITR). Except for OTC deficiency, UCDs are autosomal recessive in inheritance. Here we analyze our outcome in liver transplantation (LT) mainly live donor liver transplant in treatment of UCDs.
Material and methods: Thirteen children (median age 41 months) underwent liver transplantation at our institution from January 1, 2011 to September 30, 2018. Of these 10 had ASA, two with citrullinemia, and there was a single patient with OTC deficiency. Twelve grafts were donated from living relatives who were heterozygous carriers for the child's disease; a single deceased donor LT was performed. 4 of 13 grafts were ABO-incompatible.
Results: Despite the absence of dietary restriction or ammonia chelation therapy, no hyperammonemic episodes or elevations in amino acid chromatography levels were noted in any LT recipients. Electron microscopy showed particular macroscopic mitochondrial features. 31% (n = 4) developed acute cellular rejection but the actuarial graft and patient survival is 100%.
Conclusions: Apart from neonatal onset of OTC deficiency which represents a clear indication for LT, in all other UCD's conditions the indication is based on the failure to maintain metabolic compensation with medical treatment. Our experience utilizing LT is very promising with excellent graft and patient survival. Utilizing heterozygotic donors appears to be a safe practice for both the recipient and donor.

BOS396 NEUROPSYCHOLOGICAL ASSESSMENT OF SYMPTOMATIC PERIPHERAL NEUROPATHY AFTER LIVER TRANSPLANTATION

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Background: Neurologic complications occur commonly in liver transplantation. Previous study reported that sensory peripheral neuropathy was the most common neurologic complication that was obersed about 30%. However, the neurophysiology and risk factors regarding to peripheral neuropathy in liver transplantation have not been well studied. We aimed to neuropsychologically evaluate symptomatic peripheral neuropathy in liver transplant patients and to demonstrate its relationships with clinical characteristics.
Methods: Patients who underwent liver transplantation between 2010 and 2016 were recruited. Neuropathy Symptom Score (NSS) was used to identify the patients who had neuropathic symptoms and to define its severity. Quantitative sensory testing (QST) was performed to evaluate the function of small sensory fibers by measuring thermal thresholds of lower extremities to warm and cold stimuli.
Results: The patients with neuropathic symptoms had significantly increased frequencies of impairment of warm detection threshold and cold detection threshold. In addition, the severity of symptoms was positively correlated with increased thermal thresholds of warm and cold. There were significantly higher prevalence upon elders, diabetes and receiving anti-HBV agents in patients with neuropathic symptoms.
Conclusion: Our results revealed that small fiber neuropathy was the main effect in liver transplant patients with neuropathic symptoms. Moreover, elder age, diabetes and anti-HBV agents were associated with the presence of clinical symptoms of peripheral neuropathy. Further studies to clarify the mechanism are warranted.

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BOS397 PRE-TRANSPLANT LOW SKELETAL MUSCLE MASS, AS A FEATURE OF CIRRHOSIS-RELATED METABOLIC DYSFUNCTION: ANY IMPACT ON GRAFT REGENERATION IN LIVING-DONOR LIVER TRANSPLANTATION (LDLT)?

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Background: The end-stage liver disease causes a metabolic dysfunction whose most prominent clinical feature is the loss of skeletal muscle mass (SMM). In living donor liver transplantation (LDLT), the liver graft regeneration (GR) represents a crucial process to normalize the portal hypertension and to meet the metabolic demand of the recipient. Limited data are available on the correlation between pre-LDLT low SMM and GR.
Methods: Retrospective study on a cohort of 106 LDLT patients receiving an extended left liver lobe graft. The skeletal muscle index at L3 level (SMI) was used for muscle mass measurement, and the recommended cut-off values of the Japanese Society of Hepatology guidelines were used as criteria for defining low muscularity. GR was evaluated as rate of volume increase at 1 month post-LT (GRR)
Results: The median GRR at 1 month post-LT was 91%[65%-128%] and a significant correlation with graft volume-to-recipient standard liver volume ratio (GV/SLV) (rho -0.467, $p < 0.001$), graft-to-recipient weight ratio (GRWR) (rho -0.414, $p < 0.001$), donor age (rho -0.306, p 0.001), 1 month post-LT cholisterase serum levels (rho 0.397, $p = 0.002$) and low muscularity (absent vs present GRR 0.975 [0.730–1.300] vs 0.835 [0.452–1.109]) was noted. Moreover in male recipients, but not in women, it was shown a direct correlation with SMI (rho 0.352, p 0.020) and inverse correlation with 1 month SMI variation (rho -0.301, p 0.049). A low GRR was identified as an independent prognostic factor for recipient overall survival (HR 6.045, $p < 0.001$).
Conclusions: Additionally to the hemodynamic factors of portal circulation and the quality of the graft, the metabolic status of the recipients has a significant role in the GR process. A pre-LT low SMM is associated with impaired GRR and this negative impact is more evident in male recipients.

BOS398 CENTRAL DIABETES INSIPIDUS UNMASKED AFTER KIDNEY TRANSPLANT: A CASE REPORT

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Patients who undergo pituitary surgery are prone to develop Central Diabetes Insipidus (CDI) post-operatively on top of other expected hormonal deficiencies. CDI is characterized by decrease in release of antidiuretic hormone (ADH) and present clinically with polyuria, nocturia and polydipsia. However in patients with End Stage Renal Disease (ESRD) and on maintenance dialysis, CDI may be masked. To the best of our knowledge, there have only been 4 previous published study with regards unmasking of CDI post-kidney transplantation.

Here we report a case of a 62-year-old male with history of resection of a pituitary macroadenoma and ESRD secondary to Diabetic Nephropathy on maintenance dialysis admitted for living non-related kidney transplantation. Pre-transplantation, he was on maintenance desmopressin for CDI but when we developed ESRD, CDI was masked. His kidney transplant was uneventful.

Post-transplantation, he developed polyuria, increasing serum sodium levels, borderline high serum osmolality and low urine osmolality. In lieu of measuring plasma ADH levels, fluid restriction was done which resulted to increase sodium levels. A diagnosis of Diabetes Insipidus was made. He was started on oral desmopressin with noted improvement of symptoms. He was eventually discharged improved. On succeeding outpatient consults, patient's daily urine output exceeded to 4L/day and his dose of desmopressin was increased to 100mcg twice daily. He remained clinically stable with average daily urine output of 3L/day, normal sodium levels and good renal allograft function.

Successful kidney transplantation leads to unmasking of pre-existing CDI, which when missed may lead to rapid dehydration and hypernatremia. This can be prevented by prompt institution of desmopressin therapy.

BOS27 – ORGAN DONATION AND ALLOCATION: CHALLENGING AND INNOVATIVE PARADIGMS

BOS401 FIRST COMPREHENSIVE STUDY IN SPAIN ABOUT KNOWLEDGE AND ATTITUDES OF THE PUBLIC TOWARDS SEVERAL ASPECTS OF THE CONSENT SYSTEM FOR ORGAN PROCUREMENT

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Background: In the last decades, only two studies have explored the attitudes of the Spanish population towards the model of consent for organ donation. Both concluded that 75% of respondents were against the presumed consent law. This year, we conducted a more comprehensive and detailed survey of public knowledge and attitudes towards several aspects of the Spanish Model of organ donation.
Methods: The study involved 812 adults aged 16 + , representative of the population of the region of Andalucía, stratified by age, sex, geographical location, and other variables. The study was conducted in the winter of 2018–19, both online and by phone. The survey included questions regarding knowledge and attitudes towards the system of consent in place, the role of the family, organ allocation, financial incentives, AND trust in the transplant system.
Results: Our results show that 71% of respondents do not know the model of consent and 35% is not aware that families are allowed to witness the deceased preferences regarding organ procurement. They have mixed feelings regarding opt-in and opt-out models and a majority supports family involvement as witness or surrogate of deceased' preferences regarding organ procurement. A majority rejects family financial incentives, and express confidence in both the Spanish health system (82%) and the transplant systems (93%). Sixty percent believe it is transparent, and 42% believe it is unjust. A majority of them believe that donating is a duty (78%).
Conclusion: The transplant system relies on public trust and willingness to donate. Spain is the world leader in organ donation, but the attitudes of the population are little known. This study shows that strong positive attitudes towards donation and the transplant system could have a role in the success of the Spanish Model of organ donation.

BOS402 REQUIRED TIME INTERVAL TO DECIDE ORGAN DONATION BY THE CAUSE OF BRAIN DEATH AND CONSENTER

Gyoungsu Kim, Minhwa Kim, Chunhee Bok, Jeonglim Lee, Wonhyun Cho
KODA

Background: The main cause of brain death changed from cerebrovascular disease and head trauma to various origin of anoxic brain injury recently. Because of this, the time duration requested for decision of organ donation is also changed. Family interview which is very important to get a success consent should be done on time and so we need to modify the approaching process to donor family. In order to identify right time for family contact, we reviewed and analyzed time interval between reporting call from hospital and family consent for organ donation.
Methods: We reviewed 1,875 cases of actual brain death donors who were managed in Korea Organ Donation Agency between January 2015 through July 2018. Causes of brain death, consenter, time interval between onset date of brain death and consent of donation were reviewed retrospectively.
Results: Among the cause of brain death, cerebrovascular disease was most common in 992 (52.9%), and followed by head trauma (622, 33.2%) and anoxic brain injury including suicide (261, 13.9%). The consent of organ donation was done by spouse in 784(41.8%), followed by parents in 526(28.1%), children in 375(20.0%) and siblings in 175(9.3%). The interval between onset of brain death and time of consent were 12.1 ± 49.1 days in cerebrovascular disease group, 9.1 ± 25.3 days in head trauma group and 6.5 ± 7.4 days in brain anoxia by hanging. According to the consenter of donation, parents group took longest (14.0 ± 65.0 days) and followed by spouse(9.5 ± 22.9 days), children (8.3 ± 20.6 days) but related family and sibling were 7.4 ± 5.4 days and 7.2 ± 9.7 days respectively.
Conclusion: Because of shorter time interval until consent of organ donation in suicide group, we need to ask attending physician to allow to contact family more early point than the other brain death group. And also, if the donation consent is decided by parent, we have to change approaching policy to the family because they need more time to decide the the donation.

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BOS403 KNOWLEDGE TRANSFER AND LEADERSHIP IN ORGAN DONATION FROM EUROPE TO CHINA: KETLOD

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Introduction: KeTLOD is an "Erasmus+ project that promoted development and implementation of a postgraduate program in organ donation (OD) in accordance with European (EU)Space for Higher Education guidelines. KeTLOD program, customized to the needs of Chinese healthcare professionals was implemented in 7 Chinese Universities(CU). The learning strategy was developed in collaboration with 3 EU Universities.
Methods: Project evaluation was performed on 3 levels: Donation Diagnosis (DD), Training and Quality. DD was done following different adapted questionnaire methodologies and conducted in 3 parts: Donation activity, Existing & Specific training needs and Online feasibility &University requirements. Training consisted in two stages: Train the Trainers (TxT) a blended program addressed to future Chinese trainers. and the 1-year postgraduate program (PP) of 25 ECTS credits.The program employs blended learning methodology (seminars, online training (OT) and traineeships). Pre- and post-training tests, self-assessing activities, and traineeship activity charts were used to evaluate the students. To assess the program, qualitative and quantitative tools questionnaires, rubrics and interviews were employed.
Results: DD showed a lack of academic training in the beneficiary Chinese universities. TxT was completed by 22 Chinese trainers. The training program was evaluated with 4.95 and its applicability to their job with 4.90 (scale 1-poor;5- excellent).144 participants selected on specific criteria from the 7 Chinese universities followed the PP successfully completed by 64%. 21 local seminars were performed. The OT structured in 7 topics on OD were successfully completed by 80% of the students and international seminars by 72% of the students. Simultaneously to the OT, students' traineeships and dissertations research were finalized.
Conclusions: KeTLOD established an academic training in OD in 7 CU, following EU models and in compliance with EU Space for Higher Education.

BOS404 ORGAN DONATION INNOVATIVE STRATEGIES FOR SOUTHEAST ASIA: ODISSEA

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Introduction: ODISSeA-Organ Donation Innovative Strategies for Southeast Asia is an Erasmus+ project funded by European Commission. The main objective is to design & implement an academic postgraduate program on organ donation (OD) in 8 Southeast Asian (SeA) universities from Malaysia, Myanmar, Philippines & Thailand and 3 EU universities

Asia has the lowest rate of organ transplantation & highest growth rate of people entering chronic & end-stage organ failure. In 2017, the number of deceased donors per million population was 1,10 in Malaysia, 0.1 in Philippines, and 4.27 in Thailand, while Myanmar has not a deceased donation program

ODISSeA feeds from previous EU projects of postgraduate programs in OD: EMPODaT-European-Mediterranean Postgraduate Program on Organ Donation and Transplantation, KeTLOD-Knowledge transfer and leadership in Organ Donation from Europe to China
Methods: Firstly, a diagnosis is conducted through questionnaires to target groups to assess existing training programs in OD, digital literacy & access, attitude towards OD

It will be followed by a Train the Trainers program (online & face to face) to future SeA trainers (5 faculty per institution). SeA & EU experts will implement the postgraduate program (35 participants per institution) of 750 hours. It employs blended methodology (online, local & international training, informative events, on-the-job projects). Pre & post-training questionnaires, self-assessment will evaluate students
Results: The postgraduate academic program will provide a framework for SeA Universities to develop a student-centered lifelong learning strategy in highly specialized knowledge in OD, in accordance with the European Space for Higher Education. Upon completion a diploma accredited by SeA universities will be issued
Conclusion: ODISSeA is an innovative initiative to establish recognized academic training in OD in SeA universities, following best practices from previous educational projects in OD & successful EU models

BOS405 BIG DATA-DRIVEN: CHARACTERIZING MEDIA CONTENTS AND MEDIA EFFECTS OF ORGAN DONATION ON A SOCIAL MEDIA PLATFORM

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Background: The lack of organ has become a barrier for the development of organ transplantation program. Media campaigns on the social media platform have the potential to promote organ donation (OD). This study aims to analyze media posts using big data-driven technology regarding OD on Weibo, a social media platform in China, and to identify the media themes that are most advantageous in promoting the public's OD awareness and intentions.
Methods: Based on 16 million social media users' posts randomly extracted from January 1, 2017, to December 31, 2017, 1507 media posts relevant to OD were included. Themes of the media posts were identified, and their effects in promoting public awareness toward OD were measured by the number of reposts and comments they induced. The themes' impact on OD attitudes were gauged by the support and intention for OD expressed in the comments.
Results: Five major themes were identified from the media posts about OD, among which the theme of OD behaviors constituted the highest proportion (41.13%). However, themes of statistical descriptions of OD and meaningfulness of donation were most influential in promoting OD awareness: approximately 3 out of 10 commenters for the former theme and 2 out of 10 commenters for the latter expressed intention to be organ donors. These two themes, along with meaningfulness of OD for society, a sub-theme of meaningfulness of donation, were the most effective for evoking donation supports and intentions.
Conclusion: A discrepancy was revealed between the media themes that were the most salient on the media agenda and the themes that were most effective in elevating OD awareness and intentions on the social media platform. These findings provide guidance for organ-donation campaigns. The analysis also suggested the potential of media campaigns on social media platform for promoting health behaviors and highlighted the importance of strategic message design in fulfilling this purpose.

BOS406 "OUT OF HOSPITAL" DONORS WITH SUDDEN CARDIAC ARREST: FIRST RUSSIAN'S EXPERIENCE

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Introduction: The use of extracorporeal membrane oxygenation (ECMO) into the cardiopulmonary resuscitation (CPR) complex (ECMO-CPR) is one of the ways to rescue one's life. If that method was widely accepted, the possibility of donation would be possible in all cases when death is declared.
Materials and Methods: A total of 36 patients with unrestored cardiac rhythm and continuing mCPR (on Lucas 2) admitted to the University Clinic since April 2018. The decision to use ECMO-CPR or ECMO for organ preservation (ECMO-OP) was made by ECMO team's duty doctor after extended diagnostics (angiography, CT, ultrasound, ECG, etc.). Special attention was paid to in-house protocol's inclusion and exclusion criteria compliance.
Results: A number of 18 patients were included in the protocol after a declaration of death. We performed femoral vessels cannulation followed by ECMO-OP made after 20 min of a no-touch period. 11 donors were excluded because of technical problems, an incidence of bleeding and oxygenator thrombosis. The median age of donors was 48.3 $\pm$ 4.5 years. 4 out of 7 donors were excluded due to inadequate perfusion, serology and histology related reasons. Interestingly, in 2 cases brain death was diagnosed in patients with a restored rhythm. As a result, 10 KTx and 2 LTx were performed with good outcomes.
Conclusions: The anoxic perfusion can be done to reduce the "no touch" period as in the "apnea test". Transcutaneous access for ECMO donor organs resuscitation is more ethically acceptable and can also help to avoid technical problems during the perfusion procedure. Brain death criteria can be incorporated into the ECMO protocol whenever indicated.

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BOS407 BODY AND MIND: PSYCHO-SOCIAL CONDITION OF PATIENTS WITH END STAGE LIVER DISEASE ON WAITING LIST – A PILOT STUDY

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Background: Preoperative psychosocial factors of recipients affect quality of life and also the success of liver transplantation. The aim of this cross-sectional study was to assess the psychosocial status of patients on waiting list for liver transplantation.
Methods: 36 female and 22 male recipients on waiting list were evaluated by Short-form 36 Questionnaire (SF-36), short form of Beck Depression Inventory (rBDI), State-Trait Anxiety Inventory (STAI-S, STAI-T), Caldwell Social Support Dimension Scale (CSDS), Athens Insomnia Scale (AIS) and personality dimension determined by Eysenck Personality Questionnaire (EPQ) in relation with demographic data and severity of liver disease (Model for End-Stage Liver Disease, MELD). Data was analysed with SPSS 20.0.
Results: Clinical depression is suspected in 28%. Male recipients had higher depression and anxiety, while female recipients had higher depression compared to population: rBDI: ♂7.1/16.9-♀8.5/12.7; STAI-T: ♂38.4/44.7-♀42.6/44.8; STAI-S: ♂40.9/43.9-♀45.4/42.6. This risk was not influenced by MELD and time on waiting list, but it was predisposed by elderly age (rBDI: OR:0.256, $p = 0.052$; STAI-T: OR:0.295, $p = 0.025$), introverted and emotionally unstable patients (rBDI: OR:-0.417/0.705; STAI-T: OR:-0.503/0.843; STAI-S: OR:-0.370/0.737; $p < 0.01$), limiting social relationship with CSDS (rBDI: OR:-0.34; STAI-T: OR:-0.300; $p < 0.05$) and hospitalization (rBDI: OR:0.289; STAI-T: OR:0.312; $p < 0.05$). The presence of sleep disturbance (27.6%) increased the incidence of depression and anxiety (rBDI: 28.1/9.1; STAI-T: 54.7/40.9; STAI-S: 49.6/40.7; $p < 0.01$) with a confirmed decreased quality of life ($p < 0.05$).
Conclusion: Anxiety and depression are underdiagnosed in patients with end stage liver disease. Early recognition of the risk factors such as male, introverted and emotionally less stable personality traits, preoperative hospitalization and low level of social support are an indication psychotherapy on waiting list.

BOS408 THE VIEWS OF NURSES IN ICU AND NEPHROLOGY DEPARTMENT AS CATALYSTS FOR TRANSPLANTATION

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Background: According to existing knowledge, this is the first study conducted in Cyprus with the above-mentioned research question and the second study conducted internationally following the study by the Forsberg et al. (2016).
Method/Material: A crossover – interventional study of 295 nurses working in Intensive Care Units and Nephrology (haemodialysis) units in Cyprus and Greece was carried out. The tool used to collect the data is Flodén Attitudes Toward Organ Donor Advocacy Instrument (ATODAI) (Forsberg et al. 2016) for the views and attitudes of nurses as catalysts for transplants.
Results: Nurses in Cyprus (22.9%) participated often in taking care of patients with destructive brain damage who were mechanically supported by the circulatory and respiratory system ($p = 0.015$). On the contrary, nurses in Greece have participated more often in the approach of the potential organ donation family for donation in cooperation with the National Transplant Organization (6.8%).In addition, nurses from Greece (39.8%) were more positive in post-death organ donation compared to nurses from Cyprus (24%).
Conclusion: In the present study, it was found that nurses in Cyprus often had taken care of patients with destructive brain damage most of the time who were in mechanical support of the circulatory system, while nurses in Greece had participated more often in approaching the approach of the potential organ donation family for donation in cooperation with the National Transplant Organization. In addition, it emerged that nurses in Cyprus felt more uncomfortable when dealing with patients with destructive brain damage who were in mechanical support of the circulatory and respiratory system while nurses in Greece felt more comfortable or very comfortable when approaching the potential donor family for donation organs in collaboration with the National Transplantation Agency.
Keywords: ICU, nephrology, nurses, attitudes, views

BOS409 THE DONOR ACTION PROGRAM IN THE EMILIA-ROMAGNA REGION FROM 1998 TO 2018: RESULTS

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Introduction: To establish high quality levels in organ donation, the Emilia-Romagna region (ERR), a northern Italy region of 4,448,841 inhabitants, has supported the "Donor Action" program (DA) since 1998. The question was: are all brain deaths diagnosed, reported and assessed?
Methods: The program started in July 1998 in 28 ERR Intensive Care Units (ICUs, 253 beds in all), 7 belonging to hospitals with neurosurgical departments (81 beds in all).
DA analyzes potential donor identification by reviewing the records of deceased patients. This is done by transplant hospital coordinators utilizing a regional computer network, then data are collected and analysed by the ER Transplant Reference Centre.
Results: Over the years the total deaths in ICUSs (649 vs 1874), but the percentage of severe brain damage decreased (43.9% vs 23.9%). In spite of this, the number of brain death assessments increased (86 vs 241), such as organ donors. Organ donors increased from 24.1 per million population (*p.*m.*p.*) to 29.0 *p.*m.*p.* with a consequent rise in transplantation activity.
Refusals keep on representing a big issue (31.4%).
Conclusion: These data show that in ERR, DA contributed to improving the efficiency of the regional transplantation system.

BOS411 THE ATTITUDE OF HIGH SCHOOL STUDENTS ABOUT ORGAN DONATION AND TRANSPLANTATION

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Transplant Agency

Background: The Transplant Agency is making sustainable efforts to introduce the issue of donation and transplantation in the high school curricula. It is well known, that when a family member must decide regarding organ donation, the knowledge of the deceased's intention influences the decision. The aim of this study was to determine the attitude of high school students about this subject and to assess their level of knowledge.
Methods: Two hundred eight students, aged 14 – 19 years, from four urban high schools were surveyed before and after a set of formal presentations regarding organ donation and tranbsplantation. The questionnaires regarding their opinions on organ donation, types of transplantations performed in the country and willingness to receive more information were completed before and after presentations. Participation in the study was voluntary and without any form of compensation.
Informed consent was obtained from all participants.
Results: The results indicate changes in relation to participants' knowledge regarding organ donation at baseline (59.15%) and follow-up (67.7%). 64% of children aged 14–16 years were willing to accept donation, compared to 74.7% aged 17–19 years. Around 75% of the respondents from both age groups were willing to receive more information regarding the subject of organ donation and transplantation.
Conclusion: The results provide support for the introduction of a programme that helps inform high school students about important aspects of organ donation.High school children has insufficient information regarding organ donation and transplantation.

BOS413 WHAT DO PRIMARY SCHOOL CHILDREN REALLY THINK ABOUT ORGAN DONATION AND TRANSPLANTATION (ODT)? RESULTS OF A FOCUS GROUP STUDY

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Introduction: 'Taking organ transplantation to 2020' includes education to improve the willingness to donate. We previously reported that educating primary school children successfully led to discussions of ODT with their family and peers. We subsequently sought to understand the views of primary school children on this topic via focus groups.
Method: Three workshops were conducted by a team consisting of a consultant transplant surgeon, 2 junior doctors and 2 transplant recipients at 2 primary schools in north London. Only year 5 and 6 primary school students were included. 4 weeks after the workshop, students that attended were invited to participate in a focus group where 6 activities were conducted to investigate the following themes; barriers to OD, their understanding and emotions towards OD, their preferred way about learning about OD, dealing with death and acculturation of BAME students.
Results: A total of 30 students took part across 3 focus groups. The median age was 11 years old (range 9 – 11), 12 males (40%), 16 white (53%), 8 south asian (27%), 3 black (10%) and 3 others (10%). Data analysis reveals overwhelmingly positive reactions to the workshop. The top barrier to ODT was

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identified as religion followed by fear. Feelings of sadness but also happiness of helping give life to someone else via OD were discussed. Students felt that learning about OD via movies or video games was more effective. Interestingly, not one student felt uncomfortable talking about death and their understanding of death were realistic and appropriate. BAME students had also acculturated well into the UK.
Conclusion: This qualitative study describes the views, emotions and understanding of primary school children towards ODT. Education of ODT should be done from a young age to maximise success of behavioural change towards ODT and this becomes relevant as opt-out legislation progresses in the UK.

BOS414 PREFERENCES FOR PATIENT INVOLVEMENT IN TRANSPLANT RESEARCH – A COMPARATIVE CROSS-SECTIONAL STUDY IN PATIENTS AND HEALTH CARE PROFESSIONALS IN THE SWISS TRANSPLANT COHORT STUDY

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Background: Patient and public involvement in research has emerged as a cornerstone of an effective research infrastructure to enhance research quality and relevance. The aim of this study was to assess and compare preferences of solid organ transplant (Tx) patients and health care professionals in view of Tx patients' involvement in the five phases of the research process.
Methods: Using a comparative cross-sectional study nested in the Swiss Transplant Cohort Study (STCS) we surveyed 292 adult Tx patients and 175 Tx professionals (i.e., STCS members, Tx clinicians, researchers). Participants rated five questions assessing the perceived importance of patient involvement in each phase of the research process on a scale from 0 to 9 (not at all important to very important). Using scores ?7 to indicate importance, a Chi-square test was used to compare the two groups.
Results: Figure 1 shows the perceived importance of patient involvement in the five phases of the research process for both groups. The importance of patient involvement was similar in both groups in view of

BOS415 MANAGING QUALITY OF CLINICAL NURSING TRANSPLANT CARE IN TURBULANT TIMES

Ingrid Castellanos-Bolt
UMCG

Background: Providing care to transplant patients is challenging due to the complexity of the medical and nursing care required. An experienced and well-informed nursing team is a prerequisite for maintaining quality of care. However, the turnover in nursing staff at our ward is about 18% each year. Although the team is now mostly young, eager and dynamic, it is also inexperienced. Consequently, senior nurses experienced a high workload because they had to take care of the complex patients and support and instruct the junior nurses. Junior nurses were uncertain about their ability to provide care to transplant patients. In this presentation, we want to discuss how we tried to manage this situation in order to maintain quality of care.
Method: A taskforce, comprised of 4 nurses and a head nurse, developed an action plan in which interventions aimed at upgrading the quality of care at transplant patients were presented.
Results: To improve the quality of care we intervened on two aspects: 1) the organization of care and 2)education. We began to organize care by working in couples of nurses instead of individual nursing care. In addition, a senior nurse, who was exempted from patient care supported the nurses and provided bedside teaching when needed. All nurses received personal coaching from a nurse trained in transplant nursing care. All nurses were trained in "Basics of Transplantation Care". Weekly meetings were held in which case study discussions with respect to medical, physical, psychological, social or ethical issues took place. As a result of these interventions, the junior nurses felt more secure and better able to provide care to transplant patients.
Conclusion: By giving all nurses the opportunity to reorganize their own work processes, supporting them on the job and providing them with tailored education, we were able to create a safe working environment, meet the needs of our junior nurses and maintain the quality of care for transplant patients.

BOS416 DIFFERENCES IN PERCEIVED BARRIERS/MOTIVATORS OF PHYSICAL EXERCISE BETWEEN ACTIVE AND SEDENTARY SOLID ORGAN TRANSPLANT PATIENTS

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Introduction: Physical exercise can improve long-term outcomes in transplantation. We compared barriers and motivators for physical exercise between active transplant (Tx) patients participating in a structured exercise program 'Transplantoux' (hikers and bikers) and a matched, more sedentary, control group of Tx patients.
Methods: This was a cross-sectional comparative study, nested within a quasi-experimental design. We included a convenience sample of adult Tx recipients participating in Transplantoux (N = 35 cycling, N = 13 hiking) and matched controls not participating (N = 118; matched on organ, age, gender and time post-Tx) at the end of the main study's 12-months data collection period. Patients scored the "Barriers and Motivators Questionnaire" (31 barriers & 23 motivators; 4-point self-report scale: 'not at all' to 'very much'). Average total scores of each subscale (ranging from 1 to 4) were compared among study groups using ANOVA. Individual barriers and motivators were rank ordered by study group.
Results: Average total barriers scores were higher in controls (1.5 ± 0.4) than in bikers (1.1 ± 0.1; $p < .0001$) and hikers (1.2 ± 0.1; $p < .0001$). Motivators were lower in controls (2.4 ± 0.6) than in bikers (2.8 ± 0.6; $p < .0001$) and hikers (2.7 ± 0.5; $p < .0001$). The highest ranked barriers were identical for hikers and bikers (1: bad weather, 2: lack of time, 3: too fatigued & and 4: lack of motivation), but differed from the more sedentary control patients (1: unpleasant sensations associated with exercise, 2: too fatigued, 3: lack of motivation & 4: preferring to do other things). Rankings of motivators were more similar, with 'feeling healthy' and 'enjoying how exercise feels' being the first ranked items by all three groups.
Conclusion: Insights in barrier and motivator profiles provides a basis for developing targeted physical exercise interventions tailored to patients with active or more sedentary lifestyle.

BOS28 – LUNG TRANSPLANTATION

BOS417 RENAL FAILURE INCIDENCE POST SEQUENTIAL BILATERAL LUNG TRANSPLANTATION

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Queen Elizabeth Hospital

Background: Acute renal dysfunction post lung transplant is one of the morbidities encountered that will impact the outcome and costs of both hospitalisation and community care.

This study aims to identify association factors with renal dysfunction post lung transplantation in our department.
Methods: This is a retrospective study analysing 51 cases of sequential bilateral lung transplant over the last 3 years. As primary variables we analysed pre and post-operative eGFR, ischaemic time, bypass time, intra/post-operative blood products, inotropic support peri – operatively, CVVH required, haemodialysis on discharge, duration of postoperative ventilation, length of stay in intensive care unit, return to theatre.

Secondary variables analysed were bilateral lung transplant, and comorbidities.
Results: There were 29 patients who developed post-operative renal impairment, (57%) out of which 18 patients required CVVH within the first week of ITU stay. Out of these patients, there were 7 patients who were discharge to the ward on haemodialysis.

Out of the 29 patients who developed post-operative renal impairment (eGFR < 60), only 4 patient had pre-operative renal impairment (eGFR < 60).

Out of the 7 patients discharged to the ward on dialysis, 6 patients required post-operative inotropes, only one pre-operative inotropes and 6 patients required intra-operative blood products.

18 patients requiring CVVH post-transplant had a median bypass time of 300 mins and an ischaemic time of 350 mins.

Out of the 18 CVVH patients, 17 patients required blood transfusion intra-operatively and 15 patients post-operatively.

Out of the CVVH patients 15 patients had a prolonged ventilation (>1 day).
Conclusions: A prolonged ischaemic time, as well as a prolonged operative time, mainly due to bilateral lung transplantation,

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BOS418 COMPREHENSIVE PHENOTYPIC IMMUNE MONITORING IN A PROSPECTIVE RANDOMIZED CONTROLLED TRIAL OF PROPHYLACTIC USE OF EXTRACORPOREAL PHOTOPHERESIS (ECP) IN LUNG TRANSPLANTATION

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Background: A prospective open randomized single center trial is currently being carried out to investigate the addition of prophylactic use of Extracorporeal Photopheresis (ECP) to a tacrolimus-based immunosuppressive regimen after lung transplantation (LuTx). To determine the immunomodulatory mechanisms of ECP a comprehensive phenotypic immune monitoring is performed including analysis of regulatory T cells and B cells.
Methods: To date, 29 bilateral LuTx recipients with end-stage chronic obstructive pulmonary disease (COPD) were randomized into 2 treatment arms: standard triple immunosuppressive therapy with or without additional ECP treatments (calculated sample size: 62 patients). Each patient of the ECP group received 16 ECP treatments (8 cycles on 2 consecutive days) over a period of 13 weeks, starting within 72 hours after surgery. For monitoring leukocyte subsets such as regulatory T cells (CD4 + CD25 + FoxP3 + Tregs) and B cells (CD19 + CD5-CD1d+ Bregs), polychromatic flow cytometry analysis is performed on fresh whole blood samples using validated, lyophilized monoclonal antibody panels (DuraClone). Samples were acquired before and 3 months after LuTx, when the last ECP treatment was conducted. Statistical analysis was performed using paired and unpaired t-tests.
Results: Twenty patients have reached their three-month-visit and are analyzed here. No significant difference in the frequency of Tregs ($p = 0.106$) or Bregs ($p = 0.407$) between both groups was found at baseline. At 3 months, Tregs have significantly decreased in the non-treated population ($p = 0.001$) while in the ECP-treated group no significant decline was seen ($p = 0.176$). Regarding Bregs a trend towards a post-transplant increase was found in both groups (control $p = 0.075$; ECP $p = 0.058$).
Conclusion: Preliminary data from an interim analysis of double LuTx patients receiving ECP as prophylactic treatment suggest that ECP prevents the posttransplant decline in Treg frequency seen with standard immunosuppression.

BOS419 EXTRACELLULAR VESCICLES AND LUNG TRANSPLANTATION: NEW PROSPECTIVE IN THE EVALUATION OF INJURY AND FUNCTION OF THE GRAFT

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Background: Lung transplantation (LuTX) is a consolidated surgical therapy of end-stage pulmonary failure, when maximal medical therapy fails. To assess the quality of the graft of the donor, chest x-ray, arterial gas analysis and smoking history are currently used, but often these factors do not allow a proper evaluation of the real cellular damage. In the donor, aspiration of gastric content, brain-death, or initial intensive care infections affect transplant outcome especially in the first 72 hours. Furthermore, ischemia–reperfusion lung injury (IRI) has a key role in the development of primary grafts dysfunction (PGD)
Methods and Results: The rationale of this pilot trial (15 patients) is to move from the macro clinical considerations to a micro system, getting back to the single cells that form the lung tissue. This is why we focused our attention on cell-to-cell communication, on microvesicles and exosomes (i.e.extracellular vesicles EV, release by all tissues), released into the perfusate (anterograde) and in bronchoalveolar lavage (BAL) of the graft during retrival, and thereafter in BAL at 24 hours from LuTX. We analyzed both by nanoparticle tracking analysis, whereas their surface antigens were determined by exosome-specific bead-based assays. We compared the results with lung function and major complications (lung infections, PGD, death) within 72 hours after LuTX. The results showed an heterogeneous vescicolar pattern, with a tendency to a major amount of them in BAL in case of very good recovery.
Conclusions: In lung transplantation, there is an urgent need for simple, time-sensitive, validated, and non-invasive methods to monitor the quality of the explanted lungs. The identification and the modulation of EV can be predictive of the IRI and can represent the biomarker that the thoracic surgeons are looking for to assess in advance complications associated with the quality of the graft. These are preliminary results, so further investigations are needed

BOS420 DISTAL INTESTINAL OBSTRUCTIVE SYNDROME IN LUNG TRANSPLANTED PATIENTS BECAUSE OF CYSTIC FIBROSIS

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Background: Distal intestinal obstructive syndrome (DIOS) is a common gastrointestinal complication of cystic fibrosis (CF). The essential feature of the disease is the obstruction of the aboral ileum and right colon with mucofeculent content. CF that results pulmonary involvement requires lung transplantation in order to treat respiratory failure, but it must be born in mind that DIOS may develop even in these cases. Our institute has got the task of abdominal organ transplantations and the surgical management of abdominal emergencies of any transplanted patient.
Methods and patients: We reviewed the treatment and prevention possibilities of DIOS based on our own surgical experiences and literature data.

Between January 2015 and October 2018 six lung transplanted CF patients were treated with DIOS.

DIOS developed in four patients due to steroid shot treatment, and in one patient due to fluid and electrolyte imbalance. One patient has gone recently through lung transplantation and developed DIOS soon afterwards.
Results: Three patients were successfully treated non-operatively with the correction of fluid and electrolyte imbalance, as well as intravenous and oral administration of acetylcysteine, oral Gastrografin® and intravenous neostigmine methylsulfate administration.

Three patients required surgical management, such as bowel content removal from colotomy and appendicectomy, resection of the obstructed ileum with biluminal ileostomy and right hemicolectomy. Two patients required reoperation because of postoperative complications.
Conclusion: In view of available literature and of our experiences we came to the conclusion that management of patients with DIOS has to be started with aggressive conservative treatment in a multidisciplinary approach. If conservative treatment fails, surgical intervention should be performed urgently.

BOS421 IMMUNOADSORPTION FOR TREATMENT OF ANTIBODY MEDIATED REJECTION AFTER LUNG TRANSPLANTATION

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Introduction: In the last decade, antibody mediated rejection (AMR) has emerged as an important risk factor for lung allograft dysfunction and mortality. Several clinical protocols have been proposed to try to remove donor specific antibodies (DSA) and prevent their future development, including intravenous immunoglobulin (IVIG), therapeutic plasma exchange (TPE), rituximab and other. Unlike traditional TPE, immunoadsorption (IAS) is a blood-purification technique that enables the selective removal of immunoglobulins from separated plasma through high-affinity adsorbers; advantageously, IAS does not remove other plasma components such as fibrinogen and compounds of the coagulation cascade, reducing potential adverse effects.

Our centre implemented a multimodality strategy including steroids, immunoadsorbption, IVIG and Rituximab.
Methods: All adult lung transplant (LuTx) recipients receiving a diagnosis of AMR (based on 2016 ISHLT consensus definition), were considered eligible to receive this treatment: pulsed methylprednisolone (10 mg/Kg), 5 cycles of immunoadsorption, IVIG (2 g/Kg) and rituximab (375 mg/m^2). Of note, C4d staining is not currently available at our institution.
Results: Between 2016 and 2018, four patients received multimodality antibody directed therapy for AMR. Details can be found in Table 1.

2 out of the 4 patients qualified for chronic lung allograft dysfunction (CLAD) prior to protocol start (patient 1 and 3). No adverse events were registered during IAS procedures, but patient 3 suffered *transfusion related acute lung injury* while receiving IVIG. However, patient 3's death was attributed to progressive allograft failure and not to the therapy itself.
Conclusions: Following treatment, while the total number of the original DSA and the value of MFI of the originally observed DSA decreased, clinical outcomes were variable: 2 patients are experiencing long term clinical stability, but the others rapidly progressed to severe CLAD.

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PATIENT (sex, indication, age at LuTx)	TIME at AMR diagnosis (months from LuTx)	AMR Based on 2016 ISHLT consensus	DSA with respective MFI (Mean Fluorence Intensity) pre and post (after 3 months) treatment	OUTCOME, last follow up
1, Male, Cystic Fibrosis, 47 yrs	36	Clinical, possible (DSA+)	DQB1*03:01 (DQ7) – MFI pre: 22500; post: 7500. DQA1*05:05 (DQ7) – MFI pre: 22500; post: cleared	BOS 2 (stable) – 12 months from treatment
2, Male, Cystic Fibrosis, 44 yrs	18	Clinical, probable (DSA+, lung histology+)	DQB1*05:01 (DQ5) – MFI pre: 9950; post: 5500 DQB1*05:02 (DQ5) – MFI pre: 4400; post: 1500 DQA1*05:01 (DQA1) – MFI pre: 2602; post: cleared	Progressive BOS – 3 months from treatment
3, Male, Cystic Fibrosis, 23 yrs	25	Clinical, probable (DSA+, lung histology+)	DQA1*05:01 (DQ2) – MFI pre: 24000; post: 21000 DQA1*05:03 (DQ7) – MFI pre: 22000; post: 22000 DQB1*03:01 (DQ7) – MFI pre: 27000; post: 18000 DQA1*05:05 (DQ7) – MFI pre: 24000; post: 20000	Stable for 5 month, then progressive RAS, leading to death (complicated by severe kidney failure)
4, Female, Idiopathic Pulmonary Fibrosis, 56 yrs	4	Clinical, probable (DSA+, lung histology+)	DQA1*05:01 (DQ2) – MFI pre: 13800; post: 4600 DQB1*06:01 (DQ6) – MFI pre: 22400; post: 2800 DQB1*06:02 (DQ6) – MFI pre: 11200; post: 2800 DQA1*01:01 (DQ6) – MFI pre: 16800; post: 5600 DQB1*1503 (DR15) – MFI pre: 11500; post: 4600	BOS 0p (stable) – 36 months from treatment

BOS422 THE IMPACT OF POSTOPERATIVE MECHANICAL VENTILATION AND PATIENT CHARACTERISTICS ON LUNG TRANSPLANTATION OUTCOME

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Background: Primary graft dysfunction (PGD) and bronchiolitis obliterans syndrome (BOS) are major causes of mortality after Lung transplantation (Ltx) and much is still unknown regarding postoperative interventions and their effect on these outcomes after Ltx.
Aim/Purpose: To investigate the role of postoperative mechanical ventilation settings, general patient characteristics and allograft size matching in the development of PGD, BOS and survival. Thereby possibly contributing to the improvement of standardized guidelines for mechanical ventilation after Ltx.
Method: Retrospective study including all patients who underwent Ltx between September 2011 and September 2018 (n = 116). PGD and BOS were assessed according to the international society of heart- and lung-transplantation (ISHLT) criteria. Data was collected from medical records and included chest x-ray assessments, blood gas analysis, mechanical ventilator parameters and spirometry.
Results: The overall mean survival was 4.8 years (95 % CI, 4.2–5.4 years). No risk factors for PGD could be identified. A younger recipient age was associated with a higher incidence of BOS ($p = 0.027$). Male recipient gender, diagnosis, length of stay in the intensive care unit and days mechanically ventilated all had negative effects on survival. Those who received an initial positive end-expiratory pressure (PEEP) $\leq$ 5 cm H20 and/or initial low tidal had better survival ($p = 0.025$, $p = 0.004$) when ventilating according to recipient size.
Conclusion: Our results indicated that the tidal volume should match the donor and not the recipient for best outcome in survival. Furthermore, for best outcome only moderate PEEP should be applied. Monitoring the mechanical ventilation postoperative on Ltx recipients according to tidal volumes and PEEP does matter.

BOS423 UTILISATION OF HOSPITAL IN THE HOME (HITH) BY HEART AND LUNG TRANSPLANT UNITS AT AN AUSTRALIAN TERTIARY TRANSPLANT HOSPITAL

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Background: HITH provides funded acute care in the home that would otherwise need to be delivered in hospital. HITH often provides an alternative to admission to hospital or an opportunity for earlier discharge home than would otherwise be possible.

Approximately 30 heart transplants and 100 lung transplants are performed per year at our institution.
Methods: The HITH database and transplant database were analysed and patients were evaluated from 1995 to June 2018.
Results: There have been 706 OHTx since 1988 and 1237 LTx since 1989. 6.3% of HITH admissions were for OHTx and LTx patients (23,056 HITH bed days). OHTx patients – 321 admissions: mean age 55, (82% male). Mean length of stays: Hospital inpatient 14 days, HITH 16 days and total admission 30 days. 67 direct admissions to HITH (21%). HITH therapy type – Antimicrobials 169 (53%), (CMV treatment 72(43%), Sternal osteomyelitis 39 (23%) and Septicaemia 13 (8%)), Anticoagulation 95 (30%) and Wound dressings 36 (11%). There were no adverse events in 86%, relapse in 2 patients (1%) requiring further antibiotics and unplanned readmission to hospital occurred in 19 patients (6%). LTx patients – 1280 admissions: mean age 45, (57% male). Mean length of stays: Hospital inpatient 11 days, HITH 14 days and total admission 24 days. 189 direct admissions to HITH (15%). HITH therapy type – Antimicrobials 1177 (92%), (Pneumonia treatment 823 (70%), CMV treatment 140(12%), Aspergillus 35(3%) and Sternal osteomyelitis 30(2%)), Anticoagulation 74 (6%) and Wound dressings 21 (2%).There were no adverse events in 92%, unplanned readmission to hospital occurred in 134 (10%) patients. Since 2005 there has been an increase in LTx due to DCD LTx without a noticeable rise in HITH admission rates. There were no deaths at home.
Conclusion: HITH utilisation by the Heart and Lung transplant units is large, safe and effective. The numbers of patients treated on HITH is stable over time.

BOS424 EFFECTS OF TACROLIMUS ON MECHANICAL AND HUMORAL DETERMINANTS OF BRAIN DEATH-INDUCED LUNG INJURY

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Background: The mechanisms of brain death (BD)-induced lung injury remain incompletely understood, as uncertainties persist about time-course and relative importance of mechanical and humoral perturbations.
Methods: Brain death was induced by slow intracranial blood infusion in anesthetized pigs after randomization to placebo (n = 9) or to tacrolimus (n = 8 ; 0.1 mg/Kg/J) to inhibit the expression of pro-inflammatory mediators. Pulmonary artery pressure (PAP), wedged PAP (PAWP), pulmonary vascular resistance (PVR) and effective pulmonary capillary pressure (PCP) were measured 2, 4 and 6 hours after Cushing reflex. Lung tissue was sampled to determine gene expressions of cytokinesand pathologically score lung injury.
Results: Intracranial hypertension caused a transient increase in blood pressure followed, after brain death was diagnosed, by persistent increases in PAP, PCP and the venous component of PVR, while PAWP did not change.

Arterial PO2/fraction of inspired O2 (PaO2/FiO2) decreased.

Brain death was associated with an accumulation of neutrophils in lung tissue together with increased pro-inflammatory interleukin (IL)-6/IL-10 ratio. Blood expressions of IL-6 and IL-1β were also increased. Blood expressions of IL-6 and IL-1β were also increased.

Tacrolimus pre-treatment was associated with a blunting of increased PCP and PVR venous component, which returned to baseline 6 hours after BD, and partially corrected lung tissue biological perturbations. PaO2/FiO2 and lung injury score were prevented.
Conclusions: Brain death-induced lung injury may be best explained by an initial excessive increase in pulmonary capillary pressure with increased pulmonary venous resistance, and was associated with lung activation of inflammatory apoptotic processes which were partially prevented by tacrolimus.

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BOS425 CONVERSION FROM ADVAGRAF/PROGRAF TO ENVARSUS IN STABLE LUNG TRANSPLANT (LUTX) PATIENTS

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Background: The aim of the present study was to evaluate the safety of conversion from Advagraf or Prograf (Astellas Pharma) to once-daily extended-release tacrolimus (Envarsus; Chiesi) in stable adult lung transplant recipients.
Methods: The observational included 53 stable lung transplant recipients (31 m/ 22 w) with mean age of 52.9 ± 13.9 (range 21.2–73.6) years, 39 were on Prograf and 14 on Advagraf based maintenance medication. Time after LuTX were 3.6 ± 2.9 years, the underlying disease was COPD in 22, IPF in 11, Alpha 1 ATM in 7, CF in 12 and IPH in 1 case. Through blood FK levels were measured before switch (baseline) and on day 10 (± 3), day 30 (± 10), day 90 (± 10) and day 180 (± 10). Lung function, serum Creatinine, side effects were documented at each visit. Conversion was based on a 1:0.70 proportion.
Results: Creatinine values were 1.33 ± 0.41 mg/dl, Tacrolimus dose 4.5 ± 2.5 mg/day, FK level (C0) 6.7 ± 2.2 ng/ml and FEV1 2.89 ± 0.9 L before switch to Envarsus. Within the first 2 months after switch 10 patients had to be re-switched to their prior medication due to side effects.

Analyzed parameters 180 ± 10 days after switch to Envarsus (p-values: pre-switch vs. 6 months post switch): Creatinine 1.57 ± 0.95 mg/dl ($p = 0.16$), Envarsus – dose 3.0 ± 1.8 mg ($p = 0.001$), FK- level 5.5 ± 1.4 ng/dl ($p = 0.03$), FEV1 2.58 ± 0.8 L ($p = 0.15$)
Conclusion: Conversion from Advagraf/Prograf to Envarsus in stable lung transplant patients is safe and efficient; however, initially, dose adaptations and careful monitoring are required.

BOS426 IMPACT OF DONOR AGE ON LUNG TRANSPLANTATION RECIPIENTS: A MULTICENTER COHORT STUDY

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Introduction: Due to the limited donor availability, a strategy of lung transplantation from older donors has been developed to increase the donor pool. Since 2004 in our organization donors over 60 years are considered out of protocol.The aim of this study was to investigate whether there is a difference in mortality rates by lung-donor age in order to validate the use of lung donors (LD) ≥ 60 yy .
Material and Methods: This is a multicenter cohort study in which all consecutive lung recipients transplanted in transplant centres referred to the North Italy Transplant program between 2013 and 2018 were included. LD were classified as younger (< 60 years (yy)) and older (≥ 60 yy). Survival analyses were performed to evaluate mortality rates by donor age
Results: 355 subjects were transplanted from LD < 60yy and 67 from LD ≥ 60 yy (19%). Each donor is classified according to Oto score parameters. Older donors had the high Oto score ($p < 0.005$) and were transplanted in older recipients ($p < 0.005$). No differences in sex distribution (p 0.085), single vs bilateral lung transplantation and urgency status (p 0.118) were observed. Recipients transplanted from younger donors had a mortality rate of 12% (8.7–15.3), 26.0% (16.8–25.8) and 30.2% (24.7–35.7) compared to 15.3% (9.1–15.4), 41.1% (28.6–57.6) and 48.7% (35.0–62.4) of older group at 3, 24 and 36 months, respectively. The risk of mortality was similar at 3 months (Hazard ratio (HR) 1.31, (0.66–2.62) becaming significantly higher in older donors transplanted patients at 24 and 36 mm (HR 1.68 (1.07–2.62) and 1.72 (1.13–2.63), respectively). The risk became even higher after adjustment for Oto score. Furthermore, mortality was significantly influenced by recipient age with a 2–3% increased risk per year.
Conclusion: LD ≥ 60 yy seemed to be an opportunity to increase donor pool. Further analyses needed to be done to exclude any putative confounders. Any potential benefit should be considered according to recipient-donor match.

BOS428 DO THE PRETRANSPLANT USE OF STATINS IN DONORS AND RECIPIENT REDUCE THE INCIDENCE OF PRIMARY GRAFT DYSFUNCTION (PGD) AFTER LUNG TRANSPLANTATION (LT)?

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Introduction: PGD is the main cause of mortality during the first month and the second one within the first year after LT. Statins, 3-hydroxy-3-methylglutaryl coenzyme A (HMG CoA) reductase inhibitors, have shown to have immunomodulatory and antiinflamatory effects unrelated to their cholesterol-lowering function. We hypothesized that preoperative statin therapy is associated with decreased incidence of PGD after LT.
Methods: Multicentre retrospective analysis of all consecutive adult LTs performed in 5 university transplant centers between 2015 and 2017. Combined multiple organ transplantation and lung retrasplantation recipients were excluded from the analysis. Comparison between groups according to recipient previous use of statins (E+/E-) was performed. Factors associated with the development of PGD and PGD grade 3 were analyzed using Chi square and U-Mann Whitney Test.
Results: A total of 474 adult LT recipients were followed, 110 of them under statins treatment (E+=23%). LT recipients in the statin group were older (60 ± 7 vs 53 ± 12; $p < 0.05$) and had higher Body Mass Index (BMI) (26.3 ± 3.8 vs 24.8 ± 4.2;$p < 0.05$) than those in not taking statins. The rest of recipient and donor characteristics were similar between groups.

A total of 161 patients developed PGD (34%), with no differences between groups (32.2% vs 39%). However the percentage of patients with PGD grade 3 at 72 h was lower in the E+ when compared with the E- group (55.9% vs 37.2%, $p < 0.036$). After propensity score adjustments, only the need for hemoderivates transfusion during the implant (OR 4.50 IC 1.51 – 13.38 $p < 0.007$) remained significant. Recipient statin use was not identified as a protective factor (OR 0.38 CI 0.12 – 1.206, $p = 0.10$) for the development of PGD.
Conclusions: Statin use may contribute to lessen the severity of PGD in those lung recipients who develop it. Prospective and multicentric studies with larger samples are needed to confirm such results.

BOS429 WHAT HAPPENS TO FRAILTY IN THE FIRST YEAR AFTER LUNG TRANSPLANTATION?

Louise Fuller, Helen Whitford, Rebecca Robinson, Yvonne Cristiano, Ranjana Steward, Meg Poulsen, Will Shi, Greg Snell
The Alfred

Frailty is prevalent in lung transplant (LTX) candidates. Frailty can be associated with death before and after LTX, it is unclear if frailty trajectory persists for the first year. The study aimed to investigate frailty over the first year of LTX.

Method: LTX candidates aged over 18 years were consented at listing time. All post LTX recipients completed thrice weekly, 12 week exercise rehabilitation program consisting of cardiovascular training on bike and treadmill and upper and lower limb strength training. Clinical data was collected. Edmonton frail scale (EFS) was used to assess frailty. Grip strength was tested. Primary outcome was 6 minute walk distance (6MWD) measured at 4 time-points: pre LTX, pre-rehabilitation, post-rehabilitation and 1 year.
Results: Of 103 participants, 90 (87%) were transplanted. Mean age was 58 ± 11 yrs, males 48 %, 52% had primary diagnosis of COPD. Frailty scores pre LTX were mean 5.54 ± 2.4 and at 1 year mean 3.28 ± 1.5. Amongst all participants, 6WMD improved significantly over time: pre-rehabilitation (mean 326 m) compared to post-rehabilitation (mean 523 m ($p < 0.001$) and 1 year (mean 512 m, $p < 0.001$). Those who required ≥ 7 day ICU admission post LTX entered the rehabilitation program with a lower mean 6MWD (276 m vs. 350 m, $p = 0.001$), but this difference disappeared by 1 year (489 m vs. 522 m, $p = 0.24$). Those with an EFS > 8 had shorter 6MWD preLTX compared to those with EFS ≤ 8 (245 m vs. 305 m, $p = 0.085$) and similarly at pre-rehabilitation (277 m vs. 331 m, $p = 0.077$). There were no differences in 6MWD comparing EFS > 8 vs ≤ 8 post-rehabilitation (523 m vs. 520 m, $p = 0.93$) or at 1 year (497 m vs. 510 m, $p = 0.80$). Those with baseline grip strength < 25 kg had shorter 6MWD preLTX (252 m vs. 320 m, $p = 0.006$) and pre-rehabilitation (268 m vs. 354 m, $p < 0.001$), this persisted post-rehabilitation (480 m vs. 544 m, $p = 0.002$) and at 1 year (458 m vs. 537 m, $p = 0.003$).
Conclusion: Participants in a structured post-LTX rehabilitation program.

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BOS430 THE FREQUENCY OF TISSUE-RESIDENT DONOR T AND NK CELLS IN PERIPHERAL BLOOD AFTER LUNG TRANSPLANTATION IS MODULATED BY NORMOTHERMIC EX VIVO LUNG PERFUSION

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Objectives: The appearance of donor lymphocytes in recipient blood after double lung transplantation has been described decades ago. However, neither distribution of lymphocytes, nor early kinetics and clinical relevance have been addressed in detail. Therefore, we investigated phenotype and frequencies donor T and NK cell subsets within the first 24 h to 3 wk after lung transplantation and correlated them to clinical parameters.
Methods: Blood and perfusion solutions of 59 lung recipients (30 male, 29 female, median age 51) were analysed pre Tx, T0, T24 and at 3 weeks regarding T and NK cell subsets. In a subset of 20 patients with SOC and 9 preserved with portable ex vivo lung preservation (OCS), donor T and NK cells were identified in blood by staining of donor HLA epitopes combined with lineage markers. Frequencies of donor lymphocytes were correlated to cold ischemic time (CIT), primary graft dysfunction (PGD) and chronic lung allograft dysfunction (CLAD).
Results: In all lung recipients, the frequency of CD4 + and CD8 + T and NK cells was significantly increased at T0, T24 ($p = 0.04$). At 3 wk, T cells disappeared while NK cells were still detectable. Donor NK cells comprised 18.8% at T0, 17.1% at T24 and 7.8% at 3 wk ($p < 0.001$) of circulating NK cells. Frequencies were for donor CD8 + T cells 8.3%, 6.6% and 2.6%, and for CD4 + donor T cells 6.4%, 4.6% and 1.3% of the respective subset. At T0, significantly less donor NK cells were detected in recipients of OCS lungs ($p < 0.008$). No correlation between donor NK or T cell frequencies was observed for CIT or PGD. In the limited number of patients at risk, a trend towards higher early donor T cell frequencies in recipients not developing CLAD at two years after Tx was observed ($p < 0.05$).
Conclusion: Donor T and NK cells are detectable in blood of all lung recipients during the first 3 weeks after Tx and did not correlate with CIT or PGD. Portable EVLP resulted in decreased NK cell frequencies, maybe relevant for late outcome.

BOS431 THE INFLUENCE OF DURATION OF RESTRICTIVE LUNG DISEASE ON LUNG CAPACITY POST-LUNG TRANSPLANTATION

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Background: In lung transplantation (LTx), size matching of the lung is of utmost importance. We hypothesize that duration of the restrictive lung disease (RLD) impairs reversibility of the thoracic cage and thus lung function. We investigated if duration of the RLD was predictive for regaining lung capacity post-LTx.
Methods: 32 patients were transplanted between March 2013 and November 2018 for RLD in our centre. We collected body box measured (BB) TLC as percentages of predicted (BB-TLC%) pre-LTx and post-LTx. Also we studied the difference between recipient and donor predicted TLC (pTLC). The gain in BB-TLC% post-LTx was correlated with RLD duration pre-LTx. Furthermore, predicted TLC (pTLC) of the recipient was then compared to BB-TLC pre- and post-LTx. The group was divided into short and long, based on median presence of RLD > or < 5.34 years, to calculate the differences in severity pre-LTx and gain in TLC post-LTx.
Results: Median duration of RLD pre-LTx was 5.34 years. The short and long groups both received lungs with pTLC larger than their BB-TLC pre-LTx, respectively, 2.1L ± 1.1 and 1.5L ± 1.2 larger, $p = 0.17$. The short group received significantly smaller pTLC donor lungs compared to the long group (-1.2L±0.73 vs -0.44L±0.85,$p = 0.011$). The increase in TLC post-LTx for the short and the long group was respectively, 15.3% ± 12.5 vs -6.1% ± 27.1, $p = 0.03$. The BB-TLC pre-LTx or severity in the short and long group were respectively 54.4% ± 11.4 vs 68.1% ± 27.2, $p = 0.09$. Pearson's correlation coefficient between gain in BB measured TLC pre-and post-LTx compared to time of duration of RLD and LTx showed to be -,453, $p = 0.011$. Indicating a significant inverse correlation between the two. The correlation coefficient between pTLC and BB pre-LTx TLC was smaller compared to BB post-LTx TLC (0.303 vs 0.574, $p = 0.117$ vs $p = 0.003$).
Conclusion: Our results indicate that not donor size or pre-transplant restriction, but duration of restriction pre-LTx is the strongest indicator of regaining lung capacity post-LTx.

BOS432 LASER-CAPTURE MICRODISSECTION, MASS SPECTROMETRY AND HISTOLOGY IDENTIFY PROTEIN SIGNATURES IN REMODELED AIRWAYS IN THE COURSE OF BRONCHIOLITIS OBLITERANS SYNDROME AFTER LUNG TRANSPLANTATION

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About 50% of lung transplanted patients develop chronic rejection in the form of bronchiolitis obliterans syndrome (BOS) within 5 years after transplantation. The patho-anatomical correlate is progressive, fibrotic occlusion of the small airways (obliterative bronchiolitis/OB-lesion) ultimately leading to organ failure. The cause and development of this remodeling of epithelium and extracellular matrix (ECM) is currently unknown.

We hypothesize that there are ECM alterations long before the diagnosis of BOS and that the so far unknown protein content of the OB-lesion is likely to give insight into both early and late pathologic events.

By combining laser-capture microdissection (LCM), mass spectrometry (MS) and immunohistochemistry / immunofluorescence we are establishing a protein signature of the OB-lesion, and are visualizing distinct proteins in and around the pathologic lesion. We are analyzing explant material to characterize the end-stage OB-lesion as well as transbronchial biopsies within the follow-up routine after lung transplantation to capture early disease events.

An MS workflow has been established for sample preparation and data analysis to identify the protein content in the minute amount of tissue obtained by LCM from OB-lesions in 4 μm thick tissue sections. We identified distinct ECM-affiliated proteins, ECM regulators, glycoproteins, collagens and secreted factors. Some proteins were observed in all investigated OB-lesions, whereas others might be linked to certain morphological subtypes.

The analysis of early and end-stage ECM alterations in the transplanted lung, combining spatial information and advanced protein identification, provides molecular and morphological insights essential for a better understanding of the development of chronic rejection after lung transplantation.

BOS29 – KIDNEY IMMUNOSUPPRESSION-COMPLICATIONS AND CHALLENGES

BOS433 COMPARISON OF ALEMTUZUMAB AND IL2 MONOCLONAL ANTIBODY INDUCTION IN TRANSPLANT RECIPIENTS WITH LUPUS NEPHRITIS

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Introduction: Optimal post-transplant immunotherapy for patients who have received significant pre-transplant immunosuppression is not known. For patients with prior lupus nephritis (LN), the risk of rejection needs to be balanced against the prospect of malignancy and infective complications.

We compare the outcomes of a large cohort of transplant patients with prior LN who received induction with either alemtuzumab (anti-CD52) or an anti IL-2 receptor monoclonal antibody (IL2). Our centre favours IL2 in patients who previously received cyclophosphamide.
Methods: We identified 33 CD52 and 25 IL2 patients; median follow up 6.12 years. All patients received tacrolimus maintenance immunotherapy; those who received IL2 were also on mycophenolate. All infections were microbiologically proven and cancers included intra-epithelial neoplasia grades 2 and 3.
Results: Patient characteristics at the time of transplantation:were also comparable.

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	CD52 (N = 33)	IL2 (N = 25)	*p* value
Female	28 (84.8%)	19 (76.0%)	0.40
Mean age	39.6 ± 12.0	44.6 ± 10.6	0.11
Living donor	22 (66.7%)	12 (48.0%)	0.16
Pre-emptive transplant	9 (27.3%)	3 (12.0%)	0.16
Pre-transplant cyclophosphamide	8/22(36.4%)	13/17 (76.5%)	0.014
Pre-transplant malignancy	4 (12.1%)	0	0.07
MMF at time of transplant	5(13.2%)	24(96.0%)	<0.0001

There was no difference in patient [HR:0.34(0.06–2.00), $p = 0.26$] or allograft survival [HR:0.91(0.33–2.51), $p = 0.85$] between the groups. There was also no difference in rejection [HR:0.87(0.29–2.60) $p = 0.79$] and Donor Specific Antibody [HR:0.50(0.16–1.46),$p = 0.61$] free survival.

There were 6 de novo malignancies in CD52 group and 2 in the IL2 group, $p = 0.24$. There were 7 viral infection episodes (BK, CMV, EBV), with no difference between the 2 groups, HR 0.97(0.22–4.35), $p = 0.93$. Incidence of urosepsis, bacteraemia and fungal infection were also comparable.

Discussion: Despite a prior history of more potent immunosuppression, there was no difference in the clinical outcomes of LN patients receiving IL2 compared with CD52 induction, although rate of viral and malignancy complications was high in both groups.

BOS435 CRUISIN' INSTEAD OF SNOOZING? A RETROSPECTIVE COMPARISON OF SLEEP QUALITY PRE AND POST RENAL TRANSPLANT AT A SINGLE UK CENTRE

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Aims: Poor sleep quality is associated with significant detrimental effects on both quality of life and cardiovascular risk. Sleep disorders are well recognised in patients with end-stage renal failure. The impact of renal transplant on sleep habits is less well understood. The primary aim of this study was to decipher if renal transplant has any impact on recipients sleeping habits and overall quality of life.

Methods: A modified Pittsburgh Sleep Quality Index (PSQI) questionnaire was distributed to recipients transplanted within the last 12-months, enquiring about sleep quality both pre and post renal transplant. The data was processed using SPSS.

Results: The salient sleep study findings both pre and post-renal transplant from our study are summarised in the table below. Percentages and mean (+/- SD) are used unless otherwise specified.

Trends Pre-transplant		Trends Post-transplant	
Sex (M:F)	28:17	Sex (M:F)	28:17
Modal Age range (years)	51–55	Modal Age range (years)	51–55
Hours Slept (6–8 hrs modal range)	57.1%	Hours Slept (6–8 hrs modal range)	62.5%
Bedtime before midnight	82%	Bedtime before midnight	84%
Sleep Medication	7%	Sleep Medication	4%
Sleep Latency < 30 minutes	47.6%	Sleep Latency < 30 minutes	55%
Quality Of Sleep	Good – 46.3%, Adequate – 31.7%	Quality Of Sleep	Good – 47.5%, Adequate – 37.5%
Bad Sleep (Bad/V bad)	17.9%	Bad Sleep (Bad/V bad)	10%
Daytime Somnolence	11%	Daytime Somnolence	7%
Average Sleep Score (+/- SD)	6.83 (+/- 2.7)	Average sleep score (+/- SD)	6.38 (+/-2.3)

Discussion: 45 responders: 28 males and 17 females. The modal age range asked was 51–55 years. 62.5% of responders slept for 6–8 hours post renal transplant, compared to 57.1% pre-transplant. Sleep latency post renal transplant within 30 minutes improved by 8%. Adequate quality of sleep was improved post transplantation by 6%. Daytime somnolence rates were reduced by 4% amongst recipients. The average modified Pittsburgh sleep score was 6.83 (±2.7) pre-transplant and 6.38 (±2.3) post-transplant ($p = 0.55$).

Conclusion: Despite no statistically significant differences between pre and post-transplant modified Pittsburgh scores, aspects of recipients sleep are clearly improved. This would suggest that aspects of sleep are improved after renal transplant. This is despite introduction of immunosuppressive agents. Thus, further larger scale studies are required to investigate.

BOS436 ASSOCIATION BETWEEN MEMS DETECTED NONADHERENCE AND INTRA-PATIENT VARIABILITY IN TACROLIMUS CONCENTRATION AMONG KIDNEY TRANSPLANT RECIPIENTS: A POST HOC ANALYSIS OF THE PRIMA TRIAL

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Background: High intra-patient variability (IPV) in tacrolimus (Tac) exposure is a known risk factor of poor graft outcome. While non-adherence has been suggested to influence IPV, it is yet unclear how important nonadherence is in determining IPV or whether calculated IPV based on Tac levels measured during outpatient visit reflect nonadherent behavior of the patients. We have thus analyzed the association between nonadherence detected by medication event monitoring system (MEMS) and Tac IPV in renal transplant patients through a post hoc analysis of the PRIMA trial.

Methods: PRIMA was a prospective randomized trial evaluating the effectiveness of a mobile app in promoting Tac adherence in kidney recipients of > 1 year post-transplant (NCT01905514). Among the original population (n = 138), 92 patients with > 5 mo. MEMS use and ≥ 4 measured value of tacrolimus level was included. IPV were compared between the non-adherent group (defined as a taking adherence of < 98% or > 102% and/or at least 1 drug holiday) and the adherent group using two different indices of IPV – coefficient of variation (CV) and intra-individual variability (IIV).

Results: The median value of CV and IIV of the total 92 patients were 16.4 (IQR 11.3–24.9) and 13.1 (IQR 8.5–19.2). CV and IIV of nonadherent group (n = 59) were not significantly different from those of the adherent group (n = 33) (CV, median 16.5 (IQR 11.6–25.5) vs. 16.0 (IQR 11.5–23.5), $p = 0.602$; IIV, median 13.1 (IQR 8.5–19.2) vs. 12.1 (IQR 8.5–19.1), $p = 0.622$). Correlation analysis using spearman's rho also failed to find a significant correlation between the longitudinal adherence measures by MEMS and the intra-patient variability indices. (Table 1)

	CV rho	*p*-value	IIV rho	*p*-value
Taking adherence	-0.067	0.527	-0.061	0.561
Timing adherence	-0.098	0.352	-0.090	0.392
Dosing adherence	-0.113	0.284	-0.107	0.308

Conclusion: In our study population of > 1 year post-transplant, Tac IPV was not significantly associated with nonadherent behavior detected by MEMS, suggesting that IPV may have limited role in detecting nonadherence in the outpatient clinic.

BOS437 CHRONIC ALLOGRAFT FIBROSIS CAUSED BY CALCINEURIN INHIBITORS IS MEDITATED BY BAX, NOL3 AND XIAP APOPTOTIC GENES DYSREGULATION

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Introduction: Calcineurin inhibitors (CNI) remain the most effective and widely used immunosuppressive agents in organ transplantation, is a factor that limit the outcome of renal transplantation graft rejection. Nephrotoxicity in a major secondary effect. The known mechanism is hypoxia causing specific histological data as nodular hyalinosis, hyalinosis, fibrosis, thrombotic microangiopathy, and isometric tubular vacuolization.

Aim: Exploratory and descriptive study of the gene expression behavior of representative extrinsic and intrinsic apoptotic pathways in renal biopsies of 10 patients with CNIT where compare with 10 biopsies without toxicity data.

Methods: An Observational, descriptive cross sectional study was conducted. A convenience size of 20 renal biopsies samples was included from the Organ Transplant Unit of the Hospital General de México. The mRNA expression of renal tissue biopsies was analyzed using the RT2 Profiler PCR Array platform considering genes involved processes associated with renal damage, the results where compared with no CNIT biopsies

Results: Two of 10 patients presented acute renal dysfunction. In the rest of the cases the toxicity was an incidental finding in the year follow up biopsy during the histopathological analysis. The QPCR arrays showed that Bcl-2-associated X protein (BAX), Nucleolar Protein 3 (NOL3) and X-Linked Inhibitor of Apoptosis (XIAP) were consistent overexpressed only in the CNIT patients. The Mann-Whitney U test was consistent for the three evaluated genes revealed in the control group an average rank of 1.5, while the patients have three more times

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with respect the control. This result suggests that in the group of patients with CNIT BAX is activated, suggesting that apoptosis via mitochondria is turn on probably due to the arteriolar vasoconstriction and the hypoxic state.
Conclusions: We proposed that intrinsic apoptotic pathway plays a relevant role in the physiopathology of the CNIT.

BOS438 EVALUATION OF DIFFERENT APHERESIS TECHNIQUES IN ABO-INCOMPATIBLE KIDNEY TRANSPLANTATION. THE GREEK EXPERIENCE

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Introduction and Aim: ABO-incompatible(ABOi) kidney transplantation (KTx) is an established way to expand the living donor pool. A preconditioning protocol including anti-A/B antibody removal with plasmapheresis is applied to recipients before KTx. Several apheresis methods can be used. Aim of the study was to evaluate different apheresis techniques in ABOi KTx.
Methods: Between 2005 and 2018, 51 ABOi KTx were performed in our center. Three apheresis techniques were used. Double-filtration plasmapheresis (DFPP) in 11 patients, antigen-specific immunoadsorption (SIA) in 24 and antigen-unspecific immunoadsorption (UIA) in 7 patients, while 9 patients needed no plasmapheresis. During each session1–1.5 plasma volume was processed. Anti-A/B were measured using gel technique and the goal titer before KTx was ≤ 1/16.
Results: Mean recipient age was 40 years (18–69) and 69% of patients were men. The initial median A/B titer was 1/64 [1/2–1/128],1/64 [1/4–1/256],1/16 [1/4–1/128] in SIA, UIA and DFPP groups. The median number of sessions before KTx was 4.5[2–14], 6[2–11] and 4[2–8] respectively (p=NS). One serial dilution reduction per procedure was reached with all techniques. There were no major complications with any of the methods. A rebound of anti-A/B titer post-KTx occurred in two patients, who underwent 9 and 8 apheresis sessions post-Tx. In the first case, there was no clinical impact, while in the second there was sudden, unexplained rebound (titer 1/4096) and accelerated rejection with subsequent graft loss. One more patient experienced primary nonfunction without increase in anti-A/B titer. Renal function was similar (creatinine 1.47 vs 1.33 vs 1.37 mg/dl inthe SIA, UIA and DFPP group respectively).The cost of DFPP was lower compared to the other two methods.
Conclusion: Both DFFP and immunoadsorption (antigen-specific or not) are safe and comparably effective for anti-A/B removal in ABOi KTx.The choice of either technique depends on the cost and expertise of the center.

BOS439 THE IMPACT OF A CLINICAL YOUTH WORKER ON RISK OF NON-ADHERENCE AND ENGAGEMENT IN TEENAGE AND YOUNG ADULT KIDNEY TRANSPLANT RECIPIENTS

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A youth worker was appointed in November 2015 to improve clinical engagement and outcomes in teenage and young adult kidney transplant recipients (aged 16–25). There is a high rate of non-adherence in this population with published transplant failure rates of between 20–33% within 36 months of transition to adult care.

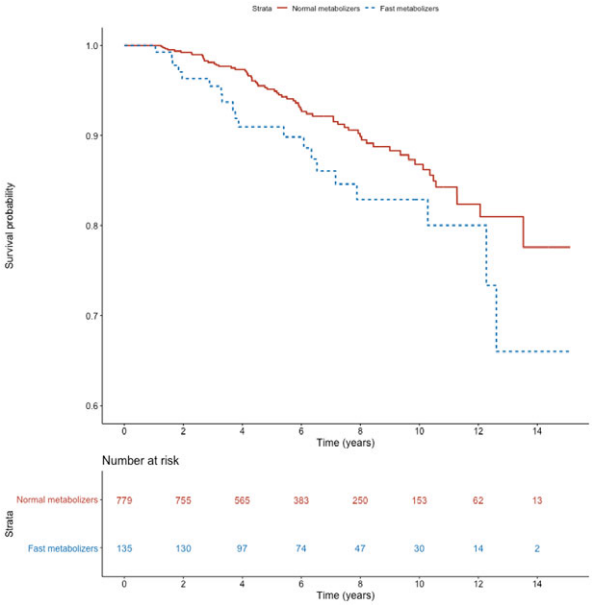
A specific risk assessment scoring system was developed and measured annually over 3 years in a cohort of 42 young adult patients. Level of support categorised as: Level 1 (Highest: immediate 1:1 support; currently non-adherent at risk of graft loss): Level 2 (Non-critical personalised regular support from youth worker); Level 3 (Low risk: in contact with young adult service (YAS); participating in peer support); Level 4 (Very low risk: seen by dedicated YAS team in standard clinics- no specialist youth worker support).
Results: Reduction of risk was documented : Level 1 (n = 14) 33% falling to (n = 1) 2%; Level 2 (n = 12) 29% initially falling to (n = 3) 7%; Level 3 (n = 10) 24% remained stable (n = 10) 24% and Level 4 (n = 6) 14% rising to (n = 26) 62% with (n = 2) 5% graduating to standard adult care over the 3 year observation period. This progressive reduction in patient risk was achieved with support from the youth worker:600 hours 40% giving level 1 support;900 hours 51% giving level 2 support;100 hours 7% giving level 3 support;33 hours 2% giving level 4 support. The youth worker support was delivered by 1,200 hours of 1–1 support;500 hours at young adult clinics;350 hours young adult social events and 100 hours of social media communication.
Conclusion: A youth worker can considerable reduce risk of patient non-engagement in a high risk teenage and young adult transplant population.

BOS440 TACROLIMUS CONCENTRATION/DOSE RATIO IS AN INDEPENDENT PREDICTOR OF DEATH-CENSORED KIDNEY ALLOGRAFT SURVIVAL

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Tacrolimus (Tac) remains the cornerstone of kidney transplantation immunosuppression. Its narrow therapeutic index demands therapeutic drug monitoring. The C/D ratio (Tac trough concentration / daily Tac dose) was shown to be associated with Tac nephrotoxicity and early acute rejection. We herein investigated the value of the C/D ratio in predicting graft survival.
Methods: We retrospectively analyzed the cohort of Tac-treated kidney transplant recipient (KTr) between 2004 and mid-2018 at Grenoble University Hospital. We computed the median C/D ratio (medCDr) over time and separated fast metabolizers (C/D ratio < 1.05) from normal or slow metabolizers (C/D ratio ³ 1.05). Using a multivariate Cox proportional hazard model, adjusting for the median C/D ratio, development of de novo Donor Specific Antibodies (dnDSA), body mass index (BMI), mean Tac trough levels and standard deviation of the Tac trough levels, we assessed whether the C/D ratio was a predictor of death-censored graft survival.
Results:

A total of 1011 KTr were included in the analysis. The mean Tac trough level was 6.65 μg/l, with an overall mean Tac dose of 3.33 mg/day. Virtually all patients received Tac+Mycophenolate, with a usual Tac trough targeted range from 5 to 8 μg/l. The mean medCDr was 2.19, ranging from 0.24 to 8.57. 141 KTr had a medCDr < 1.05. There were 92 death-censored graft losses, (23 in the fast metabolizer group). In the multivariate Cox model, the hazard ratio associated with the medCDr was 3.07 (p < .001), independently from dnDSA development (HR 2.79, p < .001) and mean Tac trough levels (HR 1.5, p < .001). Other factors were not significantly associated with KTr survival. As shown in figure 1, the survival difference reached 8% after 4 years and remained stable thereafter.
Conclusions:: Tacrolimus metabolization, as defined by the C/D ratio, independently impacts KTr death-censored graft survival.



BOS442 IMPACT OF CONVERSION FROM CYCLOSPORINE TO TACROLIMUS ON GLUCOSE METABOLISM AND CARDIOVASCULAR RISK PROFILES IN LONG-TERM STABLE KIDNEY TRANSPLANT RECIPIENTS

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Background: Compared with tacrolimus, cyclosporine increases cardiovascular risk. Furthermore, tacrolimus has a negative effect on glucose metabolism compared with cyclosporine. This study investigated the effect of the conversion from cyclosporine to tacrolimus for immunosuppressive therapy

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on glucose metabolism and cardiovascular risk profiles in long-term stable kidney transplant recipients (KTRs).
Methods: In this prospective, open-label, single arm study, 36 KTRs were enrolled. Three were excluded. Patients were evaluated for glucose metabolism and cardiovascular risk factors at baseline, 3-, and 6-months after conversion of medication. Serial changes were analyzed by repeated measures analysis of variance.
Results: The mean duration from transplantation was 12.6 ± 4.0 years and baseline serum creatinine levels were 1.10 ± 0.23 mg/dL. After conversion, fasting plasma glucose levels increased sequentially from 101.7 ± 18.5 to 107.4 ± 21.3 mg/dL ($p = 0.007$), and glycated hemoglobin levels increased from 5.7 ± 0.8 to 6.0 ± 1.2 % ($p = 0.016$). Among cardiovascular risk factors, fibrinogen levels were decreased ($p = 0.015$), but other factors including blood pressure and lipid profile were not changed (all $p > 0.05$). There was no change in renal function, including the serum creatinine ($p = 0.611$) and urine protein-to-creatinine ratio ($p = 0.092$). Body mass index levels were decreased ($p = 0.037$) and body weight showed a decreasing tendency ($p = 0.063$). In addition, we retrospectively selected age, gender, and time after kidney transplantation-matched cyclosporine maintained KTRs and there were no changes on glucose metabolism, lipid metabolism, and graft function in the group.
Conclusions: Switching of immunosuppressant to tacrolimus has an apparent negative effect on glucose metabolism and an unclear advantage on cardiovascular risk profiles for long-term stable KTRs.

BOS443 CLINICAL EXPERIENCE OF CONVERSION FROM ANTIMETABOLITES WITH STANDARD EXPOSURE TACROLIMUS TO EVEROLIMUS WITH TACROLIMUS MINIMIZATION IN STABLE KIDNEY TRANSPLANTED RECIPIENTS

Ma Luisa Rodríguez-Ferrero, Andrés Delgado, Luis Sánchez-Cámara, Esther Hurtado, Fernando Anaya
Hospital General Universitario Gregorio Marañón

The use of everolimus (EVE) with tacrolimus (TAC) minimization as de novo or as maintenance therapy, is increasingly widespread with good results in renal function.

The aim of the study was to describe our clinical experience after conversion from antimetabolites (MMF) with standard exposure TAC to EVE with TAC minimization in stable kidney transplanted recipients.
Methods: We studied 229 kidney transplants performed consecutively from 07/01/2011 to 12/31/2016. 57 (24.89%) kidney recipients converted from MMF to EVE with TAC minimization was performed. The recipients had stable renal function and no proteinuria.
Results: 57 patients (64.9% male, mean age 57.19 ± 15.52 years). The median time from transplant to conversion was 6 months (IQR 2.25–13). The conversion was due to: viral infection (44%), neoplasia (19.3%), nephrotoxicity induced by calcineurin inhibitors (3.5%), others (26.3%) and diarrhea (7%). Renal function remained stable with a mean glomerular filtration rate estimate by MDRD-4 equation from 38.86 ± 13.17 ml/min/1.73 m2 at baseline to 39.21 ± 14.07 at the end of the study (ns). A significant increase in proteinuria ($p < 0.023$) and an increased use of statins and Inhibitors of the Renin-Angiotensin-Aldosterone System (IRAAS) was observed at the end of the study. Treatment with EVE was stopped due to adverse events in 8.9% patients (proteinuria 60%, lymphocele 20% and pancytopenia 20%). A decrease in donor specific antibodies (DSA) was observed at the end of the study. No patient had acute rejection after conversion. Serum creatinine > 2 mg/dl one-year posttransplant, but not at the time of conversión, was associated to worse graft survival (log Rank $p = 0.011$).
Conclusions: Conversion to EVE is a good option in selected patients. It is well tolerated and allows TAC minimization whitout deterioration in renal function and without DSA production. Increased proteinuria that requires increased use of IRAAS, was observed. One-year renal function affects graft survival.

BOS444 EDEMA IN PATIENTS RECEIVING EVEROLIMUS "DE NOVO"

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Background: Edema was an adverse effect observed in 34.5% in everolimus group vs 24.2% in control group in Transform Study. The aim of the study is to know the incidence and characteristics of edema in patients who received everolimus "de novo" plus standard dose of tacrolimus and to compare them with a control group.
Methods: We studied 150 patients: 50 consecutive patients received everolimus "de novo" plus tacrolimus and in the same period, 100 patients received tacrolimus and micofenolic acid derivatives.We analyzed the incidence, intensity, risk factors, management of edema in both groups.
Results: After 26.2 ± 10 months of follow-up, we observed edema in 56 patients (37.3%): 27 (54%) in everolimus group and 29 (29%) in control group, $p = 0.003$. The probability to present edema was 10.1%,22.4% and 41.3% in everolimus vs 10.1%, 20.3%, and 25.4% in control at 3, 6 and 12 months respectively $p = 0.006$. Edema was trivial, moderate and severe in 74.1% vs 57.1%, 25.9% vs 32.1%, and 0% vs 10.7% in everolimus vs control respectively. Management of edema (everolimus vs control) was diuretics in 14.3% vs 27.6%, stop of calcio-antagonist agents in 46.4% vs 48.3%, diet in 28.6% vs 24.1% and others in 10.7% vs 0%. Edema evolution (everolimus vs control) was improved in 70.4% vs 60.7%, got worse in 0% vs 10.7% and not change in 29.6% vs 28.6%. When we analyzed the everolimus group, we found a relationship between edema and low MDR4 at sixth month (<35 ml/m), $p = 0.02$ and acute rejection, $p = 0.05$. Everolimus was suspended in three patients by edema. Renal function, patient and allograft survival didn´t show differences between patients who presented edema.
Conclusions: Everolimus "de novo" plus standard dose of tacrolimus caused edema in 54% of patients without impact in renal function or patient or allograft survival. Edema was low intensity in 70%, and it improved in 70%. A relationship between edema and a low MDRD4 at six months and acute rejection was observed in everolimus group.

BOS445 ANTI-NEU5GC RESPONSES IN KIDNEY ALLOGRAFT RECIPIENTS AFTER TREATMENT WITH RABBIT ANTI-THYMOCYTES GLOBULINS

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Non-human immunoglobulins including Anti-Thymocyte Globulins (ATG) display galactose-α1.3-galactose (α-Gal) and N-glycolyneuraminic acid (Neu5Gc) glycans which are highly immunogenic in humans, due to loss-of-function mutations in humans of the key genes involved in their synthesis. Because ATG is the most popular induction treatment in allograft recipients, it is important to decipher the response against these antigens, particularly against Neu5Gc, wich has been associated to formation of immune complexes and to xenosialitis, an systemic inflammation possibly causing damages to the transplant and to the host.

We conducted a prospective study on the response against α-gal and Neu5Gc after ATG induction treatment on a kidney transplant recipient cohort (n = 60) compared to transplanted patients not receiving ATG (n = 30). Using quantitative ELISA and sialoglycan microarrays, we analyzed quantitatively and qualitatively the response against these carbohydrates.

We show in a serial analysis that, despite observing a drop in the levels of anti-Neu5Gc antibodies compared to the pre-existing levels at 6 and 12 months post-graft likely due to the immunosuppression, there was a significant increase in the anti-Neu5Gc levels at 6 months post-graft, between the ATG-treated and non-treated patients ($p = 0.007$). Anti- α 1,3-Gal antibodies, in contrast, remained unchanged. Furthermore, the sialoglycan microarray analysis shows greater anti-Neu5Gc reactivity against multiple different Neu5Gc-containing glycans in patients treated with ATG, as well as a greater shift in their anti-Neu5Gc repertoire for some Neu5Gc specificities that were lacking in the sera at baseline.

In conclusion, kidney graft recipients receiving ATG develop anti-Neu5GC antibodies. These finding warrant further investigation into their possible role in graft dysfunction.

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BOS446 EVALUATING ADHERENCE TO IMMUNOSUPPRESSIVE DRUGS THROUGH TRACKYOURMED® AN INNOVATIVE QR CODE-SCANNER APP IN RENAL TRANSPLANTATION: PRELIMINARY RESULTS FROM I-COM TRIAL

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Introduction: Low adherence to chronic immunosuppressive (IS) drugs has been recognized as a major cause of premature graft loss. Although erratic trough blood IS levels may identify patients with low compliance, this approach does not allow an accurate assessment of IS adherence in the long run. Unfortunately, useful methods to improve medication adherence are scarce and not easy to implement. We developed a novel m-Health-based technology (Trackyourmed®), in which an accurate tracking of medication intakes through a novel QR code scan system is recorded in a backoffice for its ulterior evaluation.
Methods: We have conducted a 6-month follow-up prospective, non-randomized pilot study (i-COM), to evaluate the rate of implementation success of this new tool among kidney transplant recipients and characterize main factors associated to erratic or low IS compliance. This novel technology provides an accurate reminder, awareness and tracking of the different IS intakes done by the patient. All this information is then recorded and may be immediately visualized both by patients and transplant physician (Figure 1). Here we provide an interim analysis of the first 50 patients included in the study.
Results: 10/50(20%) patients abandoned the use of the app short time its initiation (first 3 weeks), whereas 80% recognized being comfortable and happy with its use. The majority of patients stopping the app use were younger and had more frequently experienced acute rejection in the past as compared with active users. Patients with extended-release TAC showed significantly more regular intakes than patients with an immediate-release formulation.
Conclusions: This preliminary analysis suggest that the use of this new m-Health technology seems to have high acceptance among kidney transplant recipients and is able to recognize patients with low IS adherence after kidney transplantation

BOS447 STRIKING DIFFERENCES IN THE INCIDENCE OF DE NOVO CATARACT IN PATIENTS WITH DIFFERENT PREPARATIONS AND DOSAGES OF GLUCOCORTICOIDS – A COLLABORATIVE TRANSPLANT STUDY REPORT

Bernd Doehler, Caner Suesal
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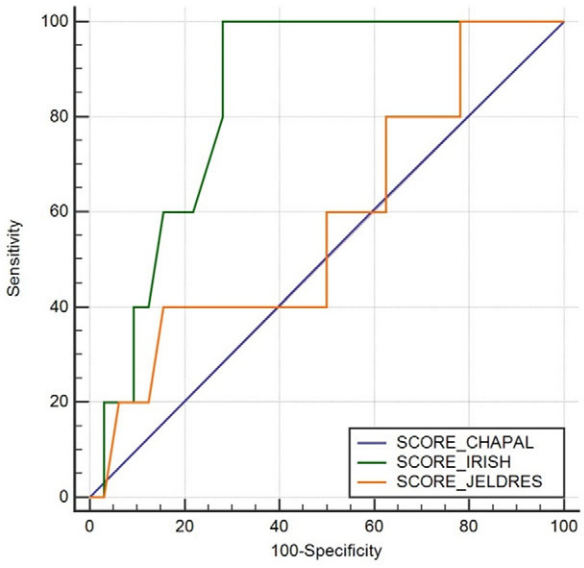
Background: Glucocorticoids (steroids) are responsible for a variety of side effects, including de novo development of cataract. Methylprednisolone is considered to be 25% more potent than prednisone or prednisolone and is therefore applied at accordingly lower doses. We compared the incidence of de novo cataract under different glucocorticoid preparations and dosages.
Methods: More than 35,000 adult kidney-only recipients transplanted during 1997–2016 with a functioning graft $\geq$ 2 years and information on immunosuppressive medication at year 1, including the preparation and dosage of glucocorticoids, were analyzed by multivariable Cox regression for de novo cataract development during years 2 and 3 post-transplant.
Results: Graft survival was similar under the different glucocorticoid preparations. Compared to steroid-free medication at year 1, the cumulative incidence of de novo cataract increased for all glucocorticoid preparations. Prednisone and prednisolone did not differ significantly, leading to a 1.5-fold increase of cataract incidence. A remarkable 3.6-fold increase was observed in patients on methylprednisolone treatment. A prednisone/prednisolone dosage $\leq$ 5 mg/day was associated with a 1.5-fold and $>$ 5 mg/day with a 1.9-fold higher incidence of de novo cataract. In contrast, methylprednisolone-treated patients showed even at low dosages of $\leq$ 4 mg/day a 3.2-fold higher cataract incidence. Particularly increased cataract incidences were observed in patients on higher dosages of methylprednisolone, reaching 5.5-fold at $>$ 4 mg/day.
Conclusion: Our data show a dose-dependent increase of post-transplant de novo cataract incidence by all preparations of glucocorticoids, which is extremely pronounced under methylprednisolone. Whether methylprednisolone is indeed only 25% more potent than prednisone or prednisolone must be reevaluated. Methylprednisolone therapy in its present form does not appear to be suitable for maintenance immunosuppression.

BOS30 – STRATEGIES BATTLING KIDNEY ISCHEMIA

BOS449 TAILORING IMMUNOSUPPRESSIVE THERAPY BASED ON DELAYED GRAFT FUNCTION RISK ASSESSMENT IN KIDNEY TRANSPLANT: RECIPIENT SCORING SYSTEMS

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Introduction: Delayed Graft Function (DGF) is defined as the need for at least one postoperative dialysis session during the first week after transplantation and is associated with an increased risk of acute rejection and a worse recovery graft function. The aim of this study is to validate the predictive scores of DGF, in order to identify the most accurate one, and tailor the peri-operative immunosuppressive therapy.
Methods: We applied IRISH, CHAPAL and JELDRES scores on our transplant population from 2013–2018 (tot n°257). We collected data on donors, recipients and transplants to calculate the three scores through the use of dedicated web programs (www.transplantcalculator/DGF; DGFS DIVAT; Dedicated standard for Jeldres, Excel sheet). The number of transplants on which we could apply the IRISH score were 160 (62.25%), the CHAPAL score were 39 (15.18%) and the JELDRES score were 245 (95.33%).
Results: Out of a total of 257 transplants, there were 41 cases of DGF (15.95%). Of these, IRISH score identified 24 DGFs (58.54%), CHAPAL score 5 (12.20%) and JELDRES score 41 (100%). The statistical analysis of ROC curves was statistically significant for IRISH ($p = 0.001$). Moreover the p value for JELDRES score was 0.057 and for CHAPAL 0.874. Again the pairwise comparison of ROC curves showed a significant statistical difference between IRISH and CHAPAL scores with $p = 0.017$.
Conclusions: Based on these preliminary results, IRISH score seems to be the most statistically significant score to identify potential DGF. In the future transplant's cases we will apply the IRISH score to each recipient to have more possibilities to identify those with a high probability of developing a DGF. Following this our achievement is to develop a specific immunosuppressant therapy based on calcineurine inhibitors, tailored on the genotypization of cytochrome P450 (isoforms 3A4, 3A5) in high-risk of DGF recipients, in order to improve the outcome of the procedures and the grafts survival.



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BOS451 COMPREHENSIVE ASSESSMENT OF DONOR KIDNEY WITH DONOR CLINICAL INFORMATION, PRE-TRANSPLANT BIOPSY PATHOLOGY SCORE AND HYPOTHERMIC MECHANICAL PERFUSION PARAMETERS

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Background: Currently, more and more kidney donors were extended criteria donor which caused higher incidence of delayed graft function (DGF). Therefore, the assessment for the quality of donor kidneys is important and a predictive model could be helpful.
Methods: The retrospective study recorded 102 recipients of a single kidney transplant. All patients underwent follow-up after transplantation at least three months. Data collection include donor clinical information, biopsy histopathology score, hypothermic mechanical perfusion parameters and DGF incidence. Data were analyzed by SPSS® version 17.0. $p < 0.05$ was considered statistically significant.
Results: Results of univariate analyses identified that the major risk factors of DGF including Hypertension, serum creatinine (SCr),Remuzzi, MAPI, acute tubular injury (ATI) and arteriole narrow(AN).

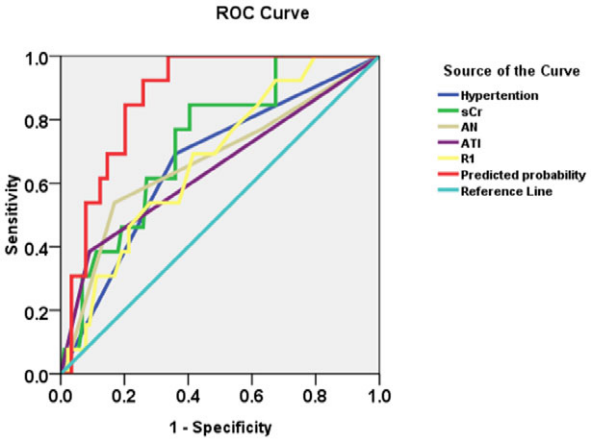
Hypertension history, SCr, Remuzzi, MAPI scoring standards, were also strongly correlated with HMP parameters ($p < 0.01$) .

The prediction of DGF with receiver operating characteristic curve (ROC) showed that the area under the curve (AUC) could be increased to 0.874 when all variables were considered, including resistance index (R1)(Table 1, Figure1).
Conclusion: The addition of HMP parameters to donor clinical information, and pre- transplant biopsy score increases the AUC 's evalution of renal graft quality and to evaluate the risk of DGF.

Table 1. ROC curves for clinical, histopathological, and HMP parameters as predictors of DGF

Test Result Variable(s)	Area	Std. Error	Asymptotic Sig	Asymptotic 95% Confidence Interval Lower Bound	Asymptotic 95% Confidence Interval Upper Bound
				Hypertension	0.666
0.080	0.053	0.509	0.823		
SCr before				procurement	0.732
0.067	0.007	0.601	0.862		
AN	0.672	0.089	0.046	0.497	0.846
ATI	0.647	0.092	0.087	0.467	0.828
R1	0.674	0.072	0.044	0.532	0.816
Predicted			probability	0.874	0.037
0.000	0.801	0.947			

Figure1. ROC curves for predicting of DGF
Key Words: Kidney transplant;donor scoring;Histopathology;HMP;Acute tubular injury



BOS452 ULTRASOUND ELASTOGRAPHY CORRELATIONS WITH CLINICO-LABORATORY PARAMETERS IN KIDNEY TRASPLANT RECIPIENTS

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Radiological and morphological studies have an important role in the monitoring of kidney transplant recipients (KTx). In recent studies to evaluate the stiffness of parenchymatous organs, besides routine ultrasound (US), a novel ultrasound elastography (USE) method has been used. However, there are few studies about the usage of this method in KTx patients. We have shown (Järv et al, 2018) that the accuracy of USE results depends on the BMI. Aim of the study was to evaluate correlations between USE and clinico-laboratory parameters in KTx patient's subgroups.We enrolled to cross-sectional prospective study 116 KTx patients (pts, 69 males and 47 females, age range 22–79 years). Pts were divided into two groups: pts with diabetes (DM, N = 24) and without (non-DM, N = 92). Main demographic and clinico-laboratory parameters (gender, age, time from kidney transplantation, creatinine, urea, eGFR) were collected. US and USE studies were performed; resistive index (RI) was measured with Philips Affiniti 70 device.Similar demographic and clinico-laboratory parameters were found in both study groups, statistically significant differences were found in radiological measurement means: KTx length (DM 10.6 cm non-DM 11.2 cm; $p = 0.005$), RI (non-DM 0.69 DM 0.75; $p = 0.003$), USE results (DM 8.1 $\pm$ 5.1 kPa; non-DM l 7.3 $\pm$ 4.6 kPa). In the correlation study, statistically significant correlations between USE parameters and age (R = -0.2 $p = 0.04$), BMI (R = -0.4 $p = 0.001$), skin-to-graft distance (R = -0.4 $p = 0.001$) and HbA1c (%) (R = -0.3 $p = 0.03$) were found. Interestingly, although according demographic and clinical parameters in both groups were similar only in DM group statistically significant correlation was found between renal function and USE results: eGFR (R = 0.7 $p = 0.002$), serum creatinine (R = -0.6 $p = 0.007$), and, between KTx width (R = -0.7 $p = 0.001$) and mean RI (R = -0.7 $p = 0.001$). USE could be used for the evaluation of renal elacity changes that are due to secondary structural and functional changes after KTx

BOS455 EFFECT OF THE CLAMPING AND DECLAMPING TIME ON KIDNEY TRANSPLANT OUTCOMES, A RETROSPECTIVE MULTI-CENTRIC COHORT STUDY

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In last decades slow improvement in long-term kidney graft survival has been observed. Improvement could require optimization of organ procurement and preservation, when ischemia causes metabolic change and inflammation. The circadian rhythm corresponds to the 24 h cycle on which is regulated the biological functions. Its integrity is guaranteed by a molecular clock contained within each cell (intrinsic control). In various conditions a link between molecular clock and tolerance to ischemia has been shown and circadian oscillations of the immune system have been reported. In this setting, we wanted to evaluate the effect of clamping and declamping time on kidney transplant outcome.

We conducted a study, obtaining data from every deceased-donor kidney transplant procedure performed in the hospitals belonging to the French DIVAT cohort and in the Oslo University Hospital.

Among the 5020 included patients, 49.7% were in the declamping nighttime group (18 h-6 h) and 50.3% in the declamping daytime group (6 h-18 h); 64.2 % in the clamping nighttime group (18 h-6 h) and 35.8% in the clamping daytime group (6 h-18 h). In a multivariate analysis no significant difference was observed when comparing nighttime versus daytime declamping in Delayed Graft Function (DGF) (RR = 0.99; $p = 0.89$) or acute rejection rate (RR = 1.06; $p = 0.45$) or allograft failure (RR = 1.01; $p = 0.92$). While DGF and acute rejection rate was not significantly different between nighttime and nighttime clamping (RR = 1.07; $p = 0.49$ and RR = 1.00; $p = 0.95$ respectively), in a Cox regression model there was a trend toward more graft failure in the nighttime clamping group (RR = 1.19; $p = 0.07$).

While declamping time did not have any impact on kidney graft outcome, graft failure would seem increase when organ procurement is performed on nighttime. Mechanistic analysis are required to explore whether this trend are related to an intrinsic difference in organ according to the clamping time.

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BOS456 THE EFFECT OF IGL-1 PRESERVATION SOLUTION ON OUTCOME AFTER KIDNEY TRANSPLANTATION: A RETROSPECTIVE SINGLE CENTRE ANALYSIS

Julie De Beule, Steffen Fieuws, Diethard Monbaliu, Maarten Naesens, Mauricio Sainz, Ben Sprangers, Dirk Kuypers, Jacques Pirenne, Ina Jochmans

KU Leuven

Background: Institute George Lopez-1 (IGL) is a new preservation solution with unique features (low K+, low viscosity, PEG). Data on outcomes of IGL preserved kidneys are scarce. We compared outcomes of IGL-preserved kidneys to those preserved with HTK or UW solution.
Methods: All deceased donor kidney transplantations performed at our centre (2000–2018), where IGL, HTK, or UW was used, were included. Multivariable analysis for delayed graft function (DGF), eGFR at 1y, and graft loss were performed. We corrected for donor/recipient gender and age, donor type, donor arterial hypertension, cause of death, donor warm ischemia time, HLA mismatches, pre-transplant dialysis duration, retransplantation, cold ischemia, and anastomosis time. Donor centre was added as random effect. The risk of bias was reduced by using a double robust approach, consisting of propensity scored weighting and correction for confounders used for propensity scores in the multivariable models. A sensitivity analysis of cases between 2010 and 2018 was done as IGL was only introduced in 2014.
Results: 1868 patients were included. Unweighted incidence of DGF was 17% in IGL, 25% in HTK, 16% in UW. eGFR at 1y was 46 (SE1.6), 50 (0.8), and 50 (0.6) mL/min/1.73 m², respectively. Death censored graft loss within 3y was 7%, 9%, 7%, respectively. We found no independent association of IGL on any of the outcomes when compared to HTK or UW preservation (Table). Sensitivity analysis (n = 917) showed similar results (not shown).
Conclusion: In this retrospective analysis, after reducing risk of bias, IGL seems to result in comparable outcomes vs HTK or UW for any of the outcome variables. IGL seems to be a safe kidney preservation solution.

Table

		p-value
DGF	OR (95% CI)	
IGL vs HTK	1.05 (0.63;1.75)	0.99
IGL vs UW	1.38 (0.86;2.21)	0.25
Graft loss	HR (95% CI)	
IGL vs HTK	0.71 (0.32;1.50)	0.59
IGL vs UW	0.85 (0.40;1.83)	0.87
eGFR at 1y	Mean diff (95% CI)	
IGL vs HTK	-1.12 (-2.67;0.53)	0.99
IGL vs UW	-0.20 (-2.73;2.34)	0.99

BOS457 URINE RECIRCULATION IMPROVES HAEMODYNAMICS AND ENHANCES FUNCTION IN NORMOTHERMIC KIDNEY PERFUSION

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Background: The purpose was to compare urine recirculation (URC) and urine replacement with Ringer's lactate in a porcine normothermic kidney perfusion model.
Methods: Pigs (n = 10) were allocated to either NKP with URC (n = 5) or NKP without URC (n = 5), where Ringer's lactate replaced urine output. Animals were anaesthetised and both kidneys were retrieved, uninjured. One kidney was placed on NKP after 2 h cold ischaemia time (CIT) and the remaining kidney was static cold stored for 27 h and then placed on NKP. An autologous blood-based perfusate solution, leukocyte-filtered, was used and NKP performed up to 24 h. Perfusion parameters, biochemistry and metabolic parameters were monitored and perfusate, urine and tissue samples were collected.
Results: Physiological mean arterial pressures and flows were achieved in perfusions with and without URC, within the first hour of perfusion but remained stable only with URC. Significantly higher arterial flow levels could be achieved with URC; median arterial flow of 319 ml/min with URC vs 226 ml/min in NKP with urine replacement, $p < 0.0001$. The duration of CIT before NKP start had no impact on arterial flow. Perfusate sodium levels were higher without URC, 129.9 ± 12.3 with URC vs 158.7 ± 19.4 without; $p < 0.001$. pH was stable at physiological levels only in NKP with URC. Lactate levels, compared within each kidney pair, were lower with URC, 2.55 ± 1.28 vs 6.9 ± 1.6; $p < 0.001$. The hourly urine output was higher in NKP without URC; 548 ml/h vs 150 ml/h with URC, $p = 0.008$.

The achieved duration of NKP (up to 24 h) was significantly longer in NKP with URC, 17.3 ± 9.2 vs 5.3 ± 1.3 NKP without; $p = 0.02$.

The baseline tubular condition appeared unchanged after NKP with and without URC.
Conclusion: Normothermic kidney perfusion using a portable prototype device preserves the parenchymal quality of healthy porcine kidneys with and without URC. Urine recirculation is needed to maintain haemodynamics, perfusate volume and homeostasis and to readily achieve up to 24 h.

BOS458 KIDNEYS DONATED FOLLOWING BOTH CIRCULATORY AND BRAINSTEM DEATH BENEFIT FROM HYPOTHERMIC MACHINE PERFUSION

Samuel Tingle, Rodrigo Figueiredo, John Moir, Michael Goodfellow, Emily Thompson, Ibrahim Ibrahim, Lucy Bates, David Talbot, Colin Wilson

Freeman Hospital

Introduction: There remains a lack of consensus on the optimal storage method for deceased donor kidneys. This meta-analysis aimed to compare storage with hypothermic machine perfusion (HMP) versus traditional static cold storage (SCS).
Methods: The Cochrane Kidney and Transplant Specialised Register was searched to identify (quasi-)RCTs to include in our meta-analysis. Two authors independently reviewed each study, and extracted data using a standardised form. The primary outcome was incidence of delayed graft function (DGF). Statistical analyses were performed using random effects models and results expressed as relative risk (RR) with 95% confidence intervals.
Results: 14 RCTs (2138 participants) could be included in our primary analysis. There is high-certainty evidence that HMP reduces the risk of DGF when compared to SCS (Fig 1; RR = 0.77; 0.67–0.90, $p = 0.0006$). This benefit is significant in both DCD (Fig 2; 772 patients from 7 studies, RR = 0.75; 0.64–0.87, $p = 0.0002$), as well as DBD grafts (Fig 2; 971 patients from 4 studies, RR = 0.78; 0.65–0.93, $p = 0.006$). There was no evidence for a differing treatment effect in DBD vs DCD grafts ($p = 0.72$). However, the number of perfusions required to prevent one episode of DGF was lower for DCD grafts, due to higher overall DGF rates in this subgroup; NNT of 7.26 and 13.60 in DCD and DBD grafts respectively. Studies published in the last decade confirm that HMP significantly reduces the incidence of DGF in the modern era (1355 patients from 5 studies, RR = 0.77; 0.66–0.91, $p = 0.002$). There is strong evidence that HMP also improves graft survival in both DBD and DCD grafts, at both 1 and 3 years. Economic analyses suggest that HMP leads to overall cost savings in both North American and European settings.
Conclusion: HMP is superior to SCS in deceased donor renal transplantation. Its use is especially advised in DCD kidneys, where less perfusions are needed to prevent one episode of DGF.

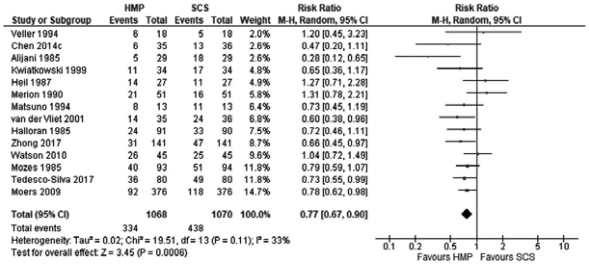


Figure 1 - Forrest plot showing overall relative risk of developing delayed graft function with hypothermic machine perfusion compared with static cold storage. Results display relative risk with corresponding confidence intervals for each study. Diamonds represent pooled data from multiple studies. A random effects model was employed with I² tests used to assess heterogeneity. CI – confidence interval; SCS – static cold storage; HMP – hypothermic machine perfusion.

BOS459 EFFECT OF NEW BASKENT UNIVERSITY ORGAN-PRESERVATION SOLUTION ON THE ACTIN CYTOSKELETON REARRANGEMENT AND APOPTOSIS OF RENAL TUBULAR CELLS: COMPARISON WITH OTHER PRESERVATION SOLUTIONS

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Background: Despite significant advances in transplantation, damage caused to organs due to long cold ischemia time and perfusion solutions

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remains a serious hurdle. We aimed to compare the efficacy of the new Baskent University Preservation Solution (BUPS) with UW and HTK.
Methods: 50 Male Sprague Downey rats, weighing 350–450 g, were randomized into 3 groups (Group B: BUPS, Group H: HTK and Group W: UW) corresponding to the 3 solutions tested. Rats perfused with 50 cc (+4 C) BUPS, UW, and HTK perfusion solutions from the distal part by connecting the proximal and of the intra-abdominal aorta after laparotomy. Nephrectomy performed after perfusion, and the kidneys preserved under hypothermia (+4 0C) in the same solution for seven distinct periods (0,1,3,6,12, 24, 48 hours). Tubular expression of cytoskeleton proteins PARP and Paxillin studied. Apoptosis assessed by TUNEL staining.
Results: Neither group had shown significant cellular injury at 0, 1, 3-hour perfusion. At 6,12, 24 and 48-hour perfusion, the percentage of injured tubules found to be lowest in Group B, and Group H compared to Group W ($p < 0.01$). Compared to Group H, the degree of tubule damage was most moderate in Group B at 6,12, 24 and 48-hour perfusion ($p < 0.05$). Group B showed lowest degrees of tubular PARP, Paxillin expression and apoptosis compared to Group H and W in each time scale. Even in kidneys, up to 48 hours Group B showed the lowest degrees of cytoskeleton rearrangement and apoptosis than groups H and W. Kidneys with higher degrees of tubular cytoskeleton rearrangement tend to show higher degrees of apoptosis.
Conclusion: The disruption of the actin cytoskeleton and the increased rate of apoptosis is the main findings of tubular damage during ischemic conditions. The interruption of the cytoskeleton and therefore the rate of apoptosis is lowest in Baskent University solution. Thus Baskent University solution will be the utilizable perfusion solution with lowest tubular damage.

BOS461 LYSIS OF RENAL-DERIVED INTRAVASCULAR FIBRINOGEN IMPROVES ORGAN PERFUSION AND NANOPARTICLE ACCESSIBILITY DURING NORMOTHERMIC MACHINE PERFUSION

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Normothermic machine perfusion (NMP) has the potential to repair marginal human kidneys prior to transplantation, while simultaneously allowing delivery of therapeutics. We previously observed that intravascular

BOS462 THE "TICK MARK" PATTERN OF INTRAOPERATIVE SYSTOLIC BLOOD PRESSURE – A SIGNAL OF DELAYED RENAL GRAFT FUNCTION

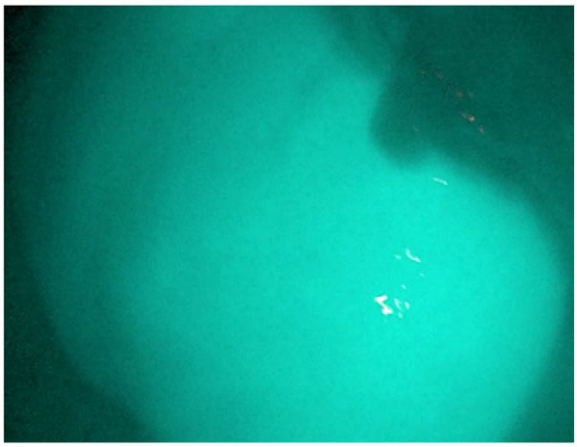
Anikó Smudla[1], Dorothea Trimmel[1], Gábor Szabó[2], János Fazakas[1]
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Background: Delayed graft function (DGF) is a multifactorial clinical entity. The aim of our study was to identify the early perioperative non-invasive hemodynamic parameters in DGF patients.
Methods: 122 adult deceased-donor kidney transplantation were retrospectively analysed, with respect to donor (medical history, kidney donor risk index – KDRI), recipient (medical history), perioperative factors (cold-warm ischaemic time, renal arterial resistive index – RI) and anaesthetic, especially, non-invasive hemodynamic management. Patients were grouped as DGF and immediate graft function (IGF). The data was analysed with SPSS 20.0.
Results: Prevalence of DGF was 21.3% (N = 26). DGF was related to higher donor BMI ($p = 0.041$), KDRI over 1.6 ($p = 0.008$), recipients age over 65 years ($p = 0.026$) and perioperative factors, such as lower residual diuresis of recipient (8.7 mL/kg vs. 14.4 mL/kg; $p = 0.005$), higher intradialytic weight gain (2.65 kg vs. 2.16 kg; $p = 0.07$) and more positive fluid balance over first postoperative day (3310 ml vs. 2354 ml; $p = 0.013$).The curve of change in intraoperative systolic blood pressure (ΔSBP) showed a "tick mark" pattern in DGF and a "semi-circular" shape in IGF group. In DGF group, ΔSBP compared to baseline value (SBP_B) was higher at reperfusion (-3.16% vs. -12.84%; $p = 0.047$), at the ending surgery (-5.83% vs. -3.26%; $p = 0.074$) and at the ending anaesthesia (ΔSBP_{EA}) (11.81% vs. -1.26%; $p = 0.014$). In the multivariate logistic regression model, the ΔSBP_{EA} showed association with SBP_B (OR: 26.98; 95% CI: 8.58–84.78), DGF (OR: 4.46; 95% CI: 1.19–16.67) and recipients age over 57 years (OR: 2.99; CI: 1.07–8.36). The postoperative RI was higher in DGF (0.75 ± 0.10 vs. 0.69 ± 0.08; $p = 0.007$).
Conclusion: The "tick mark" pattern of SBP kinetics might help to identify DGF intraoperatively. Detecting of this SBP pattern, the excessive fluid therapy should be avoided to prevente further graft damage.

BOS463 INTRAOPERATIVE EVALUATION OF TRANSPLANTED KIDNEY'S PERFUSION WITH INDOCYANINE GREEN AS A PREDICTOR OF DELAYED GRAFT FUNCTION: HOW TO IMPROVE THE GRAFT SURVIVAL

Fabio Benedetti, Federica Masci, Giuseppe Ietto, Elia Zani, Cristiano Parise, Veronica Raveglia, Francesco Maria Carrano, Iori Valentina, Cristiano Salvino Baglieri, Linda Liepa, Domenico Iovino, Gabriele Soldini, Giovanni Saredi, Matteo Tozzi, Giulio Carcano
Università degli Studi dell'Insubria

Introduction: Since the introduction of extended criteria donors, the number of marginal organs employed for transplantation increased and then the delayed graft function (DGF) rate and "fragile" transplants. We explored the intraoperative fluorescent perfusion assessment of transplanted kidney to optimize post-operative therapies in order to improve graft survival.
Methods: We employed Indocyanine Green (ICG) dye to perform an intraoperative fluorescent angiography and evaluate graft blood supply after reperfusion from a quantitative point of view. Pictures of the transplanted kidney are taken respectively 5, 15 and 45 minutes after reperfusion with a dedicated high definition fluorescent camera (Karl Storz Endoscopes®) after the injection of 3 doses of ICG properly diluted in saline solution (Verdye®). Images were then analyzed with a specific open source software (ICY bioimage analysis®) and correlated with the post-operative course and recovery of renal function.
Results: 17 patients so far underwent the procedure, with a mean age of 53 years (min. 27 – max. 76). Among them, 4 experienced delayed graft function (intended as the need of dialysis during the first post transplantation week), and 1 experienced primary non-function (PNF). The patients were divided in 3 subgroups based on the post-operative course: DGF group, PNF group, Early Graft Function (EGF) group. The mean value of perfusion score for EGF group was 204,325 (maximum color intensity value is 255, due to HTML coding method); 64 for PNF group, while the mean value for DGF group was 89,625.
Conclusions: Intraoperative ICG fluorescent imaging seems a simple and risk-free technique. Our preliminary analysis shows a strong correlation between the perfusional data obtained and the outcome of the graft. The fluorescent perfusion assessment of transplanted kidney might help to optimize post-operative therapies in order to improve graft function recovery and survival.



BOS464 IMPACT OF TIME-OF-DAY OF DECLAMPING ON KIDNEY TRANSPLANT OUTCOME

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Purpose: Despite improvements in organ preservation techniques and efforts to minimize the duration of cold ischemia, ischaemia-reperfusion injury still worsens survival in kidney transplantation. We recently demonstrated a clinically significant daytime variation in myocardial tolerance to the controlled ischaemia-reperfusion insult imposed during cardiac surgery which was transcriptionally orchestrated by the myocardial circadian clock. In line with these results, we hypothesized that kidney graft tolerance to the mandatory ischemia-reperfusion would depend on the time-of-day of clamping/declamping, which would impact graft and patient survival.
Methods: We studied 1 and 3-year patient and graft survival in cohorts of 10292 patients firstly transplanted in France between 2006 and 2017, from 8413 brain-dead donors. The impact of time-of-day of clamping and

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declamping, corresponding respectively to the start of kidney ischemia and to reperfusion, as well as ischemia duration was specifically investigated.
Results: As expected, a prolonged ischemia time significantly decreased post-transplant mid-term survival. Although time-of-day of clamping was not associated with outcomes, a daytime (vs night-time) declamping time significantly increased post-transplant early survival. The association between daytime declamping and improved outcomes (patient and graft post-transplant survival) remained significant after adjustment for other predictors (HR = 1.29 [1.11–1.49] for nighttime vs daytime declamping, $p = 0.0006$). Interestingly, the deleterious impact of prolonged ischemia duration (>15 hours) was significantly compensated by a daytime (vs nighttime) declamping ; although the best results were achieved with daytime declamping and ischemia time < 15 h.
Conclusions: Daytime declamping significantly improves graft survival. Our results could impact the planning of kidney transplantation surgery simultaneously to ischemia duration in order to improve outcome.

BOS31 – SURGICAL TECHNIQUE LIVER

BOS465 EFFECT OF VASCULAR ALLOCATION AFTER MULTI-ORGAN RETRIEVALING ON SURVIVAL OUTCOME OF LIVER TRANSPLANTATION PATIENTS

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Purpose: A unique arterial allocation method which was to assure a better blood supply of pancreas graft was adopted when procuring both pancreas and liver grafts form same donors.
Methods: The method was about revascularization of gastroduodenal artery (GDA) and common hepatic artery (CHA). With this method, the liver graft was allocated the GDA-CHA patch and the pancreas graft was allocated the celiac trunk and the superior mesenteric artery patch (Figure 3). This study is to evaluate the influence of this artery allocation method in procuring pancreas grafts and liver grafts on liver transplant recipients.From January 2017 to April 2018, a total of 93 liver transplant patients was retrospectively analyzed, with 25 liver grafts procured with this method (pancreas-using group) and 68 without this method (Non pancreas-using group). All organs were from deceased citizen donors.
Results: The general characteristics were comparable between the two groups ($p > 0.05$). The incidence of portal vein complications was significantly higher in the pancreas-using group ($p < 0.05$). The differences in ICU stay time, infection risk, incidence of arterial complications, biliary complications, and levels of AST, ALT, TBil, PT within 1 month after surgery were not statistically significant ($p > 0.05$). The overall survival rate of patients in pancreas-using group was 96%, 96%, and 96% at 6 months, 12 months, and 18 months, 95.6%, 92.2% and 92.2% in the Non pancreas-using group ($p > 0.05$).
Conclusions: The unique arterial allocation method in procuring pancreas and liver won't affect the survival outcome of liver transplant recipients, but special care should be taken for portal vein complications.We propose this surgery method firstly in the world.

Figure 1 Survival analysis of two groups

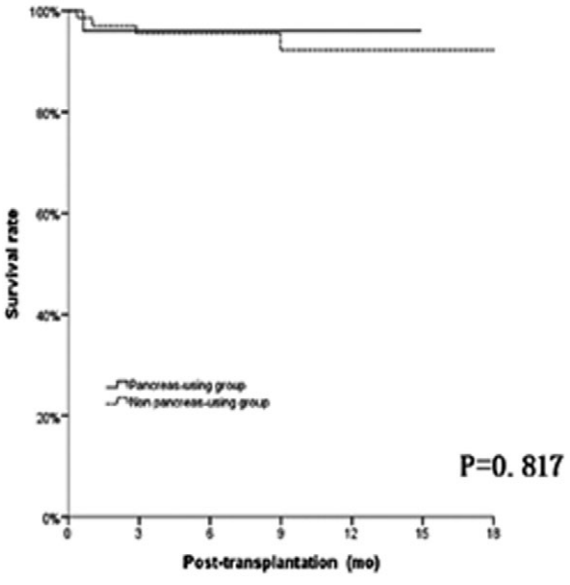


Figure 2 Patients' selection

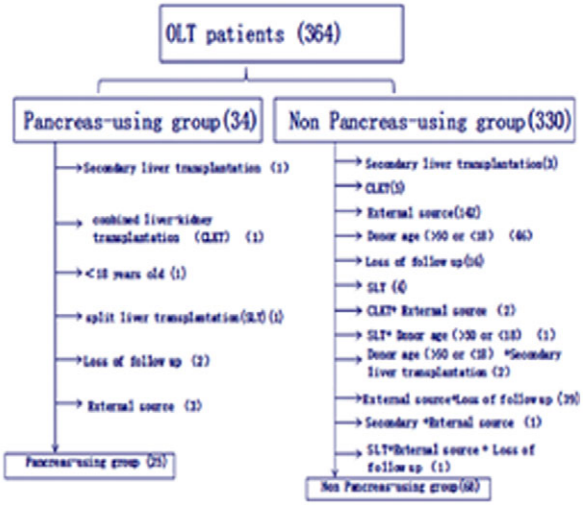
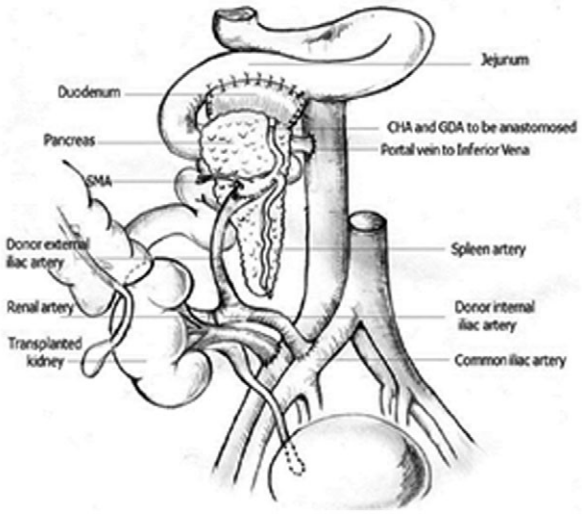


Figure 3 SPK Surgery



SESSION TITLE: BOS31 – SURGICAL TECHNIQUE LIVER

BOS466 HIGH MELD SCORE AND EXTENDED OPERATING TIME PREDICT PROLONGED INITIAL INTENSIVE CARE UNIT STAY AFTER LIVER TRANSPLANTATION AND INFLUENCE THE OUTCOME

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[1]Laiko General Hospital; [2]Department of General, Visceral and Transplantation Surgery University Hospital Essen

Background: Expectations for an immediate intensive care unit (ICU) stay after liver transplantation (LT) have changed remarkably over the last decade. The present study aimed to determine the incidence of prolonged initial ICU stay after LT (>3 consecutive days) and to identify recipient, donor, and surgical factors associated with it. Its influence on survival has also been investigated.

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Material and Methods: We retrospectively analyzed data of adult recipients who underwent deceased donor LT at the University Hospital Essen (11/2003 - 07/2012). Exclusion criteria were death within 3 days after LT, retransplantation, multiple organ transplant and diagnosis of early allograft dysfunction after LT.
Results: Of the 374 recipients finally included in our cohort, 225 (60.16%) had a prolonged ICU stay. On univariate analysis, last donor INR, high vasopressor doses, "rescue offer" grafts, being hospitalized at transplant, high urgency cases, labMELD at transplant, alcoholic cirrhosis, pre-LT renal replacement therapy and length of surgery were associated with prolonged ICU-stay. After multivariate analysis, only labMELD and length of surgery were independently correlated with an ICU-stay longer than 3 conscecutive days. Cut-off values for MELD and duration of LT were 19 and 293.5 min, respectively. A score was constructed indicating the probability of a recipient to stay in the ICU longer than 3 conscecutive days: 1/[1 + EXP (- (- 2.869 + 0.15 x LabMELD + 0.004 x Duration of operation (min)))](c-index = 0.72555). Moreover, prolonged intial ICU stay was also associated with longer total length of hospital stay (27.78 $\pm$ 10.30 vs. 35.23 $\pm$ 22.48, $p < 0.001$) and impaired patient survival rates (81.7% vs. 98% at 3 months, 75.7% vs. 91.6% at 1 year and 61.6% vs. 80.3% at 5 year, $p < 0.001$) (Figure 1).
Conclusions: For recipients with optimal graft function, prediction of a prolonged initial ICU stay is feasible based on labMELD and duration of operation.

BOS467 RETRIEVAL OF ABDOMINAL ORGANS FROM A DONOR WITH A MECHANICAL CARDIAC ASSIST DEVICE, DUE TO SEVERE HEART FAILURE. AN "OUT OF STANDARD" PROCEDURE

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Background: Organ procurement from deceased donors is usually a standard procedure. Nevertheless, the performing surgeon must often confront with demanding situations, such as atherosclerotic or aneurismatic aortic disease or even other pathologies, that may alter the surgical steps. We report on an interesting case of abdominal solid organ harvesting from a donor having a biventricular assist device (BiVAD), due to global heart failure.
Case report: A 42 years old male donor with BiVAD, enlisted for heart transplantation, died on intracerebral hemorrhage. The dressing of the operation's field and the sterile coverage of all extracorporal parts of the pump device had been made with much caution, in order neither to disrupt its function nor to significantly compromise the free space for laparotomy. During the harvesting procedure, the 2nd surgical assistant has been permanently holding the device slightly left deviated and in 45° ankle elevated, avoiding any tube kinking. Thoracotomy, although routinely performed by our standard retrieval procedure, should be omitted in this case, due to the presence of the device's tubes coming out from both sides of lower sternum. A further difficulty consisted in the unavoidable lysis of partial severe adhesions, being generated as consequence of the patient's surgical history. The dissection of the main vessels distally has been performed according to standard technique. No encirclement of the proximal aorta, beneath the diaphragm, was necessary, as the cardiac output could be arrested by clumping the left ventricle's outflow tube. Once the perfusion had been completed, the further procedure has been continued in the standard fashion.
Conclusion: There are so far no literature data on organ harvesting from deceased donors with BiVAD. Such a retrieval procedure is quite challenging and requires an experienced team. Successful usage of such organs could expand the pool of potential donors, in the era of organ shortage.

BOS469 EXPERIENCE OF HEPATIC ARTERY ANASTOMOSIS IN LIVING DONOR LIVER TRANSPLANTATION USING SURGICAL LOUPE: IN SMALL VOLUME CENTER

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Dong-A University Medical Center

Background: The hepatic artery (HA) reconstruction in living donor liver transplantation (LDLT) is a crucial step because of the smaller diameter of the artery and the increased risk of HA related complications. Also, any occurrence of the HA flow abnormalities in the immediate postoperative period may lead to fetal complications. Therefore, many centers use a micro-surgical technique for HA reconstruction. The aim of our study was to investigate the outcomes that HA reconstruction was performed under surgical loupe.
Methods: This study included 44 LDLTs with various end stage liver diseases at Dong-A university hospital Busan, Korea from January, 2014 to August, 2018. The medical records were retrospectively analyzed for the outcomes and HA related complications in these patients.
Results: LDLT was performed in 44 recipients. HA reconstruction for the initial 13 LDLT surgeries was performed using a micro-surgical technique with interrupted suture on both side HA wall. From 14 LDLT case, HA reconstruction was performed in 31 recipients under surgical loupe with interrupted suture on posterior HA wall and running suture on anterior wall.

We performed HA reconstruction in 30 adults, 1 pediatric patient (one year old) under surgical loupe, which included one dual graft LDLT.

The most notable factor in surgical loupe group compared with micro-surgical group (33 $\pm$ 5 minutes) was the quick HA anastomosis procedure with a mean time of 12 $\pm$ 3 minutes.

Fortunately, there were no HA related complications and death in both groups.
Conclusion: Although our case is not enough, with a zero HA related complication, we could consider that the HA reconstruction using surgical loupe even in smaller diameter hepatic arteries is a reliable technique and can easily be applied by an experienced surgeon

BOS470 BENCH ARTERIAL ANASTOMOSIS OVER A FEEDING TUBE (FT) STENT OF DONOR RIGHT REPLACED HEPATIC ARTERY (RRHA) TO DONOR GASTRO DUODENAL ARTERY (GDA) – A SAFE, EASY AND ANATOMICALLY CORRECT TECHNIC FOR MANAGING SMALL ARTERIAL RECONSTRUCTIONS

Hadar Merhav, Samir Abu Gazalla, Abed Khalaileh, Ashraf Imam
Hadassah Hebrew University Mediacl Center

Background: RRHA is a common variation reported in 12–18% of deceased liver donors. Commonly, the RRHA is anastomosed to the stump of the splenic artery (SA) but this adds an undesirable twist because the RRHA is goes to the right and the SA point to the left. A more anatomically suited anastomosis is to the GDA which is also usually of the same caliber as the RRHA. This, however is more challenging technically due to the small caliber of the amastomosis (2–3 mm). We present our results with an end to end anastomosis between the RRHA and the GDA using a FT to bridge the anastomosis while suturing providing stability, direction and backwall protection.
Methods: The charts and operative records of 132 consecutive donors and recipients were reviewed. methods of bench reconstruction, post operative course and arterial thrombosis/stenosis were assessed.
Results: RRHA arising from the SMA was found in 21 donors (15.7%). The RRHA was anastomosed to the GDA in 17 cases. 14 were done by a single surgeon and the rest were assisted by the same surgeon. There were 2 cases (12%) of arterial thrombosis of the main donor celiac artery to recipient hepatic arteryor splenic artery. The cause of the thrombosis was not related to the RRHA to GDA anastomosis. the anastomosis was performed on the bench end to end using X 2.5 loupes, 7–0 (surgipro) or 8–0 prolene sutures using continuous or interrupted suture technic. Central to the technic was the use of a FT to brigde the anastomosis. This creates a stable environment for the surgeon, facilitates excellent alignment and provides backwall protection.
Conclusion: RRHA arising from the SMA is a common variation requring bench reconstruction to a common channel. Placing a 5 or 8 French FT across the anastomosis during bench surgery makes the reconstruction easy and safe and avoids the need for microscope. The incidence of thrombosis is low and not necessarily related to the reconstruction. This simple technical adjunct can be useful in other similar situations

BOS471 LIVER TRANSPLANT IN THE PRESENCE OF CONGENITAL PERIHEPATIC PORTOSYSTEMIC SHUNTS – TO SHUNT OR NOT TO SHUNT?

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Background: Congenital perihepatic portosystemic shunts- intrahepatic or exrahepatic , are rare. The presence of such shunts may result in fatty degeneration, hepatic dysfunction, liver atrophy, regenerative liver nodules and encephalopathy.Three cases of liver transplant are described, carried out in individuals with congenital perihepatic portosystemic shunts, highlighting the need to modify the use of temporary portocaval shunt (TPCS) intra-operatively, dependent on the type of malformation.
Method: Case series.
Results: 7 yrs old boy was transplanted for acute liver failure. Imaging revealed atrophic left lobe with large intrahepatic portosystemic shunt connecting left portal vein to retrohepatic IVC adjacent to the hepatic venous confluence. He underwent liver transplant with caval replacement, resecting shunt with the explant. There was no need for TPCS.

18 yrs old male underwent liver transplant for increasing size of hepatic lesions in presence of Type I Abernathy malformation. Intra- operatively the shunt was ligated and TPCS was fashioned. Whole liver transplant was performed in Piggy Back technique.

37 years old male underwent whole organ liver transplantation for surveillance detected HCC. MRI revealed a shunt between right portal vein and IVC. He developed one short lived episode of hepatic encephalopathy on waiting list.Thin liver parenchyma inferior to shunt was divided, left portal vein ligated

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and the shunt itself was left undisturbed during hepatectomy, obviating need for a TPCS.
Conclusion: Flexibility should be exercised in resecting the shunts during explantation in setting of perihepatic portocaval shunts, obviating need for TPCS.

BOS474 THE IMPACT OF SIMULTANEOUS SPLENECTOMY IN ADULT LIVING DONOR LIVER TRANSPLANTATION

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Niigata University Graduate School of Medical and Dental Sciences

Backgrounds: Simultaneous splenectomy (SPX) in living donor liver transplantation (LDLT) has been performed to modulate portal pressure, prevent postoperative thrombocytopenia especially in patient with hepatitis C virus (HCV) infection, and modulate the immunologic status in ABO-incompatible cases. There are several discussions whether SPX should be indicated in LDLT or not. The aim of this study is to evaluate the safety and efficacy of SPX in adult LDLT.
Materials and methods: We retrospectively investigated the clinical outcome of adult LDLT cases (n = 104) at Niigata University Hospital from Mach 1999 to December 2018. Patients were divided to those with SPX (SPX group, n = 25) and those without (non-SPX, n = 79). Multiple clinicopathological factors and outcomes between the groups were compared and analyzed.
Results: The rates of female recipient, HCV infection and ABO incompatible transplantation is significantly higher in SPX group than non-SPX group ($p = 0.030$, $p = 0.032$, $p < 0.001$, respectively). The volume of intraoperative bleeding was much more in SPX group than in non-SPX group in significant ($p = 0.019$). There were not statistically significant differences between the two groups regarding to graft-to-recipient body weight ratio (GRWR), operative time, ischemic time, and the period of anhepatic phase. There were also not significant differences between them in the incidence of lethal complications including post-transplant bacteremia, cytomegalovirus infection, acute cellular rejection, and the patient survival.
Conclusion: In our institution, SPX was selectively performed to the recipient with HCV infection and the ABO incompatible cases. Although it has no impact on patient mortality, further investigations are necessary to represent its safety and to clarify its efficacy on the LDLT.

BOS475 APPLICATION OF PLATELET RICH PLASMA AND FIBRIN AGENTS AROUND BILIARY ANASTOMOSIS HAVE NO BENEFICIAL EFFECTS ON BILE LEAKAGE

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Acibadem Mehmet Ali Aydinlar University

Background: Platelet-rich plasma (PRP) has been one of various platelet preperations that have been used for wound healing, and recovery after surgery. Fibrin is hemastatic agent for bleeding. Bile leakage is reported in %2–25 after liver transplantation. Platelet rich fibrin can be used for preventing bile leakage.
Materials/Methods: This is a prospective study performed between 2016 November and 2018 February among living donor liver transplantations. The pateints group into three; PRP, Fibrin and no agent. PRP was prepared from the patients' own plasma and spread aorund the bile anastomosis. Tissel (Fibrin sealant, Baxter) spread around anastomosis. Surgicell (Ethicon) was put around in order to put the PRP in its place. Patients who were reoperated in the first week of transplantation excluded from the study. Groups were compared according to their demographics, bile anastomosis techniques, postoperative bile complications, and infections.
Results: There were 68 patients in PRP group, 75 patients in fibrin group and 100 patients without any agent. Age, sex, primary etiology, Body mass index, MELD score, graft volüme/body weight ratio, anastomosis technıques did not showed any difference between groups. Postoperative bile leakage, bile stricture and intrabdominal infection ratios did not showed any difference.
Conclusion: PRP and fibrin agents didn't have superior role in preventing bile leakage probably because of the digestive effects of bile

BOS476 BILIARY STRICTURE AFTER LIVER TRANSPLANTATION: REAPPRAISAL OF LONG-TERM OUTCOMES

Tomoaki Yoh, François Cauchy, Federica Dondero, Emmanuel Weiss, Claire Francoz, Safi Dokmak, Ailton Sepulveda, Maxime Palazzo, Francois Durand, Catherine Paugam-Burtz, Olivier Soubrane
Beaujon hospital

Background: Biliary strictures (BS) remain a major source of morbidity after liver transplantation. BS are categorized as anastomotic strictures (AS) or non-anastomotic strictures (NAS), which are associated with dramatically different prognoses. While BS were traditionally treated surgically, the widespread development of interventional endoscopy has dramatically modified the management of these patients. Yet, the value of endoscopy for AS and NAS strictures remains poorly described.
Methods: All patients transplanted between 2010 and 2016 were analyzed retrospectively. BS were divided into AS and NAS. Controls (no BSs) were used for comparison. Survival outcomes were compared in the two separated propensity-score matched models (model 1: AS vs. Controls, ratio 1:1; model 2: NAS vs. Controls, ratio 1:3).
Results: Among 513 transplanted patients, BSs occurred in 112 (21.8%) including AS in 97 and NAS in 15. Median follow-up was 40.2 months. Endoscopic/interventionaltreatmentswere amenable for 95 patients with AS and were effective in 93 of them. Endoscopic/interventional treatments were attempted in 7 patients with NAS and were effective in 4. In model 1 (97 patients each), AS and control patients showed similar 3 and 5 years overall (88.0 and 84.3% vs. 93.6 and 84.0%; $p = 0.938$) and graft (86.7 and 83.1% vs. 90.7 and 81.4%, $p = 0.814$) survival rates. In model 2 (NAS, n = 15 and controls, n = 45), NAS patients had lower 3 and 5 years overall (73.3 and 65.2% vs. 93.3 and 79.6%, $p = 0.065$) and graft (53.3 and 45.7% vs. 91.0 and 82.1%, $p < 0.001$) survival rates than controls.
Conclusions: AS can be treated conservatively in the vast majority of the cases, while NAS remain associated with increased risk of graft loss.

BOS477 LIVER TRANSPLANTATION IN PAEDIATRIC PATIENTS – EVOLUTION OF THE NATIONAL PROGRAM OVER THE PAST TWO DECADES

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Institute for Clinical and Experimental Medicine

Aim of the study: Liver transplantation (LTx) in children has become one of the most successful transplants of solid organs. The aim of this study was to evaluate outcomes of our national paediatric LTx program during the past two decades.
Methods: Total of 143 LTx were performed in 120 paediatric patients over the period 9/1995–10/2018, aged from 8 weeks to 18 years, weight 2.8 kg – 93.0 kg. The most prevalent diagnosis was biliary atresia. 19.2 % children were retransplanted. Transplants were performed with a whole, reduced or split graft, and 3 transplants were from a living donor.
Main results: Patients were on the waiting list 0 – 1331 days (median 43 days). 1 and 5-year patients survival rates were 87.3% and 81.1%, respectively. 1 and 5-year grafts survival rates were 75.1 % and 68.2 %, respectively (Log-Rank test, $p = \ldots$).
Conclusions: Outcomes of paediatric liver transplantation improved during the past two decades. Despite higher initial morbidity (due to introduction of partial liver grafts). These results prove a successful national paediatric LTx program.

BOS478 LIVER TRANSPLANTATION FOR WILSON'S DISEASE – SINGLE CENTER EXPERIENCE

Agnieszka Jóźwik, Beata Łągiewska, Wojciech Lisik, Edyta Karpeta, Maciej Kosieradzki, Marek Pacholczyk
Department of General and Transplantation Surgery, Medical University of Warsaw

Introduction: Wilson's disease (WD) is autosomal recessive disorder of copper metabolism. WD is rare indication for Liver Transplantation (LT). In patients with predominantly liver symptoms liver transplantation is a well-established treatment modality. The aim of the study was to evaluate the long term results of Liver Transplantation in cohort of patients treated in our institution.
Materials & Methods: From August 2000 till December 2018, 653 LTs were performed at a single institution. In that group were 25 patients (3.8%) with Wilson's disease. Eight patients (32%) underwent elective and seventeen (68%) – urgent liver transplantation.
Results: Overall surgical complications rate was 32% – 35.3% in group of urgent transplantations and 25% in group of elective patients. There was two retransplantation in that group due to hepatic artery thrombosis. Overall graft survival rates at 1, 5 and 10 years after liver transplantation were respectively

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88%, 88% and 84%. Overall patient survival rates at 1, 5 and 10 years after liver transplantation were respectively 92%, 92% and 88%. Three patients died – 9 days, 57 days and 109 months after Liver Transplantation. The causes of death were stroke, hepatic artery thrombosis and infection.
Conclusion: Liver transplantation is a method of choice for treatment of Wilson's disease associated with liver failure. The results of the patient's and graft's survival are excellent in this selected group of patients.

BOS480 INTRODUCTION AND VALIDATION OF IMAGE J® AS LIVER VOLUMETRY

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[1]Severance Hospital; [2]Ulsan University Hospital

Preoperative liver volume assessment is a critical process to avoid posthepatectomy liver failure after liver surgery. ImageJ® is free, open-source software which can be used for volumetry in personal computer. This study aimed to compare ImageJ® to other commercial volumetry softwares in measuring liver volume before hepatectomy.

From September 2013 to October 2015, patients who underwent right hemihepatectomy for living donor were enrolled retrospectively. The resected specimen weights were compared with the volumes which were measured with Aquarius iNtuition®, VoxelPlus®, Dr.Liver® and ImageJ®, respectively

A total of 30 patients (22 men, 8 women) were analyzed. The mean age was 28.2 years (16–40 years), and the preoperatively estimated future liver remnant volume ration was 34.5 %(21–46 %). The total liver volumes measured with ImageJ® showed good correlation with other modalities ($r = 0.992$, 95% CI 0.982–0.996, $p = 0.000$). The difference between actual resected graft and right liver volumes measured with ImageJ® was average 31.4 cm $\pm$ 68 cm3 , and this result was more accurate than that measured by Aquarius iNtuition® ($F = 4.402$, $p = 0.000$)

The ImageJ® showed reliable liver volume estimation accuracy, when compared with commercial CT volumetry. This open-sourced free-ware can be useful to a liver surgeon who do not own commercial volumetry program.

BOS377 LIVER TRANSPLANTATION IN PATIENTS WITH PREEXISTING PORTAL VEIN THROMBOSIS: RESULTS OF A SINGLE CENTER

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Background: Portal vein thrombosis remains a challenging problem in liver transplantation (LT). Although, it is no longer an absolute contra indication for LT, surgical techniques depend on the extent of portal vein thrombosis. The long term outcomes of patients with portal vein thrombosis who undergo LT are not well defined. Here, our aim is to report our follow up results of LT patients with pre-existing portal vein thrombosis.
Materials and Methods: Since 1988, we performed 627 (428 living donor, 199 deceased donor) liver transplantations in our centers. We performed a retrospective study of all consecutive LT patients who underwent liver transplantation from December 1988 to December 2018. The outcomes of patients with portal vein thrombosis were reviewed.
Results: From December 1988 to December 2018, we performed 627 LT procedures at our centers. Of these, 33 patients had pre-existing portal vein thrombosis (23 living donor, 10 deceased-donor); 17 had partial thrombosis, and 16 had complete thrombosis. None of them had physiological portomesenteric shunt during surgery. We had no mortality due to portal vein anastomoses complication.
Conclusion: Generally, patients with portal vein thrombosis require more complex surgeries and are associated with higher complications rates. However, as is evident from our series, long term successful outcomes can be achieved even in patients with complete portal vein thrombosis.

[Correction added on 8 January 2020, after first online publication: abstract BOS377 has been added in this version.]

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