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Abstract book

LNPTA

ORAL ABSTRACTS

O1. PRESENCE OF CHRONIC RENAL DISEASE RAISES VALUES OF BNP AND UREA IN ACUTE HEART FAILURE PATIENTS

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Introduction: Renal disfunction usually alters BNP and Troponin values, but the impact of combination of Acute Heart Failure (AHF) and Chonic renal disease on these Heart Failure markers and urea remains unclear.

Purpose: This study aimed to evaluate the impact of chronic renal disease to the values of Brain natriuretic peptide (BNP), Troponin I and urea in AHF patients.

Methods: The study enrolled consecutive patients admitted to the emergency department with acute dyspnea due to AHF and other reasons. At the time of admission, patient history was taken and blood BNP, Troponin I and urea levels were collected. Data of 435 AHF patients (mean age 69,31 years) were included in the analysis. The patients were divided into 2 groups: those who had chronic renal disease and AHF (CRD+AHF group) and those who only had AHF diagnosis (AHF group) and their BNP, Troponin I and urea levels were compared. Data were analyzed using SPSS v23 statistical package with independent samples t-test.

Results: Differences in BNP and urea levels between CRD+AHF and AHF were statistically significant: mean level of BNP in CRD+AHF group was 1628.88 (SD±1887.088) pg/ml, in AHF group – 1086.44 (SD±1336.68) pg/ml, $p<0.05$; mean level of urea in CRD+AHF group was 18.10 (SD±10.7) mmol/l, in AHF group – 9.56 (SD±6.7) mmol/l, $p<0.05$. Differences in blood Troponin I levels did not show statistical significance: mean level in CRD+AHF group was 84.68 (SD±159) ng/l, in AHF group – 109.73 (SD±829), $p>0.05$.

Conclusion: The presence of chronic renal diseases significantly elevates BNP and urea levels in patients with confirmed AHF diagnosis, however, lower Troponin I levels in CRD+HF did not show statistical significance. The impact of this co-morbidity should be considered while evaluating AHF patients in the emergency room.

O2. PERINATAL STEM CELLS EFFICACY IN THE MANAGEMENT OF PRECLINICAL ACUTE KIDNEY INJURY

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Introduction and Aim

Acute kidney injury can lead to a chronic kidney disease.[1,2,3,4]

Placental mesenchymal stem cells (PSCs) have been shown to possess anti-inflammatory and immunomodulatory properties.[5]

Methods

Human placental amniotic and chorionic cells have been isolated.

8-12 wk. Wistar female and male rats (at least 3 per end point) underwent preclinical ischemia-reperfusion injury (IRI). Treated group (Index group) received $3x10^5$ PSCs, Control group received phosphate buffer solution (PBS) in the corticomedullar region into each kidney. Both groups were compared to Untreated group. Urine and blood serum samples collected on days 0, 3, 7, and 21 to 28. Histological kidney analysis – days 3, 7, 21 to 28. Survival was calculated based on histological censoring. Kidney specimens were stained with haematoxylin and eosin and periodic acid–Schiff for histological analysis.

Results

PSCs had a consistent yield, viability, mesenchymal stem cell markers expression and suppressed proliferation of T cells in a dose-dependent fashion. Survival rate improved – 100% (Index) vs. 63% and 72% in Control and Untreated groups, respectively.

Numerical normalization of mean creatinine levels observed at Day 3 in Index group and was 2 times lower than Control and Untreated group. Unlike Control and Untreated groups, serum creatinine and urea levels normalized at day 7 and 28 in Index group. Serum K^+ and Na^+ remains without essential dynamics in Index group.

Extensive acute tubular necrosis (ATN) with broad coagulative tubular epithelial necrosis was evident after 3 days in the Untreated group. A clear tendency for a lower ATN area, loss of brush border and tubular dilatation and ATN without significant coagulative necrosis was observed in Index group up to day 7. Only minor features of acute tubular damage and no interstitial fibrosis or tubular atrophy were observed in the Index group at day 21, compared to the residual active tubular damage with focal atrophy in the Control and Untreated groups at day 28.

Conclusion

PSCs are safe and have the potential to prevent initial kidney fibrosis cascade and kidney damage, therefore can be studied in a preclinical dose-response study.

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O3. "CHALLENGES IN DIFFERENTIAL DIAGNOSIS OF ALPORT SYNDROME"

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Keywords: Alport syndrome, nephropathies, hematuria, COL4 genes, genotype-phenotype correlations

Abstract:

Background: Differential diagnosis between Alport syndrome (AS) and thin basement membrane disease (TBM) was very confusing as these disorders had a common molecular basis but different phenotype, risk of renal injury and transmission factors [1]. As more cases with progressive nephritis appeared after diagnosis of "benign TBM", new reclassification, based on genetics was proposed, leading to 3 distinc types of IV collagen α3/4/5: X- linked, autosomal, and digenic AS [2,3]. The aim of this study was to evaluate prevalence of AS and to better characterize the clinical impact of individual mutations in Lithuanian cohort.

Methods: Genetic analysis of COL4A3, COL4A4 and COL4A5 was performed by using Next Generation Sequencing technologies. Phenotypes were obtained in Vilnius University Hospital "Santaros Klinikos" by questionnaire, collected clinical, histological and laboratory records.

Results: Genotype-phenotype data for 37 Lithuanian Alport families were reported. A total of 15 new pathogenic mutations at COL4A3, COL4A4 and COL4A5 were identified. Median age of genetic diagnosis was ±33.0 (2-84 y). Clinical manifestations of mutations in the COL4A5 gene were more severe in males than in females. Risk of reaching end stage renal failure (ESRF) in homozygous and compound mutations of COL4A3 and COL4A4 was 95 %. Type of mutation was a significant predictor of ESRF age ($p<0.01$). Mutations were classified as pathogenic, likely pathogenic and variants with unknown significance (VUS) by using ACMG classification and revealed 82%, 25% and 12% respectively. Nonsense mutations, large rearrangement, small mutations affecting reading frames and resulting lower or absent levels of functional protein were associated with the highest risk for ESKF by age 31 years, while the risk was lower with missense mutations.

Conclusion: Rate of progression to ESRF and timing of extrarenal manifestations are strongly influenced by genotype. Type of COL4 variants has important implications in the diagnosis, prognosis and treatment of AS.

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O4. THE EFFECT OF PRETRANSPLANT BODY MASS INDEX ON KIDNEY TRANSPLANT RECIPIENT AND GRAFT SURVIVAL

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The main risk factors that influence kidney transplant (KTx) recipient and graft survival are hypertension, diabetes mellitus (DM), smoking, hyperlipidaemia and obesity.

However, there are many disagreements and controversies about obesity and body mass index (BMI) for the kidney transplant (KTx) candidacy criteria.

The aim of this study was to assess the influence of pre-transplant BMI and body weight gain (BWG) to the graft and patient 5- and 10-years survival.

Our study group consisted of 706 patients who received their KTx after 2000. 51.9% (N=372) of the patients had BMI<25 and 47.6% (N=336) had BMI≥25.

We found better 5-year recipient survival in BMI<25 group (n=291, 79.5%) compared to the BMI≥25 group (n=238, 70.2%) $p<0.05$; 10-year recipient survival was better in BMI<25 group (n=175, 47.8%) compared to the BMI≥25 group (n=127, 37.5%) $p<0.05$. 5-year graft survival was better in BMI<25 patient group (66.9%, n=242) compared to the BMI≥25 group (61.1%, n=204) graft survival ($p<0.05$). Both recipient graft survival was affected by the diabetes mellitus independently from overweight. The mean 5-year BWG was 12.5% (±11.2). The mean 10-year BWG was 13.9% (±10.6). The KTx survival was better in BMI<25 patient group. The survival of DM patient group was worse. The BWG results are lower than in other studies. The prevention of post-transplant weight gain should be managed by the work of multidisciplinary team.

O5. IMMUNOGLOBULIN A NEPHROPATHY PREDICTION TOOL VALIDATION IN LATVIAN POPULATION

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Introduction. Immunoglobulin A nephropathy (IgAN) is the most common glomerulonephritis globally and leading cause of chronic kidney disease. New International IgAN Prediction tool (PT) has been recently published, tool predicts the risk of a 50% decline in GFR (glomerular filtration rate) or end-stage renal disease (ESRD) after biopsy.

Aim. The study aimed to validate new PT in Latvian population.

Methods. A retrospective cohort study at Pauls Stradins Clinical University Hospital (PSCUH) Nephrology center included patients with a histologically confirmed diagnosis of IgAN from 1st January 2013 till 1st November 2019. Data were collected from medical records: GFR calculated by CKD-EPI formula, blood pressure, daily proteinuria, use of ACEI/ARBs and immunosuppression before or at the time of renal biopsy and MEST scores. Cox regression model was used to calculate the risk of 50% decline in GFR or ESRD in our center IgAN patients' maximum in the 5-year period. The correlations between PT and our data were analyzed by Spearman's Correlation.

Results. 69 patients (37 men, median age - 38 years (age range 18-72)) were included. Most of them (31,9%) were in the age group of 30-39 years. A moderate positive correlation was observed between PT and our data (r_s=0,693; p= 0,001). The difference between PT's and our results mostly was from 0 to 10% (n=34), median difference was -3,69%, maximal negative and maximal positive differences were -75,57% and 56,77%, respectively. Major factors affecting the differences between data were: age (18-29 years), male gender, GFR (15-29 ml/min/1,73m^2), MEST (T1), proteinuria >3,5g/24h, systolic (140-179 mmHg) and diastolic (≥110 mmHg) blood pressure.

Conclusions. For majority of patients' PT calculated higher risk than our estimated. Since there is a statistically significant correlation between PT and our data, we conclude that this calculator might be applied to use in Latvian population.

O6. COMBINED IBUPROFEN AND FUROSEMIDE BASED DISPLACER-ENHANCED REMOVAL OF PROTEIN-BOUND UREMIC TOXINS ESTIMATED IN SPENT DIALYSATE

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Protein-bound uremic toxins (PBUT) are not efficiently removed by commonly used hemodialysis modalities (HD/HDF) [1,2,3]. The aim of this study was to investigate combined effect of chemical displacers (CDs), ibuprofen and furosemide, on PBUT removal in patients on hemodialysis.

Methods

Ten patients (6 from Linköping, Sweden, and 4 from Tallinn, Estonia) on chronic HDF were enrolled into the study. A mid-week 240 minutes long double-needle HDF procedure using CDs ibuprofen and furosemide was performed (dialyzer surface area 2,2 m^2, blood flow 300 mL/min, dialysate flow 800 mL/min, substitution volume 15 litres).

Ibuprofen (400 mg) was administered orally 15 – 60 min before the dialysis. Furosemide (100 mg) was administered to the arterial line 70 min after start of the dialysis by an infusion pump with constant infusion rate for 7 minutes. Spent dialysate samples were collected from the dialysate outlet of the dialysis machine before, during and after furosemide infusion.

Concentrations of uremic solutes of indole-acetic acid (IAA), indoxyl sulfate (IS), p-cresyl sulfate (pCS) and uric acid (UA) were determined by high-performance liquid chromatography. Creatinine and urea values were determined in the clinical laboratory by standard methods. Mean concentrations of the uremic solutes in the spent dialysate without the effect of the CDs were predicted by the logarithmic mean equation from concentration values in samples taken before and after furosemide infusion. Relative difference in percentage between concentrations in the spent dialysate was calculated.

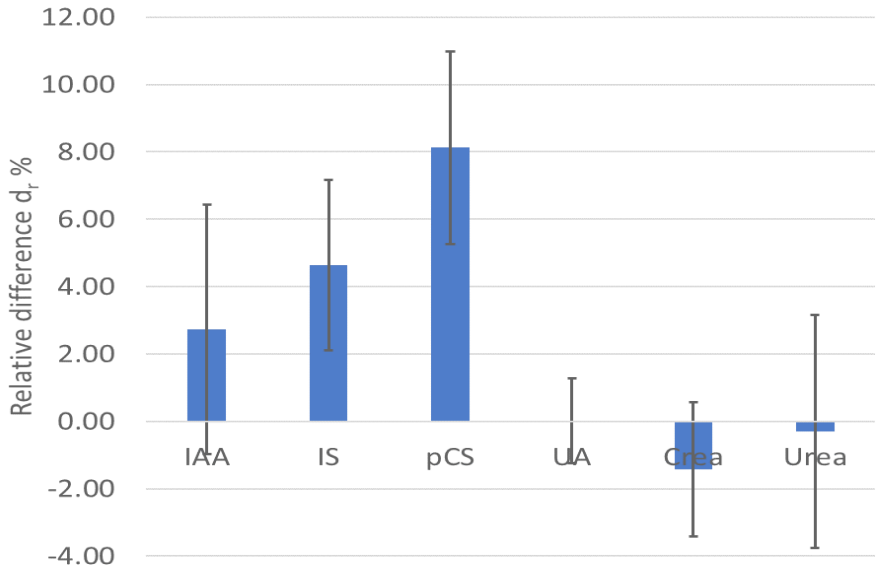

Figure 2: Relative difference of uremic toxins in spent dialysate after using combined chemical displacers furosemide and ibuprofen

Results

The relative difference between concentrations in the spent dialysate with and without the effect of CDs were in mean ± SD: IAA 2.74±3.71%, IS 4.63±2.53%, pCS 8.12±2.85%, UA 0.02±1.26%, Crea -1.42±1.99%, and urea -0.29±3.46%. **This demonstrates that the combined administration of ibuprofen and furosemide as chemical displacers during hemodiafiltration enhances the removal of PBUT.**

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O7. CASES OF RENAL FAILURE WITH *CORTINARIUS* SPECIES

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Mushrooms of the *Cortinarius* species are nephrotoxic and are associated with severe acute renal failure due to toxic effect of orellanine. Diagnosis is essentially clinical, because toxin results undetectable in plasma and urine. No specific therapy or antidote is known and early symptomatic treatment with adequate hemodialysis is recommended. [1,2]

Cortinarius poisoning is characterized by a delay (three days to three weeks) of symptoms (vomiting, diarrhea, loss of appetite, headache, a feeling of coldness, fatigue, thirst, chills and abdominal, lumbar, and muscle pain) and renal damage with clinical picture of interstitial nephritis.[2] We report seven cases of accidental consumption of *Cortinarius* spieces in Estonia, August 2020.

The patients had no underlying renal disease. None of the patients experienced clinically relevant cytolysis.

Gender/ Age	Creatinine at admission	Diuresis at admisson	Need of ICU	Need of HD during hospitalization	Biopsy	CKD (3 months after admission)	Chronic HD (3 months after admission)
M/37	642 mcmol/L	oliguria – 2000 mL	NO	YES	acute tubular necrosis	YES	YES
F/58	1776 mcmol/L	oliguria	YES	YES	not performed	YES	YES
M/66	2036 mcmol/L	oliguria	YES	YES	not performed	YES	YES
M/46	1600 mcmol/L	anuria	YES	YES	not performed	YES	YES
N/43	1072 mcmol/L	oliguria – 2000ml	YES	YES	not performed	YES	YES
M/46	2025 mcmol/L	anuria	NO	YES	not performed	YES	YES
N/43	243 mcmol/L	normal diuresis	NO	NO	not performed	NO	NO

Table 1: Characteristics of the Cortinarius intoxication patients

Six patients had an irreversible renal failure while only one of the patient who had considerably lower creatinine and maintained diuresis recovered. This case presentation indicates that intoxication with mushrooms of the genus Cortinarius is characterized by a delayed onset of severe and often irreversible renal failure.

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O8. PREDICTIVE ROLE OF REDOX MARKERS IN SEPTIC SHOCK PATIENTS ON CVVH TREATMENT

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Introductions. Currently there is a contradictive data about a role of continuous veno-venous hemofiltration (CVVH) in treatment of the septic shock patients. The discrepancies could be explained by the various Reduction-Oxidation (RedOx) phenotypes in septic shock.

Aim of the study. To check if RedOx markers are associated with the outcome of septic shock patients on CVVH treatment.

Methods. Prospective study included 65 patients with septic shock (Sepsis-3 criteria) who was started on CVVH during the 12 hours after admission to ICU from January 2019 to August 2020. Blood samples were taken from each patient prior start of CVVH. The following RedOx markers were measured: total antioxidant state (TAS), glutathione peroxidase (GPx) superoxide dismutase (SOD), nitric oxide (NO), malondialdehyde (MDA), glutathione reductase (GR) and 4-hydroxynonenal (4-HNE). SPSS 23.0 software was used for the data analyze, including hazard ratio (HR) by using Cox regression.

Results. Among study patients were 39/65 males, median of age 66 years (IQR 54-76,5), median of ICU stay 6 days (3-11). Based on the outcome all patients were divided into two groups: lethal 29/65 and survived 39/65. Thereafter RedOx markers were compared among the groups. In lethal outcomes TAS concentration is higher 1,92 mmol/l (IQR 1,67-2,61) in comparison to survivals – 1,85 mmol/L (IQR 1,67-2,20), HR 1,76 (95%CI 1,20-2,58). The same association is seen with GR, respectively, 100,3 U/L (IQR 71,8-149,9) versus 60,5 U/L (IQR 45,0-93,4), HR 1,006 (95%CI 1,003-1,010). Outcome shows no associations with GPx (p=0,624), SOD (p=0,611), NO (p=0,184), MDA (p=0,202) and 4-HNE (p=0,122).

Conclusions. Among septic shock patients on CVVH treatment high TAS and GR concentrations are strong predictors of fatal outcome. In septic shock patients high TAS and GR concentrations represent hyperinflammatory host response.

O9. PHYSICAL ACTIVITY DURING DIALYSIS: FIRST EXPERIENCE, RESULTS AND ROLE OF ACTIVE INVOLVEMENT OF PHYSIOTHERAPIST

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The aim of the study: to present the first experience of organized and physiotherapist supervised regular physical activity during dialysis sessions and to evaluate its impact on the functional capacity of chronic hemodialysis patients.

Methods: the program of physical activity during dialysis sessions under the supervision of physiotherapist was initiated 2018 11 in Diaverum Šilainiai hemodialysis clinic.

During the observational period (12 months) 33 prevalent patients were tested and suggested to start training during the dialysis sessions after evaluation of physiotherapist and construction of the individual plan. 11 patients who died, moved to other dialysis centres, refused to start the training or refused testing were excluded from the analysis. We analysed the results of 23 patients. For the evaluation of functional capacity, 3 functional tests (6 min walking test, sit-to-stand test, timed up and go test) were performed before the start of the program and after 3, 6, 9 and 12 months. The patient's opinion survey was performed after 3 months.

Statistical analysis was performed using SPSS 24 package.

Results

Results of 6 min walking test representing muscle endurance and stand up- sit down test, representing muscle strength were significantly better after one year (respectively 393.3m [187-563] vs 454.0 m [195.6-650], p-0.044 and 5.5 times [3-8] vs 7 times [4-11], p-0.011). Results of functional tests improved gradually with statistically significant improvement even after 3 month but deteriorated in the period between 9-12 month which can be explained by decreased activity due to temporal absence of physiotherapist.

Conclusions

We conclude that patients involvement in physical activity during dialysis sessions was associated with better results of functional tests after one year period and presence of professional physiotherapist during every dialysis session was one of the major factors to success.

POSTER ABSTRACTS

P1. ACUTE KIDNEY INJURY: COMPARISON RIFLE AND AKIN CRITERIA AFTER PARTIAL NEPHRECTOMY

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Introduction: several standardized definitions for acute kidney injury (AKI) have been used, no consensus exists regarding which to use after partial nephrectomies [1], [2] . This study applied the Risk, Injury, Failure, Loss, and End-stage Kidney (RIFLE) criteria by estimated GFR (eGFR) and serum creatinine (sCr), and AKI Network (AKIN) criteria to compare AKI incidence and outcomes after partial nephrectomies.

Aim of the study: to compare AKI incidence and outcomes after partial nephrectomies using AKIN and RIFLE criteria to identify AKI.

Methods: we performed prospective study to analyze the data of 63 patients without chronic kidney disease and albuminuria before partial nephrectomy for a single cT1 N0 M0 renal mass. Statistical analysis was performed, using the R statistical software package V 4.0.2. Relationships between AKI AKIN and RIFLE sCr and eGFR variables were evaluated as statistically significant when $p<0.05$.

Results: AKI by AKIN group: 19 (30.2%) patients experienced AKI after 48 h from surgery, of them the 1st stage -16 patients, and the 2nd stage – 3 (15.8%). After 2 months from surgery 8 cases of 1st stage AKI stay.
AKI by RIFLE sCr group: 12 (19%) AKI patients 48 h from surgery: 9 – Risk stage, 3 (25%) – Injury. Hypertansion rate was higher in AKI patients (*p=0.028*). After 2 months from surgery 3 patients stay with AKI.

AKI by RIFLE eGFR group: 24 (38%) patients 48 h from surgery: 21 (87.5%)– Risk stage, 3 – Injury. After 2 months from surgery 9 patients had AKI Risk stage.

In all AKI goups hopsiptal stay (*p<0.011*), hypotension time during surgery (*p<0.0421*) was longer than patients with non-AKI. After 48 h eGFR in all AKI groups was significantly lower (*p<0.001*).

Concliusion: the incidence of AKI and persist after 2 months was higher with RIFLE eGFR criteria. Hypotension time during surgery, hospital stay rates were higher in patients with all AKI criteria.

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P2. CUTE KIDNEY INJURY AFTER PARTIAL NEPHRECTOMY: RISK AND PREDICTOR FACTORS

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Introduction: partial nephrectomy (PN) can be an ideal option for tumors less than 7 cm, preserving part of the renal parenchyma and reducing the possible risk of glomerular filtration decrease **[1], [2]**. Acute kidney injury (AKI) emergence is still under research after PN.

Aim of the study: to evaluate the predictors of AKI after PN in adult patient without chronic kidney disease (CKD) and proteinuria.

Methods: a prospective study of 63 patients undergoing PN was conducted. The patients were divided into two groups according to AKI status by Risk, Injury, Failure, Loss, and End-stage Kidney (RIFLE) serum creatinine criteria: an AKI group and non-AKI group.

Results: 12 (19%) AKI patients were after 48 h from surgery: 9 – Risk stage, 3 (25%) – Injury. In AKI group was more patients with: comorbidities (91,7% vs 72.6%, *p=0.028),* higher hypotension time during surgery (27.5 ± 21.8 min vs 9.8 ±16.1 min, *p=0.002*) and decreased eGFR (50.2 ±15.5 vs 81.0 ±15.5, *p<0.001*). Univariate analysis identified independent risk factors for AKI including preoperative eGFR categories OR 4.65 (1.22-22.91, *p=0.034*) and hypotension time during surgery OR 1.05 (1.01-1.08, *p=0.006*). Multivariate regression analysis showed tumor volume OR 0.88 (0.73-0.96, *p=0.049*), blood lost OR 1.01 (1.00-1.02, *p=0.046*) and postoperative hyperglycemia OR 16.61 (2.76-655.49, *p=0.028*) correlated with AKI. Warm ischemia time, body mass index, metabolic syndrome did not predict AKI. The area under ROC curve for AKI prediction was 0.892 (95% CI 0.808 to 0.977, $p < 0.0001$) for serum hyperglycemia and neutrofhil to lymphocytes rate > 3.5 after 48 h from surgery.

Concliusion: tumor volume, blood lost, postoperative hyperglycemia may be an independent risk factor for AKI after PN. Postoperative serum hyperglycemia with higher neutrofil to lymphocytes rate more than 3.5 may be an early predictor for AKI after PN.

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P3. ACUTE KIDNEY INJURY AND PREOPERATIVE ESTIMATED GLOMERULAR FILTRATION RATE ARE PREDICTORS OF CHRONIC KIDNEY DISEASE AFTER PARTIAL NEPHRECTOMY

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Introduction: partial nephrectomy (PN) have been proposed as the standard of care for patients with type 1 tumors **[1], [2]**. However, prospective data on and accelerated chronic kidney disease (CKD) after PN is lacking. Intrinsic abnormalities in non-neoplastic kidney parenchyma might increase the risks and incidence of de novo of CKD **[3]**.

Aim of the study: to evaluate *estimated glomerular filtration rate* (eGFR) and acute kidney injury (AKI) as factors that determine the development of CKD after PN.

Methods: we performed prospective study to analyze the data of 63 patients without chronic kidney disease and albuminuria before partial nephrectomy for a single cT1 N0 M0 renal mass. Patients divided into two groups according to CKD status by KDIGO criteria after 12 months from surgery: CKD group and non-CKD group. Also CKD was evaluated by AKI AKIN and RIFLE criteria persistence.

Results: after 12 months from surgery were 4 (6.3%) patients with CKD. In CKD group were: lower preorative eGFR (67.8±8.7 vs 92.5±12.1, ml/min, $p<0.001$), higher hypotension time during PN (31.2±22.5 vs 11.9±17.7, min, $p=0.042$), lower postoperative eGFR after 48h (40.2±13.4 vs 77.5±17.7, ml/min, $p<0.001$) and 2 months from surgery (49.0±7.9 vs 85.3±12.4, ml/min, $p<0.001$), higher AKI by RIFLE serum creatinine (sCr) cases after 48 h from surgery (75% vs 15.3%, $p=0.022$).

Table 1. AKI persistence in CKD patients

Patient, Nr	AKI after 48 h			AKI after 2 months		
	AKIN, stage	RIFLE sCr, class	RIFLE eGFR, class	AKIN, stage	RIFLE sCr, class	RIFLE eGFR, class
1.	1	Risk	Risk	1	-	Risk
2.	-	-	-	1	-	Risk
3.	2	Injury	Injury	-	-	-
4.	1	Risk	Injury	-	-	Risk

Concliusion: AKI by RIFLE serum creatinin and lower preoperative eGFR may predict CKD after PN.

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P4. CARDIOVASCULAR RISK FACTORS IN KIDNEY TRANSPLANT RECIPIENTS

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Cardiovascular diseases are one of the main reason of hospitalization and mortality of kidney transplant recipients with functioning graft. The search for cardiovascular risk factors will increase the efficiency of kidney transplantation.

The aim of the study is identification of cardiovascular risk factors in kidney transplant recipients.

Methods. The study included 237 kidney transplant recipients (KTR). The average age was 47.1±10.8 years. 79 (33.3%) KTR had adverse cardiovascular events (CVE) (acute coronary syndrome, rhythm disturbance, hypertensive crisis) for three years of observation. The comparison group was 158 (66.7%) KTR without CVE. The groups were comparable by age, gender and traditional cardiovascular risk factors.

Results.

KTR with CVE had a longer duration of chronic kidney disease than KTR without CVE – 21.1±12.2 years versus 16.6±9.6 years, t=-3.06, p<0.01. The proportion of patients with obesity was higher in KTR with CVE than in KTR without CVE –– 27.8% (n=22) versus 12.7% (n=20), χ^2=8.33, p<0.01. The graft glomerular filtration rate less than 30 ml/min/1.73m^2 was more common in KTR with CVE than in KTR without CVE 12.7% (n=10) versus 3.2 % (n=5), χ^2= 9.64, p<0.01. The frequency of erythrocytosis was higher in KTR with CVE than in KTR without CVE – 29.1% (n=23) versus 16.5% (n=26), χ^2=5.15, p<0.05. Low density lipoproteins and triglycerides blood levels of KTR with CVE were higher than those of KTR without CVE – 2.97±0.88 mmol/L versus 2.61±0.69 mmol/L, t =-3.47, p<0.01 and 1.70 (1.30-2.50) mmol/L versus 1.45 (1.08-1.80), Z=-3.03, p<0.01, respectively. 27.8% (n=22) KTR with CVE had an increased NT-proBNP blood level versus 11.4% (n=18) of KTR without CVE, χ^2=10.17, p<0.01.

Conclusions: A longer duration of chronic kidney disease, obesity, glomerular filtration rate less than 30 ml/min/1.73m^2, erythrocytosis, higher low density lipoproteins and triglycerides blood levels and an elevated NT-proBNP blood level were cardiovascular risk factors in kidney transplant recipients.

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P5. THE LIFE EXPECTANCY OF THE ELDERLY ON DIALYSIS: A SINGLE-CENTER STUDY

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Brief introduction to the research question:

According to the European registry, 48 % of new dialysis patients are ≥65 years old [1]. 5-year survival of elderly dialysis patients' is 23.6%, which is markedly less than that of similarly aged patients with cancer (51%) [2].

Aim(s) of the study:

The aim was to assess the survival probability and causes of death in elderly dialysis patients.

Methods used including statistical analysis methods:

A retrospective cohort trial included 151 end-stage renal disease (ESRD) patients aged ≥65 years old with dialysis onset between January 2015 and December 2019, with follow-up until December 2019. Kaplan-Meier survival curve was constructed. Causes of death were evaluated.

Summary of results containing real data and the outcome of statistical analyses:

Overall 5 years, the proportion of new elderly dialysis patients remained unchanged (30.4% -32.3% patients/year). The median age was 70 [67;73] and 94.7% were on hemodialysis. During the follow-up, 72.2% of patients died and the median survival was 7.470 (4.930;10.700) months. The number censored was 27.8% and included 1.99% transplanted patients, 3.97% - transferred to another hospital, 1.32% - released from dialysis and 20.53% dialysis patients. 43.1% of all deceased patients died within a period of time up to 3 months. The main death causes were cardiac arrest 33.9%, congestive heart failure (CHF) 22.0%, atherosclerotic heart disease (ASHD) 17.4%, septicemia 11.9%, uremia 8.3%. Only 3.7% of patients died at home.

Conclusions:

Elderly dialysis patients' median survival is about 7.5 months, with a significant part of patients (43%) dying over a period of up to 3 months, and only 0.66% have a life expectancy of more than 5 years. Sudden cardiac death is the leading elderly dialysis patients' death cause due to cardiac arrest, CHF and ASHD.

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P6. DIABETUS MELLITUS AFTER KIDNEY TRANSPLANTATION: RISK FACTOR ANALYSIS

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Background. New onset diabetes mellitus (NODAT) has been recognized as an increasing problem in kidney transplantation (KT), with an impact on patient morbidity and transplant function.

Aim. The aim of the study is to analyze the most frequent modifiable and non-modifiable risk factor association with development of NODAT.

Materials and methods. A retrospective study involving 216 patients undergoing KT between 2014 and 2017 were enrolled. NODAT was diagnosed according to general population guidelines. Patients were divided into two groups: NODAT group and control group (without NODAT). Risk factors influencing the development of NODAT were studied.

Results. A total of 191 patients were analysed, of which 13 (6,81 %) developed NODAT. The mean age in NODAT group was 47,81 ± 14,30 years, compared to control group 52,38 ± 12,50 years, (*P*=0.24). The results of gender division were quite equal for both groups: 46,15% men and 53,85 % women in the NODAT group versus 52,54% men and 47,46% women in control group, *P*=0,78, V1=0.03. The mean BMI in NODAT group was 25,30 ± 6,34 kg/m^2 compared to 27,05 kg/m^2, *P*=0.12. There was also weak relationship (V=0.15) between C-hepatitis infection and the development of NODAT (23,08% *versus* 6,78%, *P*=0.07).

Although relative risk for autosomal dominant polycystic kidney disease was 0,14, and 95% CI 1,38±0,98, the incidence was 46,15% vs 17,51%, *P*=0,08 which means that statistical significance is limited and by increasing the population statistical significance with PTDM is likely to occur.

Conclusion. According to results, the prevalence of the studied population was relatively small. The association to NODAT was only with C -hepatitis infection, although it was weak. With the other known risk factors, the association was not proven. By including a higher number of patients we could expect to have greater statistical credibility.

P7. IMPACT OF OBESITY ON VASCULAR CALCIFICATION IN CHRONIC KIDNEY DISEASE PATIENTS

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Introduction

Recent studies have demonstrated that obesity has a protective effect and is paradoxically linked with a greater survival in patients with advanced chronic kidney disease (CKD) especially in dialysis dependent end-stage kidney disease (ESRD). Abdominal aortic calcification (AAC), arterial stiffness, peripheral arterial disease are now demonstrated by many authors as predictors of cardiovascular and all-cause mortality in CKD patients. Protective effect of obesity on formation of vascular calcification (VC) in different stages of CKD is not studied enough. It is an under a great interest to find out correlations between obesity and VC in CKD patients for evaluation of the benefits and harms of obesity in this population in different stages which gives an opportunity to act early.

Aim

The aim of this study was to compare VC in obese and non-obese CKD patients, using two methods for measuring calcifications in different anatomical areas.

Methods

Prospective cross-sectional study was conducted at Tartu University Hospital in Estonia. The study included one hundred sixty-eight consecutive patients with CKD. Patients were divided into two groups by body mass index (BMI) – group 1 (BMI ≥ 30 kg/m^2) and group 2 with BMI < 30 kg/m^2. Additionally, patients were divided according to eGFR - patients with estimated glomerular filtration rate (eGFR) < 45 mL/min/1.73m^2 (subgroup A) and eGFR ≥ 45 mL/min/1.73m^2 (subgroup B). Clinical data were collected from the electronic medical history and laboratory findings of patients. For evaluation of AAC lateral lumbar X-ray was performed. For classification of aortic calcification Kauppila score was used. The ankle-brachial index (ABI) was defined by the ratio of ankle and brachial systolic pressure. Systolic pressure of foots was measured by using Atys Microflow Doppler ultrasound device and was assessed on the tibial posterior and dorsalis pedis arteries. The measurement of blood pressure of both arms was performed mechanically. The data were processed using the The Statistica (version 13.5.0.17) software package.

Results

Altogether there were 168 patients in study population (male 45.9%, mean age 59.8±14.8 years). There was no significant difference in gender and age between obese and non-obese groups (p=0.2). Obese group patients were older (p=0.03), there were more diabetics among them (p=0.05). The presence of AAC was more common in 1B group compared to 2B group (p = 0.05) and in 1B and 2B than in 1A and 2A groups (p=0.005 and p=0.02).

In both groups ABI ≥1.3 and ABI <0.9 were more common in B subgroups.

In Mann-Whitney U test analysis, we found, that AAC score, PTH and serum phosphorus levels were significantly higher in 1B group compared with 1A group.

Table 2. Vascular calcification in different patients' groups

Parameters	Group 1 (BMI ≥30 kg/m^2)		*P* value	Group 2 (BMI <30 kg/m^2)		*P* value
	Subgroup A (eGFR≥45)	Subgroup B (eGFR <45)		Subgroup A (eGFR≥45)	Subgroup B (eGFR <45)	
AAC (%)	18.8	51.5	0.005	11.1	31.3	0.02
ABI ≥1.3 (%)	6.3	21.2	0.08	13.9	20.9	0.4
ABI <0.9 (%)	15.6	18.2	0.7	11.1	26.9	0.06

Data are given as percentage of positive cases

Statistically significant p value < 0.05

BMI body mass index; eGFR estimated glomerular filtration rate; AAC abdominal aortic calcification; ABI ankle-brachial index; LVH left ventricular hypertrophy

Conclusion

Our study demonstrated that obesity does not get favourable effect on VC in CKD patients independently of kidney function. VC, assessed by different methods, was more pronounced in obese patients with lower kidney function.

P8. IMPACT OF OBESITY ON VASCULAR CALCIFICATION IN CHRONIC KIDNEY DISEASE PATIENTS

Jana Uhlinova[1, 2], Anne Kuudeberg[3], Alina Denissova[2], Pilvi Ilves[2], Margus Lember[1, 2], Mai Ots-Rosenberg[1, 2]

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Introduction

Recent studies have demonstrated that obesity has a protective effect and is paradoxically linked with a greater survival in patients with advanced chronic kidney disease (CKD) especially in dialysis dependent end-stage kidney disease (ESRD) [1], [2]. Abdominal aortic calcification (AAC), arterial stiffness, peripheral arterial disease are now demonstrated by many authors as predictors of cardiovascular and all-cause mortality in CKD patients [3], [4], [5]. Protective effect of obesity on formation of vascular calcification (VC) in different stages of CKD is not studied enough. It is an under a great interest to find out correlations between obesity and VC in CKD patients for evaluation of the benefits and harms of obesity in this population in different stages which gives an opportunity to act early.

Aim

The aim of this study was to compare VC in obese and non-obese CKD patients, using two methods for measuring calcifications in different anatomical areas.

Methods

Prospective cross-sectional study was conducted at Tartu University Hospital in Estonia. The study included one hundred sixty-eight consecutive patients with CKD. Patients were divided into two groups by body mass index (BMI) – group 1 (BMI ≥ 30 kg/m^2) and group 2 with BMI < 30 kg/m^2. Additionally, patients were divided according to eGFR - patients with estimated glomerular filtration rate (eGFR) < 45 mL/min/1.73m^2 (subgroup A) and eGFR ≥ 45 mL/min/1.73m^2 (subgroup B). Clinical data were collected from the electronic medical history and laboratory findings of patients. For evaluation of AAC lateral lumbar X-ray was performed. For classification of aortic calcification Kauppila score was used. The ankle-brachial index (ABI) was defined by the ratio of ankle and brachial systolic pressure. Systolic pressure of foots was measured by using Atys Microflow Doppler ultrasound device and was assessed on the tibial posterior and dorsalis pedis arteries. The measurement of blood pressure of both arms was performed mechanically. The data were processed using the The Statistica (version 13.5.0.17) software package. Continuous variables were compared using the Mann-Whitney U test.

Results

Altogether there were 168 patients in study population (male 45.9%, mean age 59.8±14.8 years). There was no significant difference in gender between obese and non-obese groups (p=0.2). Obese group patients were older (p=0.03), there were more diabetics among them (p=0.05). The presence of AAC was more common in 1B group compared to 2B group (p = 0.05) and in 1B and 2B than in 1A and 2A groups (p=0.005 and p=0.02).

In both groups ABI ≥1.3 and ABI <0.9 were more common in B subgroups.

In Mann-Whitney U test analysis, we found, that AAC score, PTH and serum phosphorus levels were significantly higher in 1B group compared with 1A group.

Table. Vascular calcification in different patients' groups

Parameters	Group 1 (BMI ≥30 kg/m²)		*P* value	Group 2 (BMI <30 kg/m²)		*P* value
	Subgroup A (eGFR≥45)	Subgroup B (eGFR <45)		Subgroup A (eGFR≥45)	Subgroup B (eGFR <45)	
AAC (%)	18.8	51.5	0.005	11.1	31.3	0.02
ABI ≥1.3 (%)	6.3	21.2	0.08	13.9	20.9	0.4
ABI <0.9 (%)	15.6	18.2	0.7	11.1	26.9	0.06

Data are given as percentage of positive cases

Statistically significant p value < 0.05

BMI body mass index; eGFR estimated glomerular filtration rate; AAC abdominal aortic calcification; ABI ankle-brachial index; LVH left ventricular hypertrophy

Conclusion

Our study demonstrated that obesity does not get favourable effect on VC in CKD patients independently of kidney function. VC, assessed by different methods, was more pronounced in obese patients with lower kidney function.

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P9. RENAL MANIFESTATION OF AMYLOIDOSIS: SINGLE CENTER EXPIERIENCE

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Objectives. The amyloidosis are a rare group of diseases that result from extracellular deposition of amyloid and multiorgan involvement, although 1 organ system usually predominates. Few epidemiological data have been published by now [1].

Aim. To perform a registry analysis of patients with confirmed renal amyloidosis biopsy.

Materials and methods. In retrospective study 40 symptomatic patients were enrolled with renal biopsy-proven amyloidosis from January 2014 through January 2020 treated in a single tertiary center, Riga, Latvia. Descriptive and analytical statistics were performed on SPSS, level of statistical significance was set at $p < 0.05$. GFR was calculated by CKD-EPI formula.

Results. The mean age of study group at enrolment time was 64.5 years [95% CI: 60.8-68.1], most of the patients were females - 57.5% [42.5-72.5]. Renal biopsies showed that patients had three types of amyloidosis: AA 50% [35-67.5], AL 37.5% [22.5-52.5] and ATTR 12.5% [2.5-25]. Each year since 2014 were revealed 7 cases per year, excluding 2016 when it was only 5 cases. By now death was diagnosed in 24 patients out of 40. The mean survival period from diagnosis date is 247.63 days (CI 150.8-359).

Renal replacement therapy (RRT) was performed in 12 patients: peritoneal dialysis - 6, hemodialysis – 6. RRT was started in a time of 265.5 days (CI 46.59-602.4). Start of RRT was not statistically significant associated with mortality (p=0.206).

Mean serum creatinine and proteinuria at diagnosis were 163.1±19.9 μmol/l and 5.3 ±3.8 g/day, respectively. Symptomatic other organ involvement (OOI) had 25% of patients – heart, intestine, lungs or CNS, but there were not found a significant relationship between OOI and patients survival [p=0.053].

Conclusion. Three types of amyloidosis are revealed in renal biopsy registry, and one third of patients requires RRT. The mortality is high in patients with diagnosed amyloidosis.

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P10. THE VALUE OF DONOR BIOMARKERS FOR PREDICTING EARLY GRAFT FUNCTION

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Abstract

Background: When considering whether to accept a cadaveric kidney with worsened kidney function for the donation, there are no commonly accepted guidelines. Additional tests for biomarkers, which are easy, inexpensive, and quick to perform, could help with the decision of kidney acceptance [1]. NGAL (neutrophil gelatinase–associated lipocalin), IL-18 (interleukin-18) and KIM-1 (kidney injury molecule-1) are the commonly reported biomarkers for acute kidney injury [2-4]. Aim of our study was to evaluate whether these donor's ischemic injury biomarkers could predict delayed graft function after kidney transplantation.

Materials and methods: The prospective observational study enrolled 29 kidney donors and 48 corresponding adult recipients who underwent kidney transplantation between May 2017 and December 2019 at the Hospital of Lithuanian University of Health Sciences. 34.5% of donors met expanded criteria. We tested kidney donor's NGAL, IL-18 in serum and urine, KIM-1 in urine at the day of kidney explantation and assessed associations with recipients delayed graft function (DFG). Donors' specimens were analyzed in Rigas Stradins University Laboratory as recommended by the manufacturer by using commercial ELISA kits. All data were analyzed using SPSS 22.0 (IBM Co., NY, USA).

Results: Among 48 corresponding kidney transplant recipients, 41.6% experienced delayed graft function. In univariate analysis serum and urine IL-18 (p=0.041 and p=0.027), urine NGAL (p=0.029), and urine KIM-1 (p=0.007) levels were significantly higher in the DGF group as compared to the immediate graft function (IGF) group. Significance of urine NGAL was not confirmed in multivariate analysis (p=0.06). Significance of other biomarkers was confirmed in multiple logistic regression analyses with a backward variable selection adjusted for donor evaluation (extended criteria or standard), recipient's dialysis vintage, cold ischemia time. The significant association of the serum NGAL (p=0.191) with DGF was not found. There was no statistically significant correlation between donor biomarkers and donor's serum creatinine.

Conclusion: In summary, donor's serum and urine IL-18, urine KIM-1 biomarkers, together with clinical donor evaluation, recipient's dialysis vintage and cold ischemia time can provide additional value in predicting DGF.

Keywords: biomarker, kidney donor, transplantation, delayed graft function.

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P11. VALUE OF SUPAR BIOMARKER AND LUNG ULTRASOUND FOR THE PREDICTION OF EARLY KIDNEY GRAFT FUNCTION

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Background: Certain pre-and post-transplant causes can lead to delayed function of the transplanted kidney. This study aimed to test whether demographic data, body hydration status, level of soluble urokinase-type plasminogen activator receptor (suPAR) biomarker could predict early kidney graft function.

Methods: We examined patients, who underwent cadaveric kidney transplantation (Tx) from 2016/11/01 to 2020/10/01 in the Hospital of Lithuanian University of Health Sciences. Demographic data and data on routine laboratory tests were collected. For evaluating body hydration we performed lung sonography (LU) and bioelectrical impedance analysis (BIA) before Tx and 3-5 days after (n=76 (61.3%). We evaluated the level of suPAR biomarker before Tx and 3 days after (n= 17). On follow-up, 2 groups of patients were distinguished: immediately graft function (IGF) and slow graft function (SGF).

Results: SGF was observed in 57 (45.9%), of 124 patients. The development of SGF was associated with longer donor cold ischemia (17.6±5.1 hours vs 15.5 ±4.5 hours; p=0.02), hyperhydration measured by LU before Tx (1.2±1.8 B lines vs 0.3±0.8 lines; p=0.01) as compared to the IGF group. BIA measures were not different between groups. The level of suPAR before Tx was not related to early graft function. But 3 days after Tx there was suPAR reduction in the IGF group, but remaining high level in the SGF group (6±2 vs 8.8 ±2.2; p=0.04). No other tested factors were related to SGF.

Conclusion: Lung hyperhydration before kidney transplantation and longer cold ischemia time is associated with slow graft function. SuPAR level was higher 3 days after transplantation in the slow graft function group. Bigger sample size is needed for evaluation of suPAR value in kidney transplantation.

References:

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