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10-13 November 2022
Antalya, Turkey

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17th BANTAO

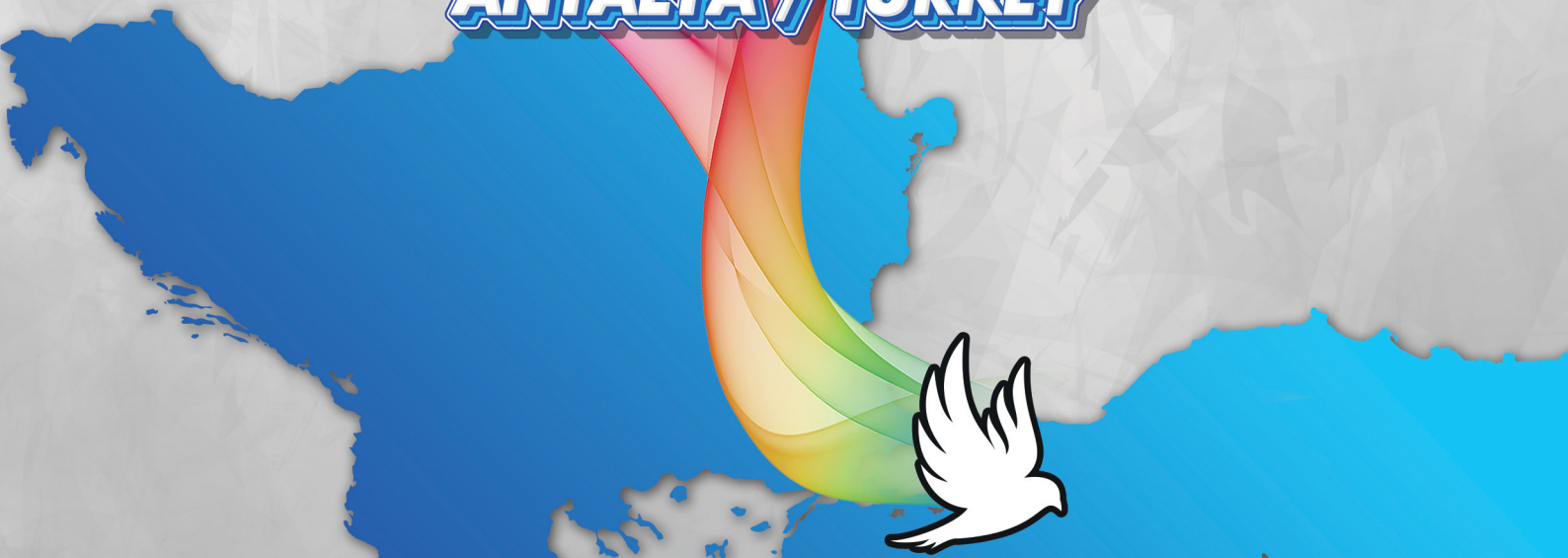
(The Balkan Cities Association of Nephrology, Dialysis, Transplantation and Artificial Organs)

CONGRESS

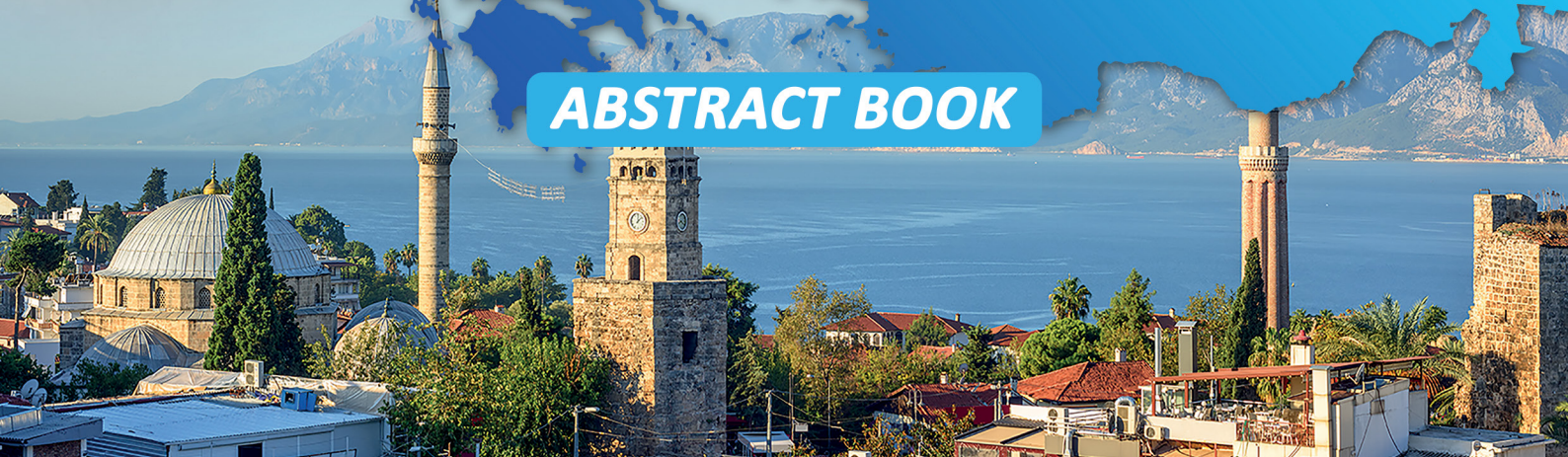
Kaya Palazzo Congress Center

November 10-13 , 2022

ANTALYA / TURKEY



ABSTRACT BOOK



17th BANTAO CONGRESS

November 10-13, 2022, Antalya, Turkey

Dear Friends and Colleagues,

It was our pleasure and honor to welcome you at the 17th BANTAO (The Balkan Cities Association of Nephrology, Dialysis, Transplantation and Artificial Organs) Congress on 10-13 November, in Antalya-Turkey

The Scientific Committee of the Congress paid great attention to include the most up-to- date topics in the various fields of Nephrology in the Congress Program. The scientific program of the 17th BANTAO Congress was enriched by "Nephrogenetics" CME Course supported by ERA (European Renal Association) and "Immunologic Kidney Diseases" CME Course supported by ISN (International Society of Nephrology). The invited speakers from Balkan Cities, distinguished experts coming for ERA and ISN-supported CME Courses and speakers from Turkey created a great athmosphere for education and progression in the field of Nephrology. The attendees had a great chance to listen, meet and interact with world-renowned speakers, and also had time to see their friends and colleagues in this face to face meeting after the long Covid pandemic.

We hope the congress made a great contribution to the education of the attendees and the progression of scientific interactions between the colleagues in Balkans.

As you could find the congress program below; you could also watch all the presentations made during the congress whenever you want at: www.nefroloji2022.serenaslive.com

Thank you for your participation and support.

President of the Congress
President of the BANTAO
Mustafa ARICI

Vice President of the Congress
Secretary of the BANTAO
M. Sena ULU

17th BANTAO CONGRESS

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Tolga Yıldırım, Turkey

Scientific Program

10 NOVEMBER 2022, THURSDAY

HOUR	HALL A
13:30-15:00	**ERA CME NEPHROGENETICS COURSE** **Part 1**
13:30-14:00	**Chairs:** Christoph Wanner (Germany), Mustafa Arıcı (Turkey)
14:00-14:30	What should I know before ordering a genetic test? **Beata Lipska (Poland)**
14:30-15:00	How can I interpret a genetic test result? **Fatih Ozaltın (Turkey)**
	How frequent are genetic diseases as cause of CKD? **Roser Torra (Spain)**
15:00-15:30	**COFFEE BREAK**
15:30-16:15	**SATELLITE SYMPOSIUM**
16:15-17:30	**ERA CME NEPHROGENETICS COURSE** **Part 2**
16:15-16:40	**Chairs:** Roser Torra (Spain), Serhan Tuğlular (Turkey)
16:40-17:05	Types of cytogenetic and molecular tests – which for who? **Beata Lipska (Poland)**
17:05-17:30	The importance of correct phenotyping for genetic interpretation? **Fatih Ozaltın (Turkey)**
	Genetic counselling for inherited kidney diseases **Roser Torra (Spain)**

10 NOVEMBER 2022, THURSDAY

HOUR	HALL A
18:00-19:00	**TSN & BANTAO** Joint Opening Ceremony
18:00-18:30	**Alaattin Yıldız, Chair of TSN**
18:30-18:35	**Mustafa Arıcı, Chair of BANTAO**
18:35-18:40	**Ayten Karakoç, Chair of Nursery Society**
18:40-18:45	**Rümeyza Kazancıoğlu, Chair of TSJ**
18:45-18:55	Abstrast Results of TSN
18:55-19:00	Abstract Results of Bantao
19:00-19:30	TSN&BANTAO Opening Lecture **Oturum Başkanları:** Ali Başçı, Alaattin Yıldız Wars, Kidney Patients and Beyond **Mehmet Şükrü Sever**
19:30-20:30	Retirement Ceremony **Musa Bali** **Fevzi Ersoy** **Mehmet Şükrü Sever**

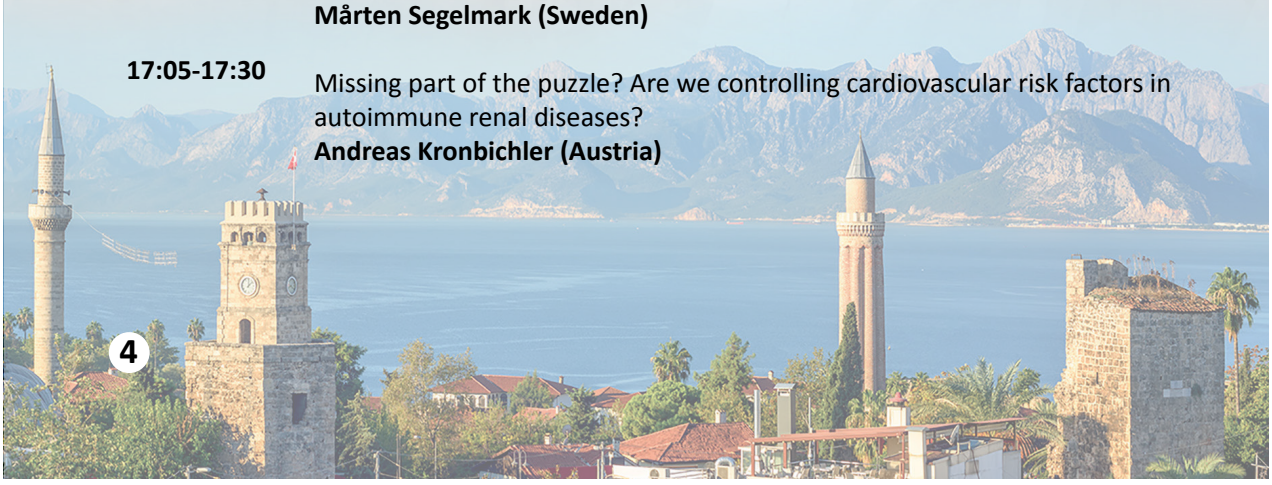
17th BANTAO CONGRESS

11 NOVEMBER 2022, FRIDAY

HOUR	HALL A	HALL B
08:30-09:45	**CLINICAL NEPHROLOGY** **Chairs:** Tevfik Ecder (Turkey), Sena Ulu (Turkey)	**Oral Presentations-1** **Chairs:** Barış Hasbal (Turkey) Funda Sağlam (Turkey)
08:30-08:55	Diabetic kidney disease – early detection and subsequent intervention for delaying the progression **Goce Spasovski (N. Macedonia)**	***Please see page 8***
08:55-09:20	ANCA associated vasculitis in University Clinical Center of Republica Srpska-our experiences **Milorad Grujičić (Bosnia and Herzegovina)**	
09:20-09:45	Mechanisms of renal fibrosis in glomerulonephritis **Aglaia Chalkia (Greece)**	
09:45-10:15	**COFFEE BREAK**	
10:15-11:00	**SATELLITE SYMPOSIUM**	
11:00-12:28	**CLINICAL NEPHROLOGY** **Chairs:** Meltem Pekpak (Turkey) Dimitrios Petras (Greece)	
11:00-11:22	Short and long-term recovery after kidney injury in patients with COVID-19 **Damir Rebić (Bosnia and Herzegovina)**	
11:22-11:44	Limits in the nephroprotective therapy **Adalbert Schiller (Romania)**	
11:44-12:06	Oxidative stress in chronic kidney disease **Flaviu Bob (Romania)**	
12:06-12:28	Should we consider the cardiovascular system while evaluating CKD-MBD. **Merita Rroji (Albania)**	
12:30-13:30	**LUNCH / POSTER SESSION** **Chairs:Nikolina Smokovska (North Macedonia), Meltem Seziş Demirci (Turkey), Erhan Tatar (Turkey)**	3

11 NOVEMBER 2022, FRIDAY

HOUR	HALL A
13:30-15:00	**ISN CME IMMUNOLOGIC KIDNEY DISEASES Part 1** **Chairs:** Rumeyza Kazancıoğlu (Turkey) Petar Kes (Crotia)
13:30-14:00	Emerging modes of treatment in IgA nephropathy **Vladimir Tesar (Czech Republic)**
14:00-14:30	Anti-GBM disease – pathogenesis and a novel therapy **Mårten Segelmark (Sweden)**
14:30-15:00	Rationale, efficacy and safety of B-cell depletion in FSGS and MCD **Andreas Kronbichler (Austria)**
15:00-15:30	**COFFEE BREAK**
15:30-16:00	**SATELLITE SYMPOSIUM**
16:15-16:40	**ISN CME IMMUNOLOGIC KIDNEY DISEASES Part 2** **Chairs:** Gültekin Süleymanlar (Turkey), Kültigin Turkmen (Turkey)
16:15-16:40	Membranous nephropathy - recent progress in the treatment **Vladimir Tesar (Czech Republic)**
16:40-17:05	Treatment of ANCA associated vasculitis – what is new in the 2022 EULAR recommendations **Mårten Segelmark (Sweden)**
17:05-17:30	Missing part of the puzzle? Are we controlling cardiovascular risk factors in autoimmune renal diseases? **Andreas Kronbichler (Austria)**



12 NOVEMBER 2022, SATURDAY

HOUR	HALL A	HALL B
08:30-09:45	**CLINICAL NEPHROLOGY and TRANSPLANTATION** **Chairs:** Elif Arı Bakır (Turkey) Sanjin Racki (Croatia)	**Oral Presentations-2** **Chairs:** Savaş Ozturk (Turkey) Tolga Yıldırım (Turkey) ***Please see page 8-9***
08:30-08:55	How to treat NODAT in Tx patient **Nikolina Basic-Jukic (Croatia)**	
08:55-09:20	Post-kidney transplantation malignancies, how often should we screen the patient? **Arzu Velioğlu (Turkey)**	
09:20-09:45	New biomarkers in early diagnosis of Diabetic Nephropathy **Nevi Pasko (Albania)**	
09:45-10:15	**COFFEE BREAK**	
10:15-11:00	**SATELLITE SYMPOSIUM**	
11:15-12:30	**CLINICAL NEPHROLOGY and DIALYSIS** **Chairs:** Myftar Barbullushi (Albania) Vidojko Gjorgjevic (Serbia)	
11:15-11:40	Strange vascular access for hemodialysis **Petar Dejanov (N. Macedonia)**	
11:40-12:05	Gene polymorphisms and all-cause mortality in end-stage-renal disease patients on dialysis and renal transplant patients **Sanja Simić Ogrizović (Serbia)**	
12:05-12:30	The Turkish Home Hemodialysis Experience How to start and expand a home hemodialysis program in a middle-income country **Ercan Ok (Turkey)**	
12:30 - 13:30	**LUNCH / POSTER SESSION** **Chairs: Özkan Ulutaş (Turkey), Ercan Türkmen (Turkey)**	

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12 NOVEMBER 2022, SATURDAY

HOUR	HALL A	HALL B
13:30-15:00	**CLINICAL NEPHROLOGY and DIALYSIS** **Chairs:** Lada Petrović (Serbia) Marina Mugosa Ratkovic (Montenegro)	**Oral Presentations-3** **Chairs:** Sibel Bek (Turkey) Serap Demir (Turkey)
13:30-14:00	Patient selection for APD. For whom, when? **Vassilios Liakopoulos (Greece)**	***Please see page 9***
14:00-14:30	Acute peritoneal dialysis **Fevzi Ersoy (Turkey)**	
14:30-15:00	What we know about the treatment of anemia using HIF stabilizers: experience from clinical trials. **Nada Dimkovic (Serbia)**	
15:00-15:30	**COFFEE BREAK**	
15:15-16:15	**SATELLITE SYMPOSIUM**	
16:15-16:40	**CLINICAL NEPHROLOGY** **Chairs:** Dimitris Tsarikis (Greece) Halima Resic (Bosnia & Herzegovina)	
16:15-16:40	Genetics of FSGS in adults **Milan Radović (Serbia)**	
16:40-17:05	Top 10 papers in Nephrology 2021: A Nefroblog selection **Ayça İnci (Turkey)**	
17:05-17:30	A new educational tool in Nephrology: Social media **Didem Turgut (Turkey)**	
17:30-18:00	**Closing remarks**	

Oral Presentations

ORAL PRESENTATIONS - 1

OP-01// COGNITIVE FUNCTION, DEPRESSION AND QUALITY OF LIFE IN PATIENTS ON MAINTENANCE HEMODIALYSIS
Sonja Golubović

OP-02// VACCINATION PROTECTION AND COVID-19 MORTALITY IN HAEMODIALYSIS PATIENTS
Vasilije Tomanoski

OP-03// A NOVEL MACHINE LEARNING APPROACH TO PREDICT POSTOPERATIVE KIDNEY FUNCTION RISK IN KIDNEY STONE DISEASE PATIENTS
Didem Turgut

OP-04// CORRELATIONS BETWEEN ADVANCED GLYCATION END PRODUCTS AND BODY COMPOSITION PARAMETERS IN PERITONEAL DIALYSIS PATIENTS
Josipa Radić

OP-05// PODOCYTURIA AS POTENTIAL MARKER OF ATHEROSCLEROSIS IN DIABETIC PATIENTS AND ITS RELATION TO THE PATHWAYS OF THE SIGNAL
Meltem Seziş Demirci

OP-06// PRESENCE OF CORONARY ARTERY CALCIFICATION IN THE INITIAL YEARS OF HEMODIALYSIS
Jovana Kusic Milicevic

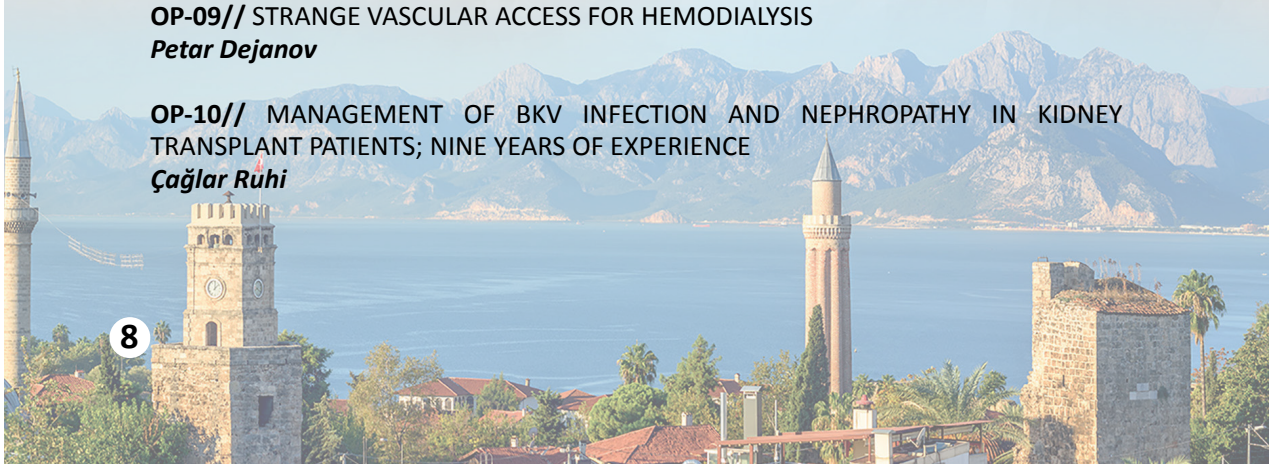
OP-07// THE ROLE OF IMMUNE CELLS IN THE PATHOGENESIS OF FABRY DISEASE PATIENTS UNDER ENZYME REPLACEMENT THERAPY
Kultigin Turkmen

ORAL PRESENTATIONS - 2

OP-08// BLEEDING AND THROMBOTIC EVENT RATES IN CHRONIC HEMODIALYSIS PATIENTS ON ANTICOAGULANT AND ANTIPLATELET THERAPY
Zorica M Dimitrijevic

OP-09// STRANGE VASCULAR ACCESS FOR HEMODIALYSIS
Petar Dejanov

OP-10// MANAGEMENT OF BKV INFECTION AND NEPHROPATHY IN KIDNEY TRANSPLANT PATIENTS; NINE YEARS OF EXPERIENCE
Çağlar Ruhi



OP-11// ATTITUDES OF KIDNEY TRANSPLANT RECIPIENTS TOWARDS COVID-19 VACCINE: A SURVEY-BASED STUDY
Burak Pacaci

OP-12// KIDNEY TRANSPLANTATION FROM A LIVING, UNRELATED DONOR (SPOUSE) - OUR EXPERIENCES
Lada Petrovic

OP-13// RELATIONSHIP BETWEEN POSTTRANSPLANT PROTEINURIA AND RENAL GRAFT OUTCOMES: A SINGLE CENTER EXPERIENCE
Mihriban Güngör

OP-14// KIDNEY TRANSPLANT PATIENTS IN MONTENEGRO
Marina Ratkovic

ORAL PRESENTATIONS - 3

OP-15// IMPROVEMENT OF ADYNAMIC BONE DISEASE IN HEMODIALYSIS PATIENTS BY LOWERING THE CALCIUM IN DIALYSIS FLUID
Nikolina Smokovska

OP-16// NEW FABRY MUTATION DETECTION WITH FABRY SCREEN IN CHRONIC RENAL PATIENTS, SINGLE CENTER EXPERIENCE
Burcu Boztepe

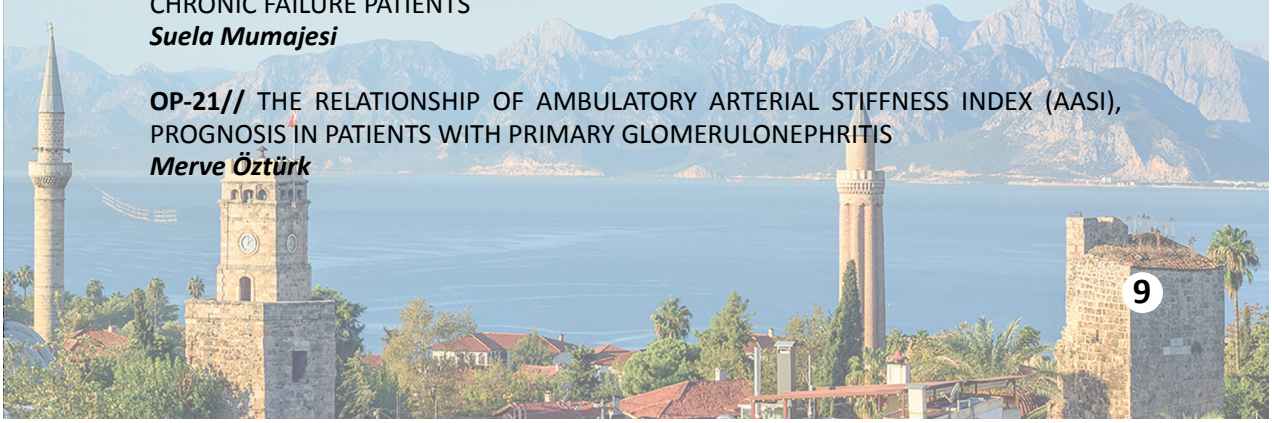
OP-17// HYPERTENSION IN THE PRIMARY HEALTH CARE
Nevı Pasko

OP-18// SGLT2 INHIBITION, A RESPLENDENT PATHWAY TOWARD DIABETIC NEPHROPATHY
Vjollca Godanci Kelmendi

OP-19// PREDICTION OF GENOTYPE POSITIVITY IN PATIENTS WITH KIDNEY DISEASE USING MACHINE LEARNING
Zeynep Ural

OP-20// METABOLIC SYNDROME AND CARDIAC STRUCTURE CHANGES ON INCIPIENCE CHRONIC FAILURE PATIENTS
Suela Mumajesi

OP-21// THE RELATIONSHIP OF AMBULATORY ARTERIAL STIFFNESS INDEX (AASI), PROGNOSIS IN PATIENTS WITH PRIMARY GLOMERULONEPHRITIS
Merve Öztürk



17th BANTAO CONGRESS

November 10-13, 2022, Antalya, Turkey

ORAL PRESENTATIONS

OP-01 **Hemodialysis**

Publication Hall: Hall 5
Publication Start Date: 2022-11-11 08:30:00
Publication End Date: 2022-11-11 08:40:00

COGNITIVE FUNCTION, DEPRESSION AND QUALITY OF LIFE IN PATIENTS ON MAINTENANCE HEMODIALYSIS

Sonja Golubović[1-2], Siniša Živković[1-2], Vladimir Veselinov[1-2], Boris Golubović[2-3], Bojana Ljubičić[2-4], Tatjana Ilić[1-2], Milica Popović[1-2], Dejan Ćelić[1-2], Dušan Božić[1-2], Igor Mitić[1-2], Lada Petrović[1-2]

[1]*Clinic for Nephrology and Clinical Immunology, University Clinical Center of Vojvodina*
[2]*Faculty of Medicine, University of Novi Sad*
[3]*Clinic of Psychiatry, University Clinical Center of Vojvodina*
[4]*Department of Emergency İnternal Medicine, Emergency Center, University Clinical Center of Vojvodina*

Introduction: Cognitive impairment, depression and a reduced quality of life are commonly found in patients undergoing maintenance hemodialysis. These conditions have been associated with an increased risk for mortality and adverse events in this group of patients.

Objective: The aim of this study was to evaluate the prevalence of cognitive impairment, depression and quality of life in patients undergoing maintenance hemodialysis.

Methods: Cross-sectional study which included seventy maintenance dialysis patients was performed at Clinic for Nephrology and Clinical Immunology, University Clinical Center of Vojvodina, Serbia. Mini-mental state exam (MMSE) and Montreal Cognitive Assessment test (MOCA) were applied to screen the patient's cognitive function, while Beck Depression Inventory (BDI) was used for depression screening. Quality of life was rated by Kidney disease quality of life questionnaire (KDQOL).

Results: Mean age of patients was 64.5 years with a distribution of 40% females and 60% male patients. It was found that 65.7% of respondents reported having depressive symptoms of different severity, among which the majority presented with mild symptoms (30%). The prevalence of cognitive impairment assessed by MOCA test was 27.1% among this group of patients. When MMSE was applied to evaluate cognitive status, impairment of different severity was identified in 17.2% of patients, with half of the patients exhibiting severe impairment. A significant reduction in physical functioning and physical role functioning was observed in our study group. Our study showed that there is a positive correlation between the BDI and MMSE (r=0.28, p=0.05) as well as MMSE and MOCA (r=0.8, p=0.01)

Conclusion: Hemodialysis patients have a great burden of depressive symptoms and cognitive impairment, as well as a diminished physical functioning and physical role functioning. Depression is associated with cognitive impairment in hemodialysis patients. Therefore, there is an important need to integrate nephrologic and mental health services for better understanding and further treatment.

Keywords: hemodialysis, patients, depression, cognitive impairment, quality of life

OP-02 Hemodialysis

Publication Hall: Hall 5
Publication Start Date: 2022-11-11 08:40:00
Publication End Date: 2022-11-11 08:50:00

VACCINATION PROTECTION AND COVID-19 MORTALITY IN HAEMODIALYSIS PATIENTS

Vasilije Tomanoski[1], Gordana Gjorgjievska[1], Vasiliki Krecova[1], Aleksandar Andonoski[1], Margarita Nakovska[1], Katerina Ristoska[1], Angela Kacakova[1], Jasminka Zvezdakovska[1], Sintia Kepeska[1], Marija Micajkova-Panova[1], Bejane Ferati[1], Ana Tomanoska[1], Zana Zabzun[1], Gojard Kjamili[1], Merima Kjamili[1], Shpresa Izairi[1], Ramazan Veliu[1], Nada Trifunovska[1], Andriana Matevska[1], Shpresim Jagupi[1], Leonora Veseli[1], Todorka Jordanovska[1], Elena Janevska[1], Davor Lozanoski[1], Tatijana Ristevska[1], Elena Stojanova[1], Katerina Dimova[1], Irena Borisova[1], Filip Kocovski[1]

[1]*Nefroplus, Republic of North Macedonia*

Introduction: The global pandemic with Covid-19 threatened haemodialysis (HD) patients as susceptible category with high risk for lethal outcome. The aim of the study was to determine the prevalence and risk factors for mortality in HD patients with confirmed Covid-19 and the effectiveness of vaccination against Covid-19.

Methods: The prospective observational multicentric cohort study included all HD patients over a period of the last 2 years. The outcome of patients with confirmed Covid-19 regarding infection timing and vaccination status was evaluated. The examined clinical parameters were: age, sex, HD duration, SARS-CoV-2 S-RBG IgG (by CLIA assay), s-albumin, comorbidities and hospital admission. Statistical analysis was performed by SPSS, continued variables with analysis of variance and categorical variables with Chi-square test and logistic regression, and survival analysis by Kaplan-Meyer test.

Results: Of total 629 HD patients (412M and 217F) with the mean age 61,9±12,7 years and HD vintage 71,7±64,5 months over a period of 2 years 318 patients had Covid-19 infection (Covid-19 group), but 311 patients had no Covid-19 (Noninfected group). Vaccine coverage with primary series (2 doses) and booster dose (3 doses) were significantly higher in the Noninfected group compared to Covid-19 group (55,3% and 32,2% vs 50,9% and 20,4%, respectively; p<0.001). In the Covid-19 group 214 patients had Covid-19 before vaccination (Prevaccination Covid-19 subgroup) and 104 patients had Covid-19 after vaccination (Postvaccination Covid-19 subgroup). Over the observed period 24% (76/318) of patients with Covid-19 deceased. The hospitalization rate in the Prevaccination Covid-19 subgroup was 51,9%, but in the Postvaccination Covid-19 subgroup was 37,5%, that was statistically significant (p=0.016). The mortality in the Prevaccination Covid-19 subgroup was 26,2%, but in the Postvaccination Covid-19 subgroup was 19,2%, that was statistically nonsignificant. Clinical parameters showed that the deceased patients compared with survived patients had statistically significant higher age and lower s-albumin. Statistically significant predictive risk factors for lethal outcome were non-vaccination (HR=18,3; p<0.001), age over 80 years (HR=5,1; p=0.004) and cardiomyopathy (HR=2,5; p=0.017). Regarding SARS-CoV-2 S-RBG IgG titer the Prevaccination Covid-19 subgroup had statistically significant higher level after the second vaccine dose compared to Noninfected group and Postvaccination Covid-19 subgroup and the Prevaccination Covid-19 subgroup had statistically significant higher level after the third vaccine dose compared to Noninfected group. In the Postvaccination Covid-19 subgroup deceased patients after 2 doses had statistically significant lower SARS-CoV-2 S-RBG IgG titer compared with survived patients. The cumulative survival in the Postvaccination Covid-19 subgroup was 28,43% after the second vaccine dose and 100% after the third vaccine dose, that was statistically significant (Chi square=4,976; p=0.026).

Conclusion: Our study showed that mortality is high in HD patients with Covid-19 and amounts 24%. The mortality in HD patients with Covid-19 was associated with advanced age, low level of s-albumin, cardiomyopathy and low SARS-CoV-2 S-RBG IgG titer. The vaccination protection against Covid-19 was the highest in HD patients after the third vaccine dose in whom getting Covid-19 no lethal outcome was observed.

Keywords: dialysis, epidemiology, COVID-19 outcome, vaccination protection

OP-03 Clinical Nephrology

Publication Hall: Hall 5
Publication Start Date: 2022-11-11 08:50:00
Publication End Date: 2022-11-11 09:00:00

A NOVEL MACHINE LEARNING APPROACH TO PREDICT POSTOPERATIVE KIDNEY FUNCTION RISK IN KIDNEY STONE DISEASE PATIENTS

Didem Turgut[1,4], Deniz Ilhan Topcu[2], Samet Senel[3], Cuneyt Ozden[3]

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[2]*Baskent University, Department Of Biochemistry, Md*
[3]*Ankara City Hospital, Department Of Urology, Md*
[4]*Hacettepe University, Department Of Biostatistics, Msc*

Introduction: Kidney stone disease (nephrolithiasis) is a common problem in primary care practice. Chronic Kidney Disease (CKD) is a recognized complication of kidney stones as a result of rare hereditary disorders (e.g., primary hyperoxaluria, Dent disease, 2-8-hydroxyadenine crystalluria, cystinuria), whereby complicated stone formation can also lead to progressive loss of GFR and ESRD at a young age. The aim of the present study was to investigate the risk factors of kidney stones in adult population and estimate the CKD progression risk.

Methods: We conducted a retrospective cohort study with kidney stone patients who were operated by Urology Department between 2012-2019 years. All patients' kidney function status were reviewed preoperatively and postoperatively at the first month. Age, sex, number of stones, stone location, surgery type, presence of hydronephrosis preoperatively, existing comorbidities, residual stone status after operation , pre-, and postop leucocyte count, and preop eGFR measurements were selected for postop eGFR prediction at the first month with machine learning (ML). 300 patient records were filtered that contain all parameters. Data set was split into training (n = 200) and test sets (n =100). H_2O AutoML engine was used to develop multiple ML models for eGFR prediction. The best model was determined using the R2 performance metric and then model performance was reevaluated using the test set. All analyses were performed with R 4.2.1.

Results: A total of 10 ML models were developed by the H_2O engine developed. The generalized linear model had the highest R2 value for the training set (0.74) and R2= 0.70 for the test set. The most three important variables for prediction of postoperative first month eGFR were, preop eGFR (31%), age (10%), and patients with multiple comorbidities (%4.)

Conclusion: Kidney stones are a risk factor for CKD, and studies are warranted to assess screening and preventive measures for CKD in complicated stone formers. ML algorithms are novel strong prediction tools for these clinical outcomes.

Keywords: kidney stone, machine learning, CKD, progression, risk

OP-04 **Peritoneal Dialysis**

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CORRELATIONS BETWEEN ADVANCED GLYCATION END PRODUCTS AND BODY COMPOSITION PARAMETERS IN PERITONEAL DIALYSIS PATIENTS

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Introduction: Possible association between advanced glycation end products (AGEs) and reduced muscle function or sarcopenia was suggested across the literature with data lacking in peritoneal dialysis (PD) patients. Therefore, the aim of this study was to determine the relationship between the accumulation of AGEs in skin and parameters related to body composition in PD patients from Split, Croatia.

Methods: This research was carried out at the Department of Nephrology and Dialysis at the University Hospital of Split. For each study subject, body composition was assessed using Tanita MC-780 Multi Frequency Segmental Body Analyzer and data about body weight (kg), body mass index (BMI), fat mass (kg and %), fat-free mass (kg), muscle mass (kg), skeletal muscle index (SMI), phase angle (°), trunk fat mass (kg and %), trunk fat-free mass (kg) and trunk muscle mass (kg) were collected. AGEs were measured using a device based on skin autofluorescence (AGE Reader mu, Diagnostic's Technologies BV, Groningen, The Netherlands).

Results: This research included 20 PD participants aged 53.5 (36.25 - 66.25) years, 9 (45%) female and 11 (55%) male with the median dialysis vintage at 24 months. Significantly negative correlations were found for AGEs and fat-free mass (p=0.03), muscle mass (p=0.03), trunk fat-free mass (p=0.03) and trunk muscle mass (p=0.03).No significantly positive correlations between AGEs and body composition parameters were found.

Conclusion: AGEs negatively correlated with fat-free mass and muscle mass in PD participants indicating a need for use of nontraditional factors for malnutrition assessment.

Keywords: advanced glycation end products , body composition , peritoneal dialysis

OP-05 Glomerular Diseases

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PODOCYTURIA AS POTENTIAL MARKER OF ATHEROSCLEROSIS IN DIABETIC PATIENTS AND ITS RELATION TO THE PATHWAYS OF THE SIGNAL

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Introduction: Diabetes is a major risk factor for atherosclerosis, and diabetic patients are at high risk for cardiovascular, cerebrovascular, and peripheral arterial disease. The purpose of our project is to determine whether there is a relationship between the data obtained from urinary podocytes and subclinical atherosclerosis markers and whether the use of podocyturia as a marker of atherosclerosis is appropriate in diabetic patients. The specificity of the project is that the podocyte markers will be looked at first as a preliminary indication of atherosclerosis in diabetic patients and that the signal pathways involved will be the first to be studied.

In our study; the levels of podocyte mRNAs in the urine specimens taken from the diabetic (n=118) and healthy control (n=103) group will be compared with molecular, biochemical and cardiological atherosclerosis markers and signal pathways from urine samples will be examined. In the gene expression change analysis of signaling pathways that may be associated with podocyte damage, TCF7, GDF15, ATF6, RAC2, WNT2, PIK3CA, GSK3B, RICTOR and DDIT3 genes were found to be significantly downregulated in the diabetic patient group compared to the control group. In the comparison of the expressions of the genes belonging to the signaling pathways associated with podocyte damage in the diabetic patient group, among individuals with proteinuria, microalbuminuria and atherosclerosis; significant downregulation of PFKFB3, RAC2, MYLK, RHO, AKT1 and RPS6KA1 genes was found in individuals with diabetes and atherosclerosis. A significant increase in the ROCK1 gene was detected in individuals in the atherosclerosis and proteinuria groups. A significant decrease in the AKT1 gene was detected in individuals in the microalbuminuria group.In the analysis of expression changes of potential genes that may be associated with podocituria, it was found that VIM, NPHS1, NPHS2, SYNPO, TGFB1, LAMA1 and NID1 genes were significantly downregulated in the patient group compared to the control group. In comparison of the expressions of genes that may be associated with podocituria in the diabetic patient group with cases with proteinuria, microalbuminuria and atherosclerosis; significant downregulation of TLN1, EZR, TJP1, CD2AP and NPHS2 genes was found in diabetic and atherosclerotic individuals. In the ELISA analysis; It was found that the levels of GDF-15, MMP9 increased significantly in diabetic patient group compared to the control group, while the levels of NOS1, MMP2, NF-KB, ProteinC were significantly decreased. Diabetic patients were older, waist-hip circumferences were higher, GFR were lower,uric acid,cystatin C and high sensitive C-reactive protein levels were found to be significantly higher than healthy controls. Systolic blood pressures, augmentation index, left ventricular mass indices, carotid artery intima media thickness, and pulse wave velocity were found to be significantly higher in the diabetic group. We suggest that decreased expression of the AKT1gene may be an early cardiovascular biomarker in diabetic patients in the microalbuminuria stage.

In conclusion, we show the importance of Wnt,RHO,PIK3CA/AKT signaling pathways associated with atherosclerosis in diabetic patients. In additionthe expression of podocituria-related markers such as NPHS1, NPHS2, ACTN4 and SYNPO may be biomarkers of subclinical atherosclerosis in the podocyte damage stage, with the expression of podocyturia-related markers significantly decreased in our study.

Keywords: diabetes, podocituria, atherosclerosis, signaling pathways, microalbuminuria

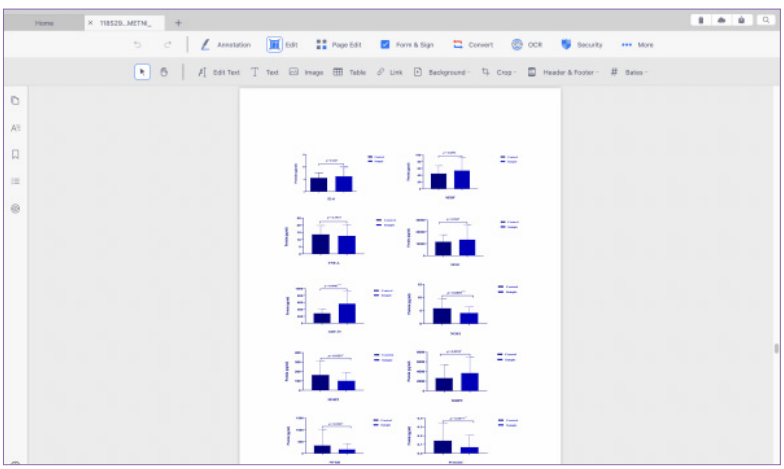

Figure: Fold change of atherosclerosis-related markers in serum obtained from peripheral blood sample compared to control

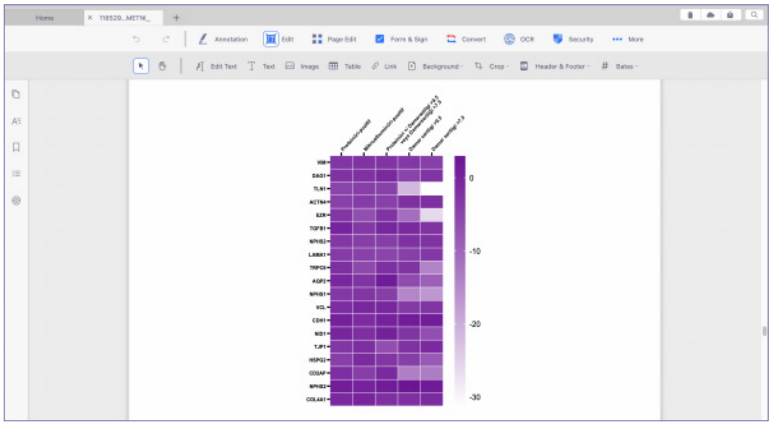

Figure: Heat map graph of the comparisons between proteinuria, microalbuminuria and atherosclerosis in the gene expressions that may be associated with podocituria in the diabetes group

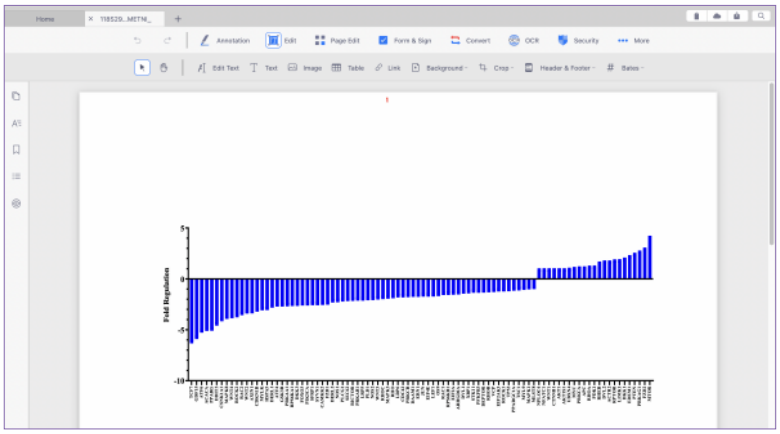

Figure: Graph of expression change in critical genes of signaling pathways that may be associated with podocyte damage

OP-06 Hemodialysis

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PRESENCE OF CORONARY ARTERY CALCIFICATION IN THE INITIAL YEARS OF HEMODIALYSIS

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Introduction: Coronary artery calcium score (CACS) is a well-established tool for diagnosing coronary artery disease (CAD), which is highly prevalent in dialysis patients. This study aimed to examine CACS in angina-free patients who recently initiated hemodialysis.

Methods: This multicentre prospective study included 60 asymptomatic patients who initiated dialysis up to 4 years prior to this investigation. Patients' data were derived from the electronic database, including demographic data, comorbidities (hypertension, diabetes, hyperparathyroidism, hyperlipidemia) and prescribed treatment regimens (angiotensin converting enzyme inhibitors, angiotensin receptor blockers, statins, vitamin D, CaCO3, dialysate-magnesium concentration). CACS was determined using cardiac computed tomography at the beginning of the study and after 12-months of follow-up. Three groups of patients were formed depending on the initial CACS value measured in Agatston units (=0, 1≤CACS≤400, >400).

Results: In the total study population baseline CACS was 160.50 (443), ranging from zero to the maximum of 3703 in one patient. Nine patients (89% men) had CACS=0, 34 (47% men) had CACS 1-400, and 17 (76.5% men) had CACS>400 ($\chi 2 = 7.467$; p=0.024). Patients were 51±7, 61±12 and 64±8 years old in the study groups, respectively. Age correlated significantly with the CACS (p=0.016). Higher CACS was associated with longer dialysis vintage (22±18 vs. 23±13 vs. 33±14 months), however difference did not reach statistical significance (p=0.155). Treatment and comorbidities did not differ significantly among groups. Statistically significant negative correlation was observed among CACS and serum iron (σ=-0.351; p=0.007). Mean CACS change over 12-months was 9.44 (0-73), 89.59 (0-478) and 290.67 (51-1060) among the study groups, respectively (p=0.000). According to the significant stenosis of the cardiac vessels, 24 (40%) patients were eligible for further cardiac diagnostics, including invasive coronary angiography.

Conclusion: CAD is frequent in angina-free hemodialysis patients, especially older ones, even in the initial years of dialysis. Calcification burden correlates with patients' age and low serum iron, and tends to increase with dialysis vintage. Screening strategies for CAD should be regularly administered in this high-risk population, including angina-free patients.

Keywords: hemodialysis, coronary artery calcium score

OP-07 Clinical Nephrology

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THE ROLE OF IMMUNE CELLS IN THE PATHOGENESIS OF FABRY DISEASE PATIENTS UNDER ENZYME REPLACEMENT THERAPY

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Introduction: We aimed to investigate the peripheral lymphocyte subgroup analysis of the patients with FD and compare these results with healthy individuals. In addition, we performed T, B, NK, and plasma cell analyses in kidney biopsy materials and compared these kidney biopsy results with the biopsy results of patients whose kidney functions were impaired after 4 years of regular ERT.

Methods:18 FD and 16 healthy individuals were included in the study. T-B lymphocyte and NK cell populations were determined. We performed kidney biopsies on 13 patients with FD prior to ERT. Of these, 4 patients had rebiopsy after 4 years of regular ERT. Immunohistochemical staining was performed to define immune cell infiltration.

Results: There was no statistically significant difference in terms of total, helper and cytotoxic T-lymphocyte and CD3-CD16+CD56+ natural killer(NK)-cell count (p=0.20;p=0.12;p=0.76;p=0.75,respectively). However, CD3+CD19+B-cell count was significantly lower in FD patients when compared to controls (FD;29.81±19.46 vs control; 54.72±22.31,p=0.001). CD56dimCD16+NK-cell subgroup was significantly higher in FD patients than the control group (30.59±18.52 vs 54.72±22.31,p=0.02). According to KBx findings prior to ERT, all patients had interstitial fibrosis(IF), podocyte vacuoles(PV), and podocyte inclusion(PI), CD3, CD4, CD8, CD16, CD56 positivity at different levels. None of the patients had CD19, CD20, CD138 positivity at the first biopsies. When we compared the first and the second KBx results of the 2 progressors, we also demonstrated that CD3+4+T-cells infiltration remained the same, however CD8+T-cells, CD16+ and 56+NK-cells infiltration were significantly decreased. In contrast,CD20+Bcells and CD138+plasma cells infiltration were significantly increased despite 4 years of ERT (15 fold and 6 fold, respectively). The CD20+B and CD138+ plasma cells and IF in patients with FD were positively correlated with proteinuria.

Conclusions: The progression of CKD and proteinuria are found to be increased despite a long term ERT.Immune cells especially B and plasma cells might be the cause of this unwanted consequences.

Keywords: fabry disease, çhronic kidney disease, T helper cells, T cytotoxic cells, NK cells, B cells, enzyme replacement therapy

OP-08 Hemodialysis

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BLEEDING AND THROMBOTIC EVENT RATES IN CHRONIC HEMODIALYSIS PATIENTS ON ANTICOAGULANT AND ANTIPLATELET THERAPY

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Introduction: For chronic hemodialysis (HD) patients anticoagulated with warfarin for non-valvular atrial fibrillation and/or venous thromboembolism, adding concomitant aspirin (ASA) therapy can increase bleeding risk with questionable antithrombotic benefits. The study aimed to assess bleeding and thrombotic event rates for warfarin and aspirin in HD patients.

Methods: In a prospective cohort of 224 HD patients, we identify patients with a diagnosis of atrial fibrillation (AF) at baseline or de-novo AF during follow-up. During a follow-up of 24 months, the primary outcome was any new bleeding event. Secondary outcomes included new arterial or venous thrombosis episodes, bleeding event type (major, fatal, life-threatening, and non-major bleeding), and death.

Results: Of the 43 HD patients with a diagnosis of AF [30 men (69.7%); mean age, 64.7 ±9.2 years], 19 patients (44.2%) were receiving combination warfarin and aspirin therapy, and 24 patients (55.8%) were only on warfarin. During follow-up, 11 (25.5%) patients suffered strokes, 21 (48.8%) patients had major bleeding, and 12 (28%) patients died. Anticoagulant treatment did not significantly reduce the risk of stroke (hazard ratio (HR) 0.78, 95%CI 0.42-1.66, p=0.531), but it significantly increased the risk of major bleeding after adjustment for prior stroke and antiplatelet co-medication (HR 2.56, 95%CI 1.46-4.68, p=0.022) compared to no anticoagulation. Additionally, patients on anticoagulation were at significantly increased risk for death (HR 1.79, 95%CI 1.22-2.86, p=0.029) which remained statistically significant after multivariable adjustment for prior stroke and antiplatelet co-medication (HR 1.96, 95%CI 1.45-3.70, p=0.018). Notably, patients with antiplatelet co-medication were at increased risk for death. Rates of thrombosis were similar, with a two-year cumulative incidence of 4.3% (95% CI, 1.8%-3.3%) for patients receiving warfarin and aspirin combination therapy compared with 3.8% (95% CI, 1.9%-4.1%) for those on warfarin alone (p=0.32).

Conclusions: In HD patients with AF, treatment with a combination of warfarin and aspirin therapy was associated with increased bleeding and similar observed thrombosis rates. Further research is needed to identify patients that may eventually benefit from aspirin and warfarin for AF or thromboembolism.

Keywords: hemodialysis, anticoagulation, antiplatelets, bleeding, atrial fibrillation

OP-09 **Hemodialysis**

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STRANGE VASCULAR ACCESS FOR HEMODIALYSIS

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Creation of vascular access (VA) for hemodialysis (HD) is a great challenge for vascular surgery in end stage renal disease (ESRD). The most used VA modalities are arterio venous fistulas (AVF): radio-cephalic, brachio-cephalic, and brachio-basilic fistulas. The most used central venous catheters (CVC) are: femoral (FC), subclavian (SC), and jugular catheters (JC). Less used VA modalities are: arterio-venous and sapheno-femoral grafts, necklase graft (from subclavian artery to subclavian vein); cannulation of femoral artery and vein azygos, and translumbar cannulation of vein cava inferior. The aim of the study was to present our experience in creation of less used modalities of VA for HD. Renal replacement therapy (RRT) was related to 92% patients on HD, 0.5% patients on peritoneal dialysis (PD), and 7.5% transplant patients (Tx). In the 20 year period (2003 – 2022) we have performed 26326 VA for HD; 6171 AVF, 17204 FC, 853 JC, and 846 SC. The number of AVF was increased from 72% in 2003 to 85% in 2022 (the highest percentage of 91% in 2019), and the number of TC was decreased from 28% in 2003 to 15% in 2022 (the lowest percentage of 9% in 2018). We have also increased JC from none in 2003 to 151 cases in 2021(the highest number of cases was 161 in 2020), and decreased SC from 67 cases in 2014, to 54 cases in 2021 (the lowest number of cases 31 in 2020). The rise of ESRD patients for the period of 20 years (2003-2022) was very high, related to 92% on HD, and only 0.5% on PD, which actually decreased from 1.5% to 0.5%. Because a great number of patients were going on HD, to provide an appropriate VA became a big challenge. During the period, the number of AVF was rising continously, while the number of TC was decreasing. Besides the most used VA, the necessity of strange new VA for HD became important. We have performed 16 strange VA for HD: 10 cases with cannulated arteria femoralis, bridging to continuous ambulatory peritoneal dialysis (CAPD), 2 cases with created sapheno-femoral AV graft; 2 cases with cannulated vein azygos intentionally (the first as a temporary VA, and the second as a permanent VA with Tesio II catheters); and 2 translumbar permanent catheters in vein cava inferior. To accept all HD patients, our strategy was to provide more appropriate AVF and less TC. To achieve this goal, we summarize that our efforts were succesful, but still we need to provide more PD, and Tx in order to decrease the number of strange VA for HD.

Keywords: vascular access, hemodialysis, end stage renal disease

OP-10 **Renal Transplantation**

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MANAGEMENT OF BKV INFECTION AND NEPHROPATHY IN KIDNEY TRANSPLANT PATIENTS; NINE YEARS OF EXPERIENCE

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Introduction: The treatment of BKV infection in kidney transplant patients, other than immunosuppressive dose reduction, treatment options with proven efficacy are limited. In this study, current treatment options, especially changing the standard treatment to everolimus/low-dose tacrolimus, were evaluated in patients who developed BKV infection or nephropathy after kidney transplantation.

Methods: Data of patients with kidney transplant between October 2013 and March 2022 were evaluated retrospectively in terms of BKV replication, development of BKV nephropathy and efficacy of treatment modalities. BKV PCR was monitored monthly for the first six months and then every three months. The initial treatment plan was everolimus/low-dose tacrolimus shift in the first step after then, IVIG, Leflunamide, or Cidofovir , depending on the clinical situation.

Results: A total of 646 patients were evaluated, 61 patients (9.4%) who had BKV replication (mean age 47.3±12.3 years, 67.2% males) were identified. Kidney transplantation from living donors was 91.8%, induction treatment was 90.2% anti-thymocyte globulin (ATG). Everolimus/low-dose tacrolimus exchange was applied in all patients with BKV replication, complete response was obtained in 73.8% of patients with the first-line approach and BKV PCR became negative, partial response (BKV PCR >50% regression) was observed in 13.1% patients. Nine patients did not respond to first-line treatment; complete response was obtained with IVIG in one patient and partial response with IVIG + Leflunamide in one another. Various combinations of cidofovir, IVIG/Leflunomide were used in a total of seven patients, partial response in only one patient, impaired allograft function in three patients, and allograft loss in three patients. Allograft function was preserved according to the basal creatinine level (1.16±0.36mg/dl vs. 1.58±1.06mg/dl, p=0.81) in those who responded to treatment in the first step.

Conclusion: Replacing standard immunosuppressive therapy with everolimus/low-dose tacrolimus/steroid is still the most effective approach in BKV infection developing after kidney transplantation. Early intervention with frequent BKV replication monitoring is appropriate for treatment effectiveness. Current treatment options seem unlikely to be successful in patients who do not benefit from first-line immunosuppressive changes.

Keywords: kidney transplantation. BK virus, tacrolimus, everolimus

OP-11 **Renal Transplantation**

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Publication End Date: 2022-11-12 09:10:00

ATTITUDES OF KIDNEY TRANSPLANT RECIPIENTS TOWARDS COVID-19 VACCINE: A SURVEY-BASED STUDY

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Introduction: Kidney transplant (KT) recipients may be more vulnerable to COVID-19. Although the humoral response to COVID-19 vaccination is diminished in KT recipients, vaccination offers some degree of protection. Therefore COVID-19 vaccination is widely recommended for KT recipients. In this study, we examined KT recipients' and healthy controls' attitudes towards COVID-19 vaccination.

Methods: This is a cross-sectional survey-based study. KT recipients who were admitted to follow-up clinics between December 2021 and April 2022 and healthy controls (excluding healthcare workers) were included in the study. Demographic characteristics and vaccination information were obtained from the questionnaire and hospital medical records. The willingness and hesitancy of COVID-19 vaccines were assessed in the survey. Concerns about the COVID-19 vaccines and adverse events after vaccines were also recorded. Being fully vaccinated was defined as two doses of inactivated vaccine plus at least two doses of mRNA vaccine or three doses of mRNA vaccine at the time of the survey. The participants who had previous COVID-19 infection, and having at least two doses of mRNA vaccine were also considered as fully vaccinated.

Results: A total of 154 KT recipients (mean age: 44.6 14.5; M/F: 50.6%/49.4%) and 172 healthy controls (mean age: 47.1 13.3; M/F: 28.5%/ 71.5%) completed the questionnaire. Previous COVID-19 infection was reported in 40.9 % of the KT patients and 30.8% of the healthy controls (p=0.057). Rates of having been vaccinated with at least one dose of COVID-19 vaccination were similar in study groups (92.4% and 92.9%). However, 41.5% of the KT recipients and 62.7% of the healthy controls were fully vaccinated at the time of the survey (p<0.001). Only, 11 of the KT recipients refused the COVID-19 vaccines. Major reasons for refusal were concerns about severe adverse events (n=8) and/or rejection risk after vaccination (n=4). The rate of concern about severe adverse events was higher in the KT recipients compared to healthy controls (%72.7 vs. %33.3; p=0.09). A Positive attitude toward to be further vaccination against COVID-19 was found in 83% of the KT recipients and 87.2% of the healthy controls.

Conclusion: Although participants showed high willingness toward COVID-19 vaccination, the number of KT recipients being fully vaccinated seems to be lower than expected. Concerns about vaccine-related adverse events (including rejection risk) were the major reason to avoid vaccination. Appropriate vaccine information given by transplant physicians may help to optimize the number of fully vaccinated KT recipients.

Keywords: kidney transplantation, COVID-19, vaccination

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KIDNEY TRANSPLANTATION FROM A LIVING, UNRELATED DONOR (SPOUSE) - OUR EXPERIENCES

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Introduction: In recent years, the characteristics of patients on the waiting list for a kidney transplant have changed. The patients are getting older, and the waiting list is more numerous. In such cases, there is a serious shortage of kidney donors. Despite reports of excellent transplant results from living unrelated donors, this resource is not utilized enough. Spousal kidney donation as a potentially available source is also very low. Certainly, the ethical aspects of this type of transplantation must be satisfied. The advantages of kidney transplants from a living, unrelated donor, spouse are: the transplant is planned, the period of the dialysis procedure is shorter or the transplant is preemptive, the occurrence of delayed grapht function is significantly less than in the case of a cadaveric transplant, non-relatedness excludes the influence of the risk of genetically determined diseases (IgAN, PKD). According to the report of most authors, the results of this kind of kidney transplantation are about 10% better compared to kidney transplantation from cadaveric donors, and the explanation for this is the better quality of these organs.

Methods: We analyzed the outcome of kidney transplantation in patients who underwent kidney transplantation from a living, unrelated donor-spouse in our transplant center.

Results: A total of 329 kidney transplants were performed in the Clinical Center of Vojvodina in the period from 1986 to 2021. Kidney donors were cadaver (64.7%), living related donor (33.7%), living unrelated donor-spouse (1.6%). In the group of living, unrelated donors, 80% of donors were wives. The average age of the recipient was 48.2 years; donor, 44 years old. The average MM was 4. There was no delayed graft function or acute rejection. The induction therapy (ATG, corticosteroid) was applied, with the continuation of triple immunosuppressive maintenance therapy (corticosteroid, MMF, calcineurin inhibitor). One-year, five-year and 10-year patient survival was 100%. The average value of creatinine after 3 months was 227.2 umol/l; after 6 months 160.2 umol/l, after a year 158.8 umol/l. One patient (20%), lost the graft function 2 years after transplantation due to urological complications. One patient was included again in a chronic hemodialysis program 13 years after transplantation due to CAN.

Conclusion: Spousal kidney transplantation has been shown to be reliable in terms of patient and graft survival, absence of acute rejection, and achievement of adequate glomerular filtration rate, despite demographic differences and differences in HLA matching. A kidney transplant from a spouse provides an opportunity to increase the resource of kidney donors.

Keywords: kidney transplantation, spousal, graft survival

OP-13 Renal Transplantation

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RELATIONSHIP BETWEEN POSTTRANSPLANT PROTEINURIA AND RENAL GRAFT OUTCOMES: A SINGLE CENTER EXPERIENCE

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Introduction: Proteinuria is an important follow-up criterion in kidney transplantation (KTx) recipients. In our study, we aimed to examine the risk factors of proteinuria and its' effects on graft survival.

Methods: We included 457 patients who underwent KTx in Ankara University School of Medicine Transplantation Unit between 01/01/2009 and 01/10/2020. Proteinuric group was defined as protein-to-creatinine ratio ≥500 mg/mg. Patients were classified in four groups according to their proteinuria levels as <500 mg, 500-999 mg, 1000-3000 mg and >3000 mg. We retrospectively examined demographic properties, clinical data and graft survival.

Results: Mean age of patients was 40±12 years and most of them was male (59.5%) (Table 1). 126 patients (27.6%) had undergone preemptive KTx. Proteinuria was related with cadaveric transplantation, urinary tract infection, and acute rejection (p=0.004 ,p=0.038 and p=0.022, respectively). Lower GFR at 60th months (77.8 % vs 66.8 P:<0.001), more graft loss (13.2% vs 7.2% p: 0.038) and death (21.7% vs 11% p: 0.002) were more common in proteinuric group compared with non-proteinuric. Renal graft survival at the 6th, 12th and 24th months was decreased in the proteinuric group compared with non-proteinuric (Figure-1), and increased proteinuria was a risk factor for graft loss.

Conclusion: Proteinuria is an important risk factor for GFR decline and graft loss. Proteinuria can be used as a prognostic marker for graft survival.

Keywords: end-stage renal disease, kidney transplantation, proteinuria

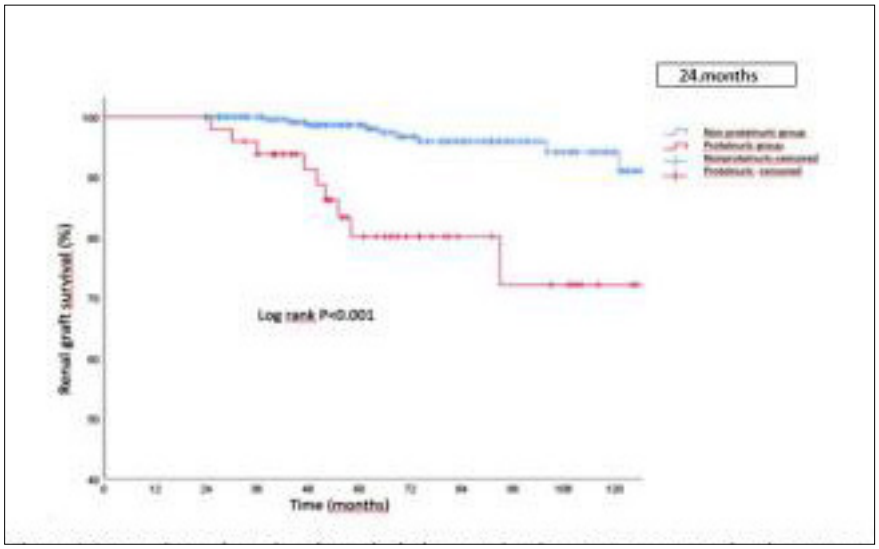

Figure 1: Comparison of renal graft survival the proteinuric group vs nonproteinuric group at 24th months

Table 1: Demographic and Clinical Data of Kidney Transplant Recipients, According to Proteinuria Status

	Non-proteinuric (n=245)	Proteinuric (n=212)	P-Value
Recipient's sex			0.97*
Male	146 (59.6)	126 (59.4)	
Female	99 (40.4)	86 (40.6)	
Recipient's age, mean±standart deviation	40.3±12.4	39.5±12.8	0.58**
Body Mass Index ≥ 25	82 (34.2)	76 (38)	0.40*
Preemptive transplantation	74 (30.8)	52 (24.5)	0.14*
History of transplantation	17 (6.9)	20 (9.4)	0.33*
Donor's sex, (n=451)			0.71*
Female	145 (60.2)	130 (61.9)	
Male	96 (39.8)	80 (38.1)	
Donor's age, (n=409), mean±standart deviation	46.4±12.3	48.7±12.3	
Type of transplantation			0.004*
Cadaveric	36 (14.7)	54 (25.5)	
Living	209 (85.3)	158 (74.5)	
Number of Mismatch, (n=456)	3.1±1.6	3.1±1.6	0.98**
Panel-reactive antibody, (n=451)			0.46*
Negative	173 (72.4)	150 (70.8)	
Class 1 positive	18 (7.5)	11 (5.2)	
Class 2 positive	24 (10)	21 (9.9)	
Class 1+2 positive	24 (10)	30 (14.2)	
Flow B positive , (n=216)	5 (4.4)	5 (4.9)	>0.99****
Flow T pozitive , (n=216)	2 (1.8)	0 (0)	0.50****
Acute rejection, at first year	38 (15.5)	35 (16.5)	0.77*
Acute rejection, after first year	7 (2.9)	25 (11.8)	<0.001*
Acute rejection	43 (17.6)	56 (26.4)	0.022*
RAAS blockade	46 (18.8)	66 (31.1)	0.002*
Graft loss	18 (7.3)	28 (13.2)	0.038*
Exitus	27 (11)	46 (21.7)	0.002*

OP-14 **Renal Transplantation**

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KIDNEY TRANSPLANT PATIENTS IN MONTENEGRO

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This paper is the result of efforts to provide patients in Montenegro who are preparing top undergo transplantation and patients who already underwent organ transplantation, with the necessary check-up in conjunction with the contacts of nephrologists from Montenegro and nephrologists in transplant centers, where their transplantation was performed. The current number of patients with a transplanted kidney in Montenegro, until September 15, 2022, is 93. Of that number, 68 patients (73%) had a living donor, of which 11 patients (16%) had a living emotional transplant. Cadaveric transplantation was performed in 25 patients (27%). Until now, there have been no direct contacts, nor any electronic communication for patients who are planned for transplantation, and no post-transplantation contacts, with the medical team in the centers where the kidney transplant was performed. Unfortunately, several couples were returned at the first examination by the transplant team, because the protocols of Montenegro and the countries where the patients were referred, before transplant preparations, differ. This paper emphasizes the necessity of harmonizing protocols before and after transplantation in Montenegro and the countries to which patients are referred, direct contact between nephrologists in Montenegro and those in transplant centers, as well as drafting and signing a contract that would have to provide for check-ups in transplant centers every six and twelve months, at the expense of the Health Insurance Fund of Montenegro. Ethics look for the right decision and the right action, and the right decision is the one that can be justified and one before which we responsibly stand.

Keywords: montenegro, kidney, transplantation, protocols

OP-15 **Hemodialysis**

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IMPROVEMENT OF ADYNAMIC BONE DISEASE IN HEMODIALYSIS PATIENTS BY LOWERING THE CALCIUM IN DIALYSIS FLUID

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Introduction: Majority of the patients with chronic kidney disease on hemodialysis (CKD HD) have various bone-related pathologies covered under one clinical entity chronic kidney disease – mineral bone disorders (CKD-MBD), one of them being adynamic bone disease (ABD)1. We aim to assess whether the lowering of the calcium in dialysis fluid will improve the ABD in HD patients2,3.

Methods: In a period of 12 months (01.10.2020 until 30.09.2021), a prospective study was conducted in one single HD center. From 133 screened HD patients, 64 patients had ABD (iPTH <150 ng/ml). 53 patients which met the inclusion criteria (age >18 years, HD vintage >90 days) were enrolled and 50 completed the study, during which the only phosphate binder that was used was calcium based. The level of calcium content in the dialysis fluid was changed from various calcium content level (1.5 mmol/L; 1.75 mmol/L) and set to 1.25 mmol/L in the enrolled patients. Laboratory parameters were followed once monthly and the level of iPTH trimonthly.

Results: Data from 50 patients was collected and analyzed, 50.9% (n=27) males. The average age of the cohort was 69.31 years (±12.49), average HD vintage was 51.94 months (±43.82). Average HD time was 254.8 minutes (±14.71) with average blood pump 393.4 ml/min (±44.38). The iPTH level was significantly changed, from 67.48 ng/ml (±32.85) to 150.38 ng/ml (±92.96), p=.00001. At the study end, 24 out of 50 patients (48%) had iPTH level >150 ng/ml, p=.00001. Calcium level changed slightly from 2.27 mmol/L (±0.15) to 2.25 mmol/L (±0.18), p=.25. The phosphate level changed from 1.29 mmol/L (±0.49) to 1.55 mmol/L (±0.48), p=.004. The alkaline phosphatase level significantly changed, from 82.61 IU/L (±49.5) to 118.71 IU/L (±50.23), p=.00002. Patients who had iPTH level >150 ng/ml at the study end had level of calcium of 2.2 mmol/L (±0.16), p=.17 compared to patients who had iPTH level <150 ng/ml (level of calcium of 2.31 mmol/L ±0.18; p= .43). There was improvement in the level of phosphate and alkaline phosphatase; 1.31 mmol/L (±0.46) vs. 1.6 mmol/L (±0.46), p=.002, and 82.57 IU/L (±57.22) vs. 130.83 IU/L (±60.24), p=.004.

Conclusion: The study concluded indirectly that minor change in HD setting as lowering the calcium in dialysis fluid might improve the adynamic bone disease in HD patients. Our findings are important as recommendation for the low and middle-income countries in which pharmacological treatments for ABD are limited and/or unavailable.

Keywords: chronic kidney disease-mineral and bone disorders, adynamic bone disease, calcium, hemodialysis, CKD-MBD

Table: Biomarkers for CKD-MBD during the study

	Start of the study	End of the study	P value
iPTH (ng/ml)	67.48±32.85	150.38 ±92.96	0.00001
Calcium (mmol/L)	2.27±0.15	2.25±0.18	0.25
Phosphorus (mmol/L)	1.29±0.49	1.55±0.48	0.004
Alkaline phosphatase (IU/L)	82.61±49.5	118.71±50.23	0.00002

Table: Comparison between subpopulations, study end (p value)

	Calcium	Phosphate	Alkaline phosphatase
iPTH <150 ng/ml	0.43	0.004	0.001
iPTH >150 ng/ml	0.17	0.02	0.004

OP-16 **Clinical Nephrology**

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NEW FABRY MUTATION DETECTION WITH FABRY SCREEN IN CHRONIC RENAL PATIENTS, SINGLE CENTER EXPERIENCE

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Introduction: Intracellular terminal α –D-galactosyl residual glycosphingolipid (especially globotriaacylsphingosine (lyso Gb3) and globotriacylceramide (GL3)) accumulation due to α-galactosidase A enzyme deficiency secondary to mutations in the GLA gene with X-linked inheritance in Fabry disease (FH) is a rare lysosomal storage disease. GL3 deposition causes changes in cell metabolism and oxidative stress and tissue fibrosis, leading to kidney, cardiac and cerebrovascular diseases and organ failure. Guidelines recommend screening for FH for high-risk populations such as familial early-diagnosed kidney disease and end-stage renal disease patients on kidney replacement therapy. By adopting this strategy, affected family members of index cases can be identified at earlier disease stages, before chronic damage to target organs develops. In our study, we aimed to investigate the prevalence of FH in patients with proteinuria over 300 mg/day and presenting with acute/chronic renal failure and to share the new mutation of the patient diagnosed with FH with the current literature.

Methods: Between 2018 and 2022, 517 patients who were followed up in the nephrology clinic of our hospital with proteinuria over 300 mg/day and admitted with acute/chronic renal failure were prospectively screened. Enzyme test (α-Gal A activity)) card study was measured by florimetric method, Plasma globotriaosylsphingosine (lyso-GL-3) levels were measured with LC-MS/MS Liquid chromatography mass spectrometry device. GLA gene mutation analysis was sequenced at the Duzen Laboratory (Ankara), using the Next Generation Sequencing method. Mutations found were confirmed by the Sanger method.

Results: In our study, we scanned 470 patients with proteinuria and/or chronic kidney disease, and a total of 3 patients (0.63%) were diagnosed with FH, including one patient with a new FH mutation in the literature (Figure 1). Eight patients with FH mutations were detected in family screening (Figure 2). Although there is no cardiac pathology in ECHO, cardiac MRI can be guiding.

Conclusions: We have strong evidence that the newly identified N215K mutation is pathogenic, and we think that screening for FH is important for early diagnosis and treatment in patients with proteinuria of unclear etiology or in whom vacuolated cells, mesangial enlargement, FSGS, interstitial fibrosis and tubular atrophy of unknown etiology are found in kidney biopsy.

Keywords: fabry disease, chronic kidney disease, new mutation

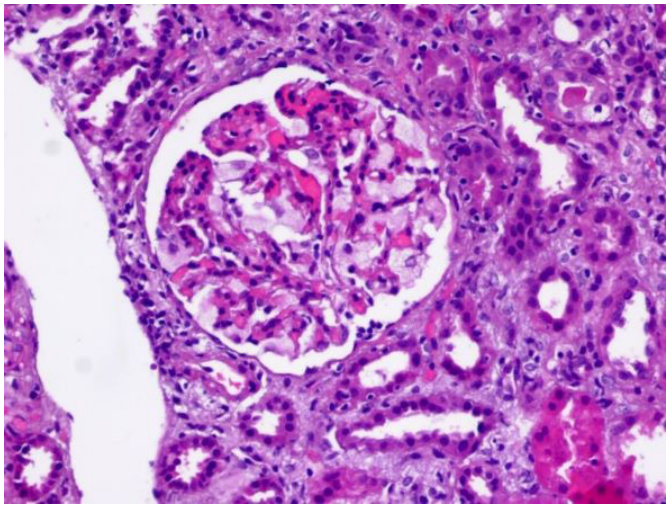

Figure 1: Light Microscopic changes in FD (Patient no 2)

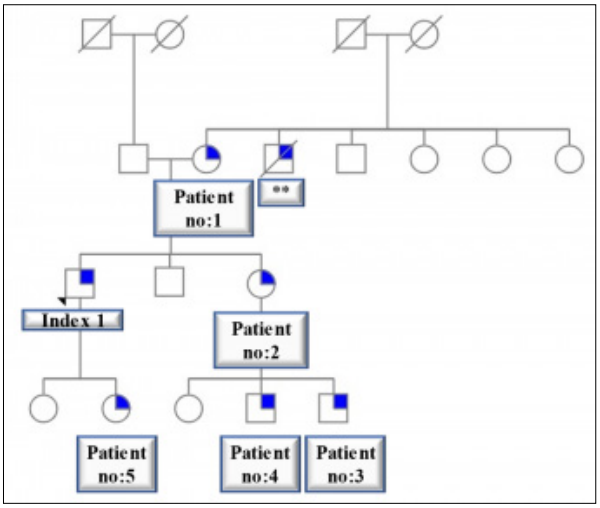

Figure 2: Fabry Patient No 1 , Family Pedigree

OP-17 **Hypertension**

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HYPERTENSION IN THE PRIMARY HEALTH CARE

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Introduction: Arterial hypertension is one of the most frequent chronic diseases, which is seen in the primary health service. It is a serious problem, which has important impacts on the community, individuals and health centres.

Methods: This cross sectional survey was conducted to determine the clinical characteristics of hypertension and association with risk factors. Adult patients diagnosed with hypertension according International Society of Hypertension (ISH) Global Hypertension Practice Guidelines (2020) and followed by the general practitioner in the primary health care service were included.

Results: A total of 70 patients participated in the study, of which 39 men (55.7%) and 31 women (42.3%), with a mean age of 44.9 ±5.2 years. The most predisposed age group for men was 45-50 years, while for women it was 50-55 years. 41% of men with arterial hypertension were smokers. Obesity was found in 38% of male patients, and about 42% of female patients. 31% of men and 42% of women diagnosed with arterial hypertension were on drug treatment. Almost half of men, 47%, and almost a third of women, 32%, were trying to control their weight. Almost 50 (71%) patients had grade 1 hypertension (office measure). Total cholesterol was found increased in 79% of hypertensive patients with an average value of 224.2 mg/dl, in 72% of cases triglycerides were found increased with an average value of 125.4 mg/dl and in 60% of cases high values of LDL were found with an average value of 161.5 mg/dl. Regarding HDL, about 66% of patients had low values, which is directly related to the risk of cardiovascular events. 60% of them had fasting glucose values above normal. 11% of hypertensive patients were Diabetes Mellitus patients with HbA1c values from 7.1-14.8%. Chronic kidney disease was found in 9(12%) hypertensive patients.

Conclusion: This study shows that regular monitoring and counselling of general population will help in diagnoses of early stages of hypertension and risk factors. Adequate management may slow progression toward other organ damage in these patients.

Keywords: hypertension, primary health care, risk factors

OP-18 **Clinical Nephrology**

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SGLT2 INHIBITION, A RESPLENDENT PATHWAY TOWARD DIABETIC NEPHROPATHY

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Introduction: Ever since their therapeutic introduction, SGLT2 inhibition class of medicaments did impress physicians of related fields, nephrologists, endocrinologists etc. Diabetic nephropathy as a clinical entity itself represents a huge burden for clinical nephrology practice, the pathology itself, the chronic and "unstoppable" deterioration to ESRD leaves not much to be done on a very common encountered disease. Treatment with SGLT2i drugs does present a safe and efficient modality for diabetic nephropathy besides glycemic control and other benefits from their pleiotropism.

Methods: 50 patients from outpatient clinic, with T2D and diabetic nephropathy of different stages. Descriptive, comparative cohort study in a series of 50 clinical cases with proteinuria. Inclusion criteria was albuminuria and T2D. Patients with eGFR below 30 where excluded. The SGLT2i drugs where started, median follow up 18 months. We did study the creatinine levels, 24 hour assessment of albuminuria expressed in g/24 h, HbA1c and glycemic control, weight and BMI index.

Results: treatment with SGLT2i showed a remarkable decrease in proteinuria, serum creatinine showed increase on the first three months and it did get back to baseline afterwards. The glycemic control was improved with a decrease of HbA1c levels, the reduction BP, weight and LDL cholesterol levels as well.

Conclusion: Treatment with SGLT2i is shown to be impressive on lowering albuminuria on T2D subjects. The 18 month follow up showed remarkable improve in kidney function tests, albuminuria, glycemic control, BP and BMI. With SGLT2i diabetic nephropathy finally has a chance to be treated and controlled. Treatment with SGLT2i drugs presents a safe and efficient modality for diabetic nephropathy, glycemic control, BP and other pleiotropic benefits.

Keywords: SGLT2i, diabetic nephropathy, albuminuria, creatinine

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PREDICTION OF GENOTYPE POSITIVITY IN PATIENTS WITH KIDNEY DISEASE USING MACHINE LEARNING

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Introduction: Cronic kidney disease (CKD) effects more than 10% of the adult population and causes substantial morbidity and mortality. Genetic kidney disease (GKD) is increasingly recognised as an important cause of CKD and can be difficult to accurately diagnose and treat. Knowing the presence of genetic kidney disease offers many advantages; including providing prognostic information, informing targeted surveillance and therapies, preventing inappropriate treatments, informing reproductive decisions, and reducing the use of invasive diagnostic investigation such as renal biopsies. However, genetic testing is a very laborious and expensive examination. The aim of our study was to develop a novel prediction model for genotype positivity in patients with kidney disease by applying machine learning algorithms to clinical, laboratory and renal imaging variables that are readily available in daily practice. We decided to use power of machine learning to decide whether genetic test is necessary or not for a patient.

What is machine Learning?

Machine learning (ML) is a type of artificial intelligence (AI) that allows software applications to become more accurate at predicting outcomes without being explicitly programmed to do so. ML models are being increasingly utilized to improve the accuracy of clinical risk prediction tools in a variety of clinical settings.

Methods: We constructed ML models using readily available clinical and laboratory data of 140 patients from Gazi University with kidney disease who had undergone genetic testing. In our case, we used Supervised machine learning Classification method with Logistic Regression Algorithm. We used Python's scikit-learn library that is has a 4-step modeling pattern that makes it easy to code a machine learning classifier. We have used %75 of the data for training and remaining %25 is used for testing the performance of the ML model. Since how the data is separated to training and testing sets effects test results, we repeated the training and testing processes 100 times and calculated the average prediction performance.

Results: A total of 140 patients with kidney disease who underwent genetic testing were screened. In this cohort, sixteen patients were then excluded because of missing data and twelve patients were excluded from the study because genetic testing was incomplete.112 patients included in the final cohort. 45 patients had a positive result, 40 patients had a negative result and 27 patients had a clinically relevant variant of uncertain significance. We evaluated 67 parameters and found 23 predictors of genotype positivity in logictic regression model in order of importance to the model. Some previously known predictors of genotype positivity were identified by our predictor selection algorithm, i.e. family history, parents consanguineous marriage, presence of polycystic kidney on ultrasound. The algorithm also identified several novel important predictors, such as the presence of isolated hematuria, presence of autoimmune disease, hypopotasemia, hyperlipidemia and development of end stage kidney disease.

Discussion: Our ML models demonstrated a good ability to predict genotype positivity in patients with GKD. ML models have never previously been applied to the prediction of genetic kidney disease and this was the first study to apply ML algorithms to clinical, laboratory and renal imaging data to predict genotype positivity in patients with kidney disease.

Keywords: adult nephrology, gene, hereditary diseases, kidney disease, machine learning

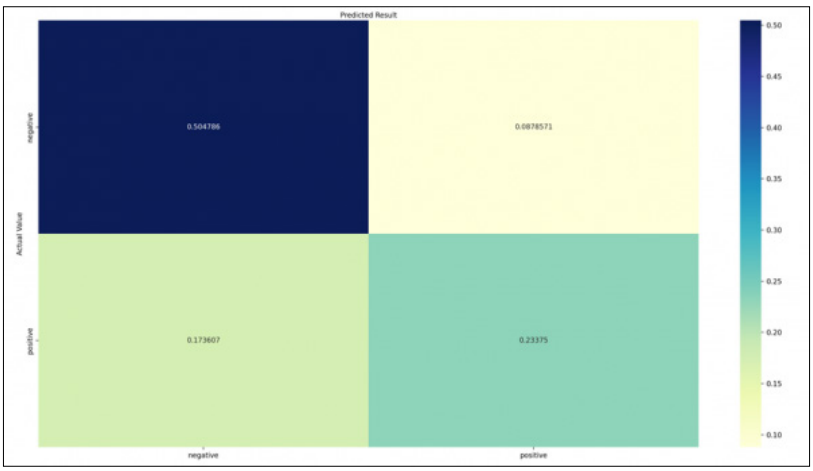

Figure 1: Confusion matrix, also known as an error matrix, is showing the performance of an algorithm. All correct predictions are located in the diagonal of the table (highlighed in blue and green), so it is easy to visually inspect the table for prediction errors, as values outside the diagonal will represent them.

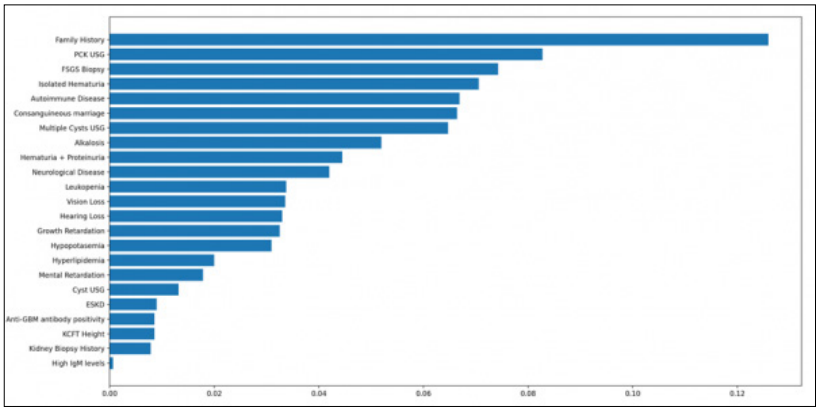

Figure 2: Feature Importance refers to techniques that calculate a score for all the input features for a given model_the scores simply represent the "importance" of each feature. A higher score means that the spesific feature will have a larger effect on the model that is being used to predict a certain variable. This analysis performed on the final trained model demostrated family history to be the most important differentiating factor, followed by PCK USG.

	precision	recall	f1-score	support
Bening	0.80	0.94	0.86	17
Patogenik	0.88	0.64	0.74	11
accuracy			0.82	28
macro avg	0.84	0.79	0.80	28
weighted avg	0.83	0.82	0.81	28

Figure 3: Positive predictive value is 0.88 and negative predictive value is 0.80

OP-20 Clinical Nephrology

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METABOLIC SYNDROME AND CARDIAC STRUCTURE CHANGES ON INCIPIENCE CHRONIC FAILURE PATIENTS

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Introduction: Metabolic syndrome is rapidly growing worldwide. Its relationship to cardiovascular and chronic kidney disease is well known.The aim of the study was to observe the association between metabolic syndrome and changes on cardiac structure in chronic kidney failure patients.

Methods: A cross sectional study on 139 patients was conducted. Metabolic syndrome was defined by National Cholesterol Education Program Adult Treatment Panel III criteria. The mean age was 53.9 ± 13.2. The following monitored data were: arterial blood pressure, waist perimeter, fasting blood glucose, triglycerides, acid uric levels and total cholesterol. Echocardiography was conducted to view cardiac structure. Statistical analysis was performed by $\chi 2$ test, Fisher's exact test and binary logistic regression.

Results: The MS incidence was 66.9% and the age of the people with MS was >45 years old. Males 60.4%. No difference between sexes was seen. The patients with MS presented the recorded parameters: increased blood pressure (88.4% and p=0.005), increased waist perimeter (68.3% and p=0.005), increased acid uric levels (61.9% and p≤0.001), decreased HDL (71.9% and p=0.005) and increased fasting blood glucose (78.4%). Changes on cardiac structure were observed in 86% (p≤0.001): left ventricular hypertrophy 49%, left ventricular diastolic dysfunction 18%, both changes were observed in 19% of patients.

Conclusions: The metabolic syndrome is almost frequent in incipience chronic renal failure patients. It is strongly associated to the frequency of cardiac structure changes. The intense management of the MS and its risk factors may contribute to the decrease cardiac structure and functional abnormalities.

Keywords: chronic kidney disease, metabolic syndrome, cardiac structure

OP-21 **Glomerular Diseases**

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THE RELATIONSHIP OF AMBULATORY ARTERIAL STIFFNESS INDEX (AASI), PROGNOSIS IN PATIENTS WITH PRIMARY GLOMERULONEPHRITIS

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Introduction: Cardiovascular diseases (CVD) are standing as number one, among the leading causes of mortality and morbidity worldwide (1). Primary Glomerulonephritis (PGN) is an important disease that can lead to end-stage renal disease. In PGN patients, the frequency of cardiovascular disease is increased due to hypercoagulopathy, proteinuria, low serum albumin level, and dyslipidemia (2,3). In our study, we aimed to reveal an easily accessible marker for predicting prognosis and cardiovascular risk in patients with primary glomerulonephritis by using the ambulatory arterial stiffness index (AASI).

Methods: After the patients were excluded according to the exclusion criteria, 61 patients diagnosed with Primary Glomerular Diseases (PGN) by renal biopsy and 179 patients in the control group were included for evaluation. Data of a total of 240 patients were analyzed in electronical environment. The clinical, laboratory, biopsy, ambulatory blood pressure measurement findings and follow-up data of the patients were analyzed. AASI, and the durations until cardiovascular and renal outcomes were measured. Coronary artery disease, ischemic stroke, peripheral artery disease, hospitalization due to heart failure, and death due to cardiovascular causes were accepted as cardiovascular outcomes. Also, renal outcomes were considered as the start of one of the Renal Replacement Therapies (RRT) or more than 50% loss of eGFR.

Results: Patients with PGN had a higher AASI value (p=0.012). There was no statistically significant difference in cardiovascular outcome between the control group and the PGN group (p>0,05). Among the patients in the PGN group, the AASI value of the patients with non-dipper pattern was higher (p=0.022). Renal outcome was worse in patients with non-dipper pattern (p=0,013). Male gender and non-dipper pattern were associated with worse renal outcome in the PGN group (p=0.048, p=0.013). Renal outcome was worse in patients with an IFTA rate of 10% or more (p=0.009). No relationship was found between AASI and renal outcome (p=0.792). The overall expected renal survival was 87.05 months (95%, CI 77.55-96.55), while it was 67.02 (95% CI 55.27-78.76) in those with an IFTA rate of 10% or more. In multivariate regression analysis, after adjusting for age and gender, we showed that the risk of achieving a renal endpoint is increased 9.4-fold in non-dipper pattern (p=0.007).

Conclusion: We found that non-dipper pattern is asociated with worse renal outcomes in the patients with primary glomerulonephritis.

Keywords: glomerulonephritis, AASI, cardiovascular event, non dipper

17th BANTAO CONGRESS

November 10-13, 2022, Antalya, Turkey

POSTER PRESENTATIONS

PP-01 Renal Transplantation

EXPERIENCE OF HEPATITIS C VIRUS TREATMENT WITH DIRECT-ACTING ANTIVIRAL AGENTS IN KIDNEY TRANSPLANT CASES: 4 CASE

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Introduction: Immunosuppressive drugs used by hepatitis C (HCV)-infected kidney transplant (KTx) recipients may lead to the progression of liver disease progression by promoting viral replication. Infected recipients are also at risk of developing new-onset diabetes mellitus, cardiovascular disease, or graft rejection. Conventional antiviral agents (interferon-α and ribavirin) are associated with poor efficacy, low tolerability, and high rejection rates in KTx recipients. In recent years, a new group of drugs that target various nonstructural proteins of the virus, direct-acting antiviral agents (DAAs), has come into use. These agents appear to be significantly changing the treatment of HCV infection in the general population. However, information on their efficacy and safety in KTx recipients is limited. This report presents our local experience with DAAs in chronic HCV-infected KTx recipients.

Methods: Data from 225 KTx patients followed between January 2017 and June 2022 were retrospectively analyzed. Patient data were obtained from medical records. Fourteen patients with positive anti-HCV antibodies were included in the study.

Results: The prevalence of chronic HCV infection in our group was calculated to be 6.2%. HCV replication [detected by HCV ribonucleic acid (RNA)] developed in 7 of these patients, 2 of whom received DAA therapy after returning to hemodialysis because of graft loss. Therefore, their data are not presented here. In the remaining 5 patients, HCV replication developed under immunosuppressive therapy and during follow-up with functioning grafts. One of them was not followed up during the pandemic, so testing could not be completed. Data from 4 patients treated with DAAs are presented here (Table 1). These 4 patients achieved sustained viral response at week 12 of treatment.

Conclusions: HCV reactivations occurring in KTx recipients on immunosuppressive therapy with stably functioning graft were successfully treated with different DAA regimens. The sustained viral response was achieved in all patients. There were no adverse clinical experiences with graft function, liver function, or drug levels during and after treatment. With these cases, we would like to draw attention to the need for multidisciplinary management of HCV-infected kidney transplant recipients by nephrology and hepatology departments and to the safety and efficacy of DAAs. The data collected on this topic will contribute to the long-term outcomes of kidney transplant recipients.

Keywords: kidney transplantation, HCV infection, direct-acting oral antiviral agents

Tables :

	CASE-1	CASE-2	CASE-3	CASE-4
Age (years)	47	45	59	72
Gender	Female	Male	Male	Female
Primary Kidney Disease	Glomerulonephritis	Pyelonephritis	Arteriel hypertension	Unknown
Replacement Therapy Before Transplantation	7 years hemodialysis	1 year peritoneal dialysis, 5 years hemodialysis	Preemptive transplantation	1 year hemodialysis
Donor	Living	Cadaveric	Living	Cadaveric
Induction	Antithymocyte globulin	Antithymocyte globulin	Antithymocyte globulin	Antithymocyte globulin
Immunsupression	Prednisolone, tacrolimus, mycophenolate mofetil	Prednisolone, cyclosporine-A, azathioprine	Prednisolone, cyclosporine-A, mycophenolate mofetil	Prednisolone, tacrolimus, mycophenolate mofetil
Duration of HCV infection	28 years	New onset	New onset	25 years
Genotype	1b	1b	1b	1b
History of prior treatment	Peginterferon plus ribavirin	Naive	Naive	Peginterferon monotherapy
DAA medication regimens	Ledipasvir 90 mg/ Sofosbuvir 400mg	Glecaprevir 100 mg/ pibrentasvir 40 mg	Paritaprevir 75 mg/ ritonavir 50 mg/ ombitasvir 12.5 mg/ dasabuvir 250 mg	Glecaprevir 100 mg/ pibrentasvir 40 mg

Tables :				
Duration of therapy, weeks	12	8	12	8
HCV RNA, before therapy	127.000 copy/mL	8.781.700 IU/mL	398.000.000 copy/mL	1.050.000 IU/mL
HCV RNA, at 12th week of therapy	Negative	Negative	Negative	Negative
Serum creatinine, before therapy mg/dL	1.33	1.02	1.13	0.89
Serum creatinine, after therapy, mg/dL	1.38	1.11	1.02	0.79
Duration of follow up, after therapy, months	63	29	18 (exitus)	6

A RARE COMPLICATION FOLLOWING PERCUTANEOUS KIDNEY BIOPSY: PAGE KIDNEY

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Introduction: The Page Kidney is the external compression of the renal parenchyma by a subcapsular hematoma. It can cause hypoperfusion and microvascular ischemia by activation of the renin-angiotensin-aldosterone system. This is an uncommon clinic that occurs after blunt trauma and renal biopsies, often causing severe flank pain and secondary hypertension. Here, we present a case of a Page Kidney that developed after a percutaneous renal biopsy.

The Case: A 52-year-old female patient was admitted with joint pain that had persisted for two months. She was hospitalized with acute renal failure, microhematuria, subnephrotic proteinuria, and anti-neutrophil cytoplasmic antibody C positivity. She had coronary artery disease and was treated with acetylsalicylic acid and clopidogrel. These medications were discontinued and renal biopsy was postponed. With a provisional diagnosis of rapidly progressive glomerulonephritis, pulse methylprednisolone and plasmapheresis were started. One week later, Tru-Cut biopsy specimens were obtained from the parenchyma of the inferior pole of the left kidney with an 18-gauge needle under ultrasound guidance (USG). The pain in the left flank, which started immediately after the procedure, gradually worsened. Abdominal USG and tomography revealed a limited intracapsular hypoechoic heterogeneous collecting area around the left kidney (Figure 1). Because of a decrease in hemoglobin from 9 g/dL to 7.4 g/dL, tachycardia (heart rate 110/min), and desaturation (oxygen saturation 85%), 2 units of red blood cell transfusion were performed. Severe pain was controlled by acetaminophen and repeated administrations of tramadol. Nitroglycerin was infused when blood pressure was uncontrolled, despite maximum doses of amlodipine, metoprolol, and doxazosin. No compression of the renal artery and no increase in hematoma size were noted during serial USGs. Clinical and hemodynamic stability was achieved 16 hours after the procedure. Histopathologic examination revealed findings consistent with Pauci immune glomerulonephritis. Treatment was supplemented with intravenous cyclophosphamide. However, the patient with highly chronic findings in the histopathologic specimens did not respond to immunosuppressive therapy and remained hemodialysis dependent.

Conclusion: Our patient developed a subcapsular hematoma after native renal biopsy, leading to Page's phenomenon characterized by severe pain and elevated blood pressure. This complication, which has been reported in only a few cases in the literature, can be detected by early imaging after any renal procedure. Although the recommended treatment approach in affected patients is conservative, surgical/laparoscopic decortication or nephrectomy may be performed in cases where hemodynamic stability cannot be achieved. In our case, clinical stabilization was achieved with intensive conservative support, and no invasive procedure was performed.

Keywords: kidney biopsy, complication, page phenomenon

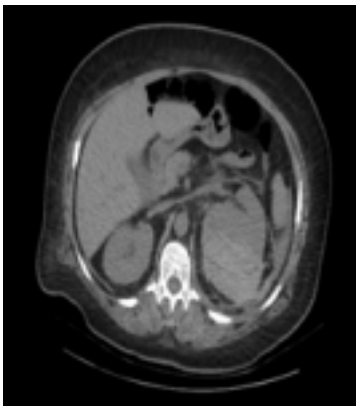

Figure 1: Heterogeneous hypoechoic hematoma surrounding the left kidney, limited into the capsule

DIABETIC KIDNEY DISEASE AND CARDIOVASCULAR RISK.

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Introduction: Diabetes is the leading cause of end-stage renal disease. Renal disease is a cardiovascular morbidity and mortality predictor which is three times more common in diabetic patients with diabetic nephropathy (DN). We aim to describe the factors of cardiovascular risk associated with DN in a group of type 2 diabetes patients.(T2D)

Methods: It was retrospective and descriptive study including 204 patients with T2D and confirmed DN, hospitalized in the Internal Medicine at UHC "Mother Teresa", between January to December 2021.

Results: There were 97 (47.5%) women and 107 (52.5%) men with mean age was 70.93 ± 9.64 years. The body mass index was 28.98 ± 6.24 kg/m^2. The average duration of diabetes was 11.35 ± 5.32 years. In 87.7% of cases, treatment for diabetes was insulin therapy. Microalbuminuria as incipient nephropathy was present in 104 patients and 100 patients had renal failure with GFR <90 ml/min. High blood pressure was present in 144 patients, 88% of whom were on ACE inhibitors. Other microangyopathic complications were present, such as diabetic retinopathy in 13.7% patients, 6 of which had a proliferative form and peripheral neuropathy in 25% patients. Ischemic heart disease was found in 36.6% of patients and angiopathy of the lower limbs in 11 patients. Hypertriglyceridemia was observed in 97 patients, hypo-HDL-cholesterolemia in 24 patients and hyper LDL-emie in 75 patients. 69.7% of patients had hiperuricemia. We noted a positive correlation between the DN stage and the severe of glycated hemoglobin (P=0.002), as well as duration of diabetes. However, no significant correlation has been demonstrated between the micro and macro albuminuria and the triglyceride level, HDL cholesterol and the LDL cholesterol level.

Conclusions: Diabetic kidney disease increases the cardiovascular risk in T2D. Its prevention and management, requires an optimal glycemic and blood pressure control, in order to protect not only the kidney but also to reduce cardiovascular risk and thus to improve the quality of life of diabetics and their prognosis of life.

Keywords: diabetic nephropathy, cardiovascular risk

PP-04 Other

ARE HIGH URIC ACID LEVELS PREDICTORS FOR ATHEROSCLEROTIC CARDIOVASCULAR DISEASES IN TYPE 2 DIABETIC PATIENTS?

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Introduction: Hyperuricemia is a high risk factor for atherosclerotic cardiovascular disease (ASCVD). There are complex and controversial data between hyperuricemia and ASCVD. Our aim was to investigate the relationship between hyperuricemia and T2DM patients with ASCVD.

Methods: This study was performed in 96 T2DM patients. All patients had treated hypertension and hypercholesterolemia. Participants were divided into 2 groups: Group1(G1) consists of 48 patients with ASCVD and Group2 (G2) 48 patients without ASCVD. ASCVD includes previous acute coronary syndrome, stroke, transient ischemic attack and peripheral arterial disease. All patients were evaluated for level of uric acid, glycosylated hemoglobin (HbA1c), LDL-cholesterol (LDL-C), triglyceride (TG), measurement of systolic and diastolic blood pressure and body mass index (BMI) and diabetes duration.

Results: The mean age of the patients presented with and without ASCVD was 63.5 and 68.5 years, respectively. UA levels in ASCVD patients were higher compared to patients without ASCVD (7.8 mg/dL vs 6,1 mg/dl, P = 0.09). Diabetes duration was longer in G1 group compared to G2 group (14.45 vs 12.6 years, P = 0.06). BMI was significantly higher at group with ASCVD (38.24 vs 31.2 kg/m^2, P = 0.07). HbA1c level did not statistically differ (12.02 % vs 11.08 %, P = 0.23;). Values of systolic and diastolic blood pressure did not statistically differ in groups (134 mmHg vs 130 mmHg, P = 0.5; 76 vs 81 mmHg, P = 0.26 respectively). TG levels were higher in G2 (105 mg/dL vs 199 mg/dL, P = 0.06) while LDL-C levels did not statistically differ between two groups (165 vs 148 mg/dL, P = 0.89).

Conclusion: T2DM patients with ASCVD have higher UA levels compared to group 2. These patients were more obese than group without ASCVD, their BMI was greater. HbA1c level, systolic and diastolic blood pressure, and LDL-C did not statistically differ between two groups. So, high levels of uric acid are predictors for the development of ASCVD in T2DM patients. Further investigation are needed to elucidate if is it an independent risk factor or not.

Keywords: atherosclerotic disease, cardiovascular, hyperuricemia

EFFICACY OF FEBUXOSTAT IN HYPERURICEMIC PATIENTS WITH CHRONIC KIDNEY DISEASE: A SINGLE CENTER EXPERINCE

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Introduction: Hyperuricemia is a common complication of chronic kidney disease (CKD). The aim of this study was to investigate the efficacy of febuxostat treatment and its effect on CKD progression in hyperuricemic patients with CKD.

Methods: Sixty-five hyperuricemic CKD patients followed from nephrology outpatient clinic were included in our study. Demoghraphic data of patients and laboratory results before and after febuxostat treatment were recorded.

Results: Of 65 patients; 43 (66.2%) were male (mean age 62.09±13.87). The clinical parameters and treatments of patients are shown in Table-1.The mean estimated glomerular filtration rate (eGFR) value before treatment was 40.98 ±19.23 mL/min. Thirty-two of patients (49.2%) were on diuretic therapy. When the uric acid (UA) values of the patients before and 1 year after the treatment were compared, the UA values at the 12 th month were found to be statistically significantly lower (9.72±1.33 vs. 6.78±2.11; p<0.001). On the other hand, there was no statistically significant difference between pre-treatment and post-treatment 12 th month eGFR values. (40.98 ±19.23 vs. 42.86 ±22.47; p=0.367). The laboratory results of the patients are shown in Table 2.

Conclusion: In our study, febuxostat provided a statistically significant decrease in uric acid levels, but did not affect eGFR levels. This may be due to the small number of patient group. Additional studies are required to further verify the renoprotective effects of febuxostat in hyperuricemic patients with CKD

Keywords: CKD, febuxostat, uric acid

Table 1: Clinical findings of patients.

	Patients (n=65)
Age	62.09±13.87
Gender (male/female)	43/22
Comorbid disease	
DM	19 (29.2%)
CVD	8 (12.3%)
CAD	23 (35.4%)
Medications	
ACEİ	32 (49.2%)
ARB	14 (21.5%)
Statin	21 (32.3%)
Beta-blocker	26 (40%)
OAD	14 (21.5%)
Diuretics	32 (49.2%)
History of smoking	19 (29.2%)
Nephrolitiazis on renal ultrasound	5 (7.7%)

Table 2: Laboratory findings of patients before and after febuxostat treatment (n=65).

	Before treatment	**After treatment**	**n**
eGFR (ml/mın/1.73 m2)	40.98±19.23	42.86±22.47	0.367
Creatinin (mg/dL)	1.93±0.92	2.03±1.45	0.389
Uric acid (mg/dL)	9.72±1.33	6.78±2.11	<0.001
CRP (mg/dL)	11.41±16.22	7.65±8.94	0.031
Serum albumin (g/dL)	4.36±0.43	4.26±0.45	0.026
LDH	398 (282-592)	683 (293-1379)	0.011
ALT (u/L)	17.51±12.23	18.62±12.85	0.605

BETA 2-MICROGLOBULIN IN PATIENTS ON HAEMODIALYSIS

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Introduction: Beta2-microglobulin (B2M) is a middle-molecular-weight protein, which is found on the surface of all nucleated cells. It plays a major role in cellular immunology. More than 95% of B2M is eliminated by degradation in the proximal tubules. It is elevated in patients with renal insufficiency. Accumulation of B2M in patients with end stage renal disease leads to Dialysis Related Amyloidosis. Serum level of B2M is a predictor of all-cause mortality in haemodialysis patients.

Methods: The prospective, observational study was done on 43 pts on intermittent haemodialysis. Level of beta2-microglobulin was measured at the beginning of the dialysis procedure, for all participants. Demographic and laboratory data were collected and compared with the level of B2M. All patients have been dialysed for more than three months. High flux membranes have been used in all patients. Patients with manifest infections have been excluded from the study.

Results: Average B2M level for 43 pts included in the study was 20.92 mg/l. Eight patients had normal value of B2M (18.60%). Average B2M level in men (22/43) was 19.12mg/l, an in women (21/43) 22.81mg/l (p=0.368). Patients included in the study had average age of 62.12 years. Patients older than 65 years had significantly higher values of B2M (25.72mg/l) compared to those younger than 65 years (17.47) (p=0.043). There was no significant difference between the B2M levels of patients with diabetes (11/43) (20.55 mg/l) and those without diabetes (32/43) (21.05 mg/l) (p=0.915). Patients who have been dialysed for more than one year (23/43) had significantly higher levels of B2M (24.06 mg/l) compared to patients who have been on haemodialysis for less than one year (20/43) (17.31 mg/l) (p=0.023). Small, positive non-significant correlation was found between levels of B2M and the number of leukocytes (p=0.135), number of neutrophils (p=0.235) and the levels of creatinine (p=0.301). Small, negative non-significant correlation was found between levels of B2M and the body mass index (p=0.382), NLR (p=0.229) and PLR index (p=0.192), CRP levels (p=0.689), PCT levels (p=0.382), fibrinogen levels (p=0.908), levels of serum proteins (p=0.548), albumin (p=0.286) and urea levels (p=0.895). Significant positive correlation was found between the B2M levels and the number of lymphocytes (p=0.010).

Conclusions: Patients on haemodialysis have elevated levels of B2M compared to general population. Levels of B2M are higher in older patients, those who have been on dialysis more than one year and those with higher number of lymphocytes, among patients dialysed with high-flux membranes.

Keywords: beta2-microglobulin, haemodialysis

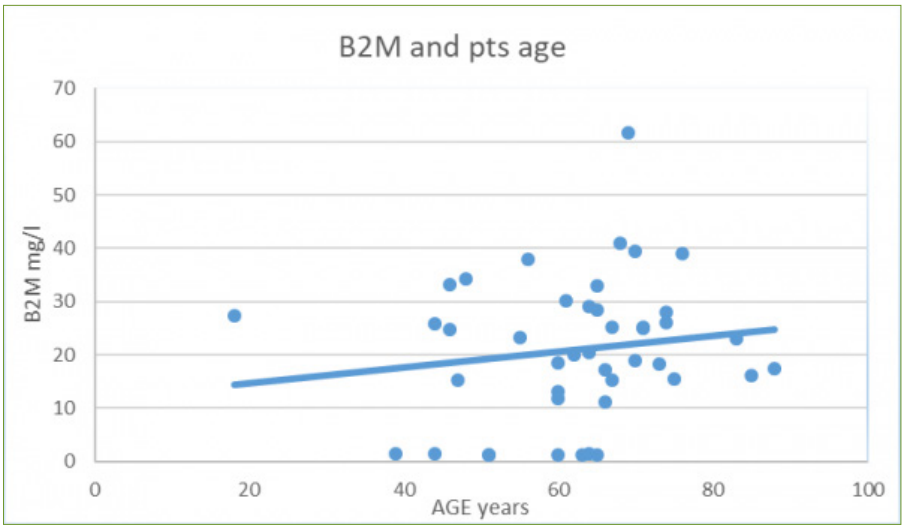

Figure: B2M and patients age

PREGNANCY AFTER KIDNEY TRANSPLANTATION: IMPACT ON MATERNAL AND GRAFT FUNCTION

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Introduction: Women with end stage kidney disease have improved reproductive function after kidney transplantation; however pregnancy rates in women who is kidney transplant recipients appear to be lower than healty women due to the risk of adverse clinical outcomes. In this study, we aimed to evaluate pregnancy on maternal, fetal risks, graft function and outcomes during pregnancy in kidney transplanted women.

Methods: This study is a retrospective observational study of evaluated that 54 pregnancies in 32 kidney transplant recipients between 2002 and 2020. For this analysis, each pregnancy was considered an event.

Results: The baseline demographic and clinical characteristics of pregnancy women summerized in table 1. The mean serum creatinine level was 0.91±3.4 (range 0.67-2.72) mg/dl pre-pregnancy period; 12 months after delivery, it was 1.16 mg/dl (range 0.78- 3.86). 8 patients (15.1%) developed deterioration of kidney graft function >10 ml/min during pregnancy. The mean time from transplantation to pregancies occured was 63.7±59.2 months. Mean pregnancy age was 33.13±8.537 weeks (range 7-40 weeks). One rejection occured in the 12 months after delivery. Preeclampsia was developed in 4 pregnancies. The rate of ceaserean section was 66.03%. Fetal outcomes included 39 live births, 9 (16.9%) abortions, 2 (3.77%) stillbirths. Sixteen (30.18%) pregnancies had preterm deliveried at <37 gestational age. The infants birth weights were 2660 mg in median (IQR 1100-3110 mg). Results of obstetric complications were summerized in 32 women with 53 pregnancies at Table 2. Also data of including the effect of pregnancy on graft dysfunction were summerized in table 3.

Conclusion: A successful post-transplant pregnancy is possible in transplant recipients, but the the risks of prematurity, low birth weight, and graft dysfunction. A lower GFR before pregnancy and co-morbidities were associated with poorer maternal and fetal outcomes.

Keywords: pregnancy, kidney transplantation, graft function, maternal outcomes

Table 1: Characterictics of kidney transplant recipients

Pregnancies	n:53 30.94±5.58
Age at transplantation time(years, mean±SD)	30.94±5.58
Age at delivery (years, mean±SD)	35.34±4.48
Mean BMI pre-pregnancy (kg/m^2, mean±SD)	22.7±3.1
Last creatinine pre-pregnancy (mg/dl, mean±SD)	0.91±3.4
Donor types (n, %) Deceased donor Living donor	11 (%20.6) 42 (79,24)
Precense of Hypertension pre-pregancy	13 (%24.5)
Etiology of Kidney Disease (n,%) Diabetes Gleomerulonephritis Vezicoureteral reflux Urological abnormalities Unknown	7 (%13.2) 12(%22.6) 17(%32.0) 8(%15.0) 9(%16.9)
Time between transplantation and pregnancy (mean±SD)	63.7±59.2
Nature of pregnancy (n,%) Unplanned Planned	5 (%9.4) 48(%90.6)

Table 2: Maternal- Obstetric and Fetal Outcomes

Pregnancies	(n:53, %100)
Preeclampsia	4(7.54)
Gestational Hypertension	4(7.54)
Gestational Diabetes	4(7.54)
Urinary Tract Infection	10 (%18.8)
Delivery mode Caeserean Sectio Vaginal	35 (%66.03) 18 (%33.7)
Creatinine delivery (mg/dl, mean± SD)	1.04±0.38
Live Births	39 (%73.5)
Miscarrieges	7 (%13.2)
Stillborn	2 (%3.77)
Terminations	5 (%9.43)
Birth weight (kg±SD) Mean birth weight Low Birth weight <2500	2660±618 15 (%28.2)
Gestational Age (years, mean±SD) Mean gestatioanl age Delivery <37 weeks Delivery <34 weeks	33.13±8.537 16 (30.1) 3 (5.66)

Table 3: Chance in graft function among pregnancy and after delivery

	Pre-pregnancy	Delivery	Post- delivery 3 months	Post- delivert 6 months	Post- delivert 12 months	p
Serum creatinine (mg/dl) mean±SD	0.91±0.33	1.04±0.38	1.09±0.51	1.13±0.69	1.16±0.53	a,b
24 hour urine proteinuria (mg/day)	204.55±301.37	429.12±713.08	365.02±763.51	392.73±763.51	384.80±750.57	
a: pre-pregnancy period and delivery , p=0.00 b: pre-pregnancy period and post delivery 6. Months, p=0.01						

EFFICACY AND SAFETY OF INTERLEUKIN-1 BLOCKERS IN KIDNEY TRANSPLANT RECIPIENTS WITH FAMILIAL MEDITERRANEAN FEVER

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Introduction: Data on use of IL-1 blockers in kidney transplant recipients (KTRs) with familial Mediterranean fever (FMF) are very limited. We aimed to evaluate the efficacy and safety of anakinra and canakinumab in the transplantation setting.

Methods: In this retrospective case-control study, we included KTRs suffered from AA amyloidosis caused by FMF and treated with anakinra or canakinumab (study group, n=36). Using propensity score matching, we selected 36 patients without FMF or amyloidosis from our database of 696 KTRs as the control group (Table 1). Primary outcomes were patient and graft survival. Biopsy-confirmed graft rejection, changes in eGFR, hsCRP, erythrocyte sedimentation rate (ESR), proteinuria, and number of monthly attacks were secondary outcomes.

Results: All KTRs with FMF began IL-1 blocker therapy with anakinra and 9 (25%) were switched to canakinumab. Overall death was more frequent in study group (19.4% vs 0%) (p=0.005); however, overall graft loss was comparable between study (27.8%) and control groups (36.1%) (p=0.448). Five- and 10-year graft survival rates were significantly higher in study group (94.4% and 83.3%, respectively) than control group (77.8% and 63.9%, respectively) (p=0.014 and p<0.001, respectively) (Figure 1). Death-censored graft survival (DCGS) rates at 5 years were 100% in study and 77.8% in control groups (p=0.001). Also, DCGS at 10 years were 94.4% and 63.9%, respectively (p<0.001). Rejections were numerically lower in study group (8.3% vs 25%), but it did not reach to statistical significance (p=0.058). When compared to pre-treatment period, with IL-1 blockers, number of attacks per month (p<0.001), eGFR (p=0.004), hsCRP (p<0.001) and ESR (p=0.026) levels were lower throughout the follow-up; whereas proteinuria levels were not (Table 2).

Conclusions: Anakinra and canakinumab are effective in KTRs suffering from FMF; however, mortality rate may be of concern.

Keywords: familial mediterranean fever, kidney transplantation, amyloidosis

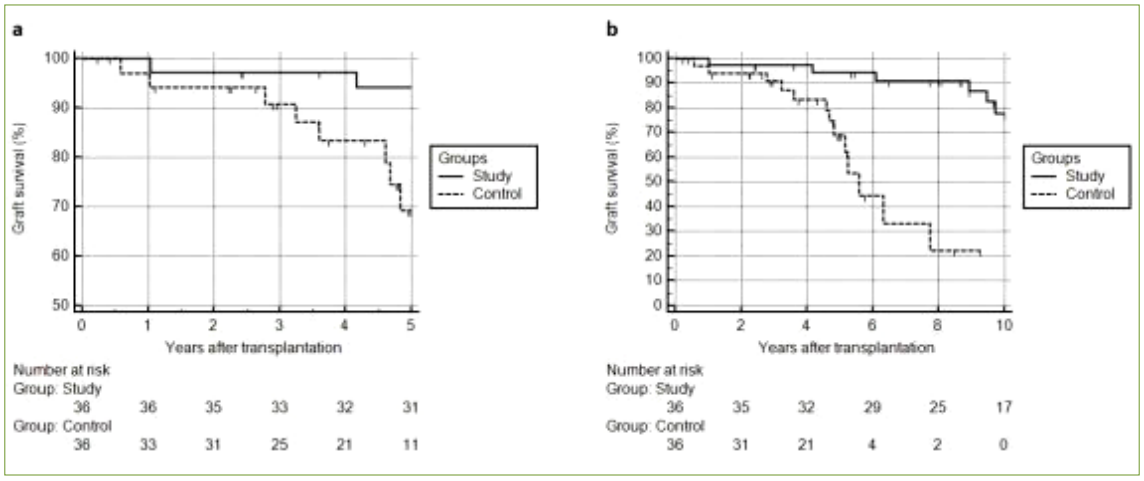

Figure 1: Graft survival rates at 5 (a) and 10 years (b) were significantly higher in the study group when compared to the control group (p=0.014 and p<0.001, respectively).

Table 1: Demographic, clinical and laboratory characteristics of all patients.

Characteristics	Study Group (n=36)	Control Group (n=36)	p
Age at transplantation (years), mean±SD	35.2±12.3	34.7±11.7	0.861
Sex (male), n (%)	22 (61.1)	19 (52.8)	0.475
Donor age (years), mean±SD	45.1±12.6	43.6±10.7	0.601
Donor sex (male), n (%)	16 (44.4)	14 (38.9)	0.633
Donor type, n (%)			0.394
- Living	32 (88.9)	34 (94.4)	
- Deceased	4 (11.1)	2 (5.6)	
Number of HLA mismatches, median (IQR)	3 (3-3.75)	3 (3-5)	0.764
Duration of follow-up (months), median (IQR)	115.5 (80.8-138.5)	55.5 (33.3-61.8)	<0.001
Transplantation year, n (%)			0.561
- 1992-1999	1 (2.8)	0 (0)	
- 2000-2009	21 (58.3)	20 (55.6)	
- 2010-2017	14 (38.9)	16 (44.4)	

Table 2: Clinical and laboratory characteristics at the time of IL-1 blocker initiation and last follow-up in the study group (n=36).

Characteristics	Initiation of IL-1 blocker	Last Follow-up	p
Number of attacks per month, median (IQR)	0.8 (0.2-2.3)	0 (0-0)	<0.001
Serum creatinine (mg/dl), median (IQR)	1.3 (1.1-2)	1.5 (1.2-2)	0.003
eGFR (ml/min/1.73 m2), mean±SD	59.2±26.2	50.2±25.3	0.004
Serum albumin (g/dl), mean±SD	4.2±0.4	4.2±0.6	0.687
Proteinuria (g/g), median (IQR)	0.2 (0.1-0.8)	0.2 (0.1-0.8)	0.283
hsCRP (mg/l), median (IQR)	20.2 (10.5-27.3)	3.1 (1.3-9.8)	<0.001
ESR (mm/h), median (IQR)	21 (11-48)	10 (3-33)	0.033

THROMBOCYTOSIS AND SYSTEMIC LUPUS ERYTHEMATOSUS – A CASE REPORT

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Introduction: Thrombocytosis indicates an elevated platelet count (≥400 x109L) and is rarely described within systemic lupus erythematosus (SLE). We present a patient with SLE and lupus nephritis class IV, who was resistant to the applied therapy leading to end-stage renal disease, in which persistent thrombocytosis was observed.

Case: A 40-year-old patient was diagnosed with SLE in 2019 (non-erosive polyarthritis, skin changes, pleural and pericardial effusion, positive ANA and anti dsDNA Ab, hypocomplementemia). Initially, she was treated with corticosteroids and antimalarials. During 2020, lupus nephritis developed (Cre 314, proteinuria 10g / 24h), and treatment continued in nephrology clinic. A kidney biopsy was performed, and treatment was started with pulse doses of Methylprednisolone 3x500mg, followed by oral CS in an initial dose of 1mg / kg / tt. Following the arrival of renal biopsy findings - diffuse proliferative glomerulonephritis class IV - pulse doses of Cyclophosphamide (CyC) at a dose of 500 mg for 14 days were introduced into the treatment. The initial effect of the treatment was favorable, after III pulse therapy Cre with 348 was 214 and proteinuria with 10g / 24h was 2.7g / 24h. However, soon several infectious complications set in, first in the form of enterocolitis, then urinary tract infections and pneumonia, then CyC therapies were delayed and generalized edema occurs, so the patient was treated with therapeutic plasma (PF) exchanges and hemodialysis due to oligoanuria. 6 PF and VI pulse therapies with cyclophosphamide were performed, but without effect, renal failury progressed with oligoanuria and a chronic hemodialysis program was started. In this patient, thrombocytosis was initially observed, which is persistent (890 -522x109L) and this is a finding that still exists today. In consultation with a hematologist, examinations were performed: peripheral blood smear, JAK, ultrasound and scintigraphy of the spleen, thus excluding hematological disease, while liver function was normal , as well as coagulation factors.

Conclusion: Thrombocytopenia is characteristic of SLE, but there are also rare cases, such as our patient, in which thrombocytosis is described, in the absence of autosplenectomy, infection or hematological disease.

Keywords: systemic lupus erythematosus; thrombocytosis, infection, autosplenectomy

INFECTION-RELATED RENAL VASCULITIS, LESSONS FROM COVID-19 DEMONSTRATING THE IMPORTANCE OF AWARENESS & COLLABORATION

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Introduction: Viral infection-related renal vasculitis is rare, but it is essential to recognize and treat it to save patients. The co-existence of double antibodies is very rare. Renal vasculitis was reported with viral infections like COVID-19. Exhaustion and lack of time was a handicap during the pandemic. Here we present two different cases that demonstrate the importance of collaboration among medical teams.

Case 1: A 60-year-old man who tested +ve for COVID was referred because of high creatinine. At presentation, we found an increase in serum cr from 1.4 to 1.8 mg/dl (Figure 1). He had hematuria & non-nephrotic proteinuria (900 mg/day). The patient reported the use of ibuprofen 600 mg for t3 days. We referred him for renal biopsy. Results revealed glomerular sclerosis (1/16) with tubular atrophy with no crescent. Serology was +ve only for p-ANCA (Table 1). He was treated as TIN with steroids for three months. On follow-up, an increase in serum creatinine accompanied by hematuria was observed. p-ANCA was pozitive again with serum Cr: 3.4 mg/dl and 799 mg/dl proteinuria. The second renal biopsy revealed 9/46 glomeruli with fibrinoid necrosis. Crescents were present in 29 glomeruli (12 were cellular). The patient received cyclophosphamide for 3 months, followed by MMF till the moment (Figure 2). Remission was obtained (Table).

Case 2: A 39 years old woman with a history of asthma was admitted to our ICU because of COVID-19 pneumonia. The has urea: 23 mg/dl, Kr: 0.6 mg/dl and CRP of 365 (figure 3). She was started on Favipravir, meropenem and ciprofloxacin. She had Tocilizumab and immune plasma two times. Although CRP came down, the renal function deteriorated. On day 4 of admission, the patient was consulted by a nephrologist. The evaluation revealed anuria since 12 hrs. A detailed evaluation revealed a clinical picture of Pulmo-renal syndrome. The patient started dialysis (SLED & CRRT) and plasma exchange with a high dose (1 gram) pulse steroid. Later we proved double positivity of both c-ANCA and Anti-GBM. The principal care was under the supervision of anaesthetists working on a 24-hour shift basis. The clinical picture and need for oxygen improved dramatically after the third session of PE. The patient's clinical picture deteriorated dramatically on the weekend. The evaluation revealed a previously missed pneumothorax. The patient deceased on day 30, after which the blood cultures showed MDR Klebsiella (except BACTRIM).

Discussion: The first case is a p-ANCA-related vasculitis that may have been referred early and started on steroid with suspicion of Tubulointerstitial nephritis (TIN), responded well till the second presentation parallel to the cessation of immunosuppression. Second Bx was essential to demonstrate the active vasculitis that aided treatment. The second case is a double antibody vasculitis, which was treated on time though not confirmed with a renal biopsy, but the need for multidisciplinary team collaboration is obvious

Conclusion: It is very important to consult patients with doubted renal functions not to miss an important diagnosis. On the other hand, one should be careful in interpreting laboratory findings and not hesitate to perform a renal biopsy again when essential. Exhaustion in a pandemic may have an adverse effect on health outcomes.

Keywords: renal vasculitis, COVID-19, acute kidney injury, ANCA, anti-GBM.

Table 1: Case 1: Laboratory findings of followup

Date	Cr (mg/dl)	Albumin (mg/dl)	Proteinurea (mg/day)	p-ANCA
23.01.2021	1,4			
05.03.2021	1,8	3,4	900	positive
6.04.2021	2,6	3,3		positive
20.05.2021	3,4	3,4	1400	
24.06.2021		4,46		Negative
23.07.2021	1,74			
24.08.2021	1,8	4,2	648	Negative
25.09.2021	1,9			
26.11.2021	3,4	4,1	760	
27.12.2021	3,10	3,9	1990	Positive
20.01.2022	2,64			Positive
22.02.2022	2,34	4,2	648	Positive
14.03.2022	1,90	4,4	544	Negative
20.04.2022	1,72	4,5		
20.05.2022	1,68	4,40		
02.06.2022	1,58	4,45	235	Negative
23.07.2022	1,7	4,66	220	

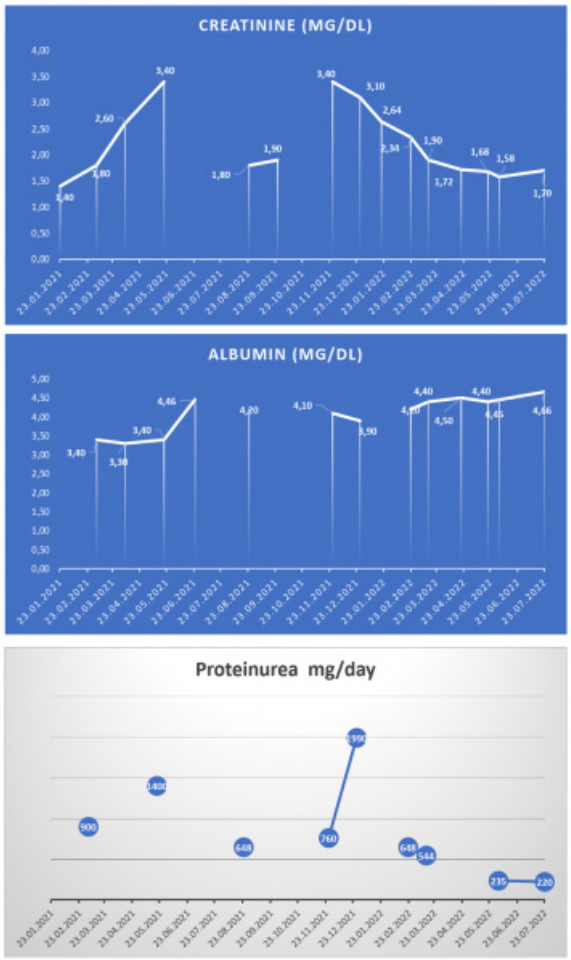

Figure 1: Case1 Laboratory followup

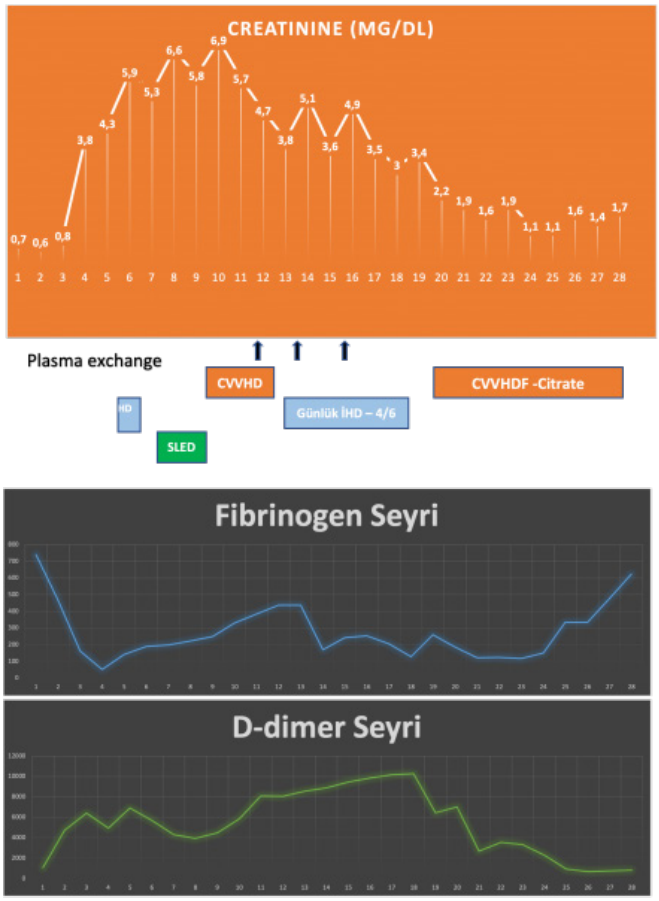

Figure 3: Clinical evaluation of case 2

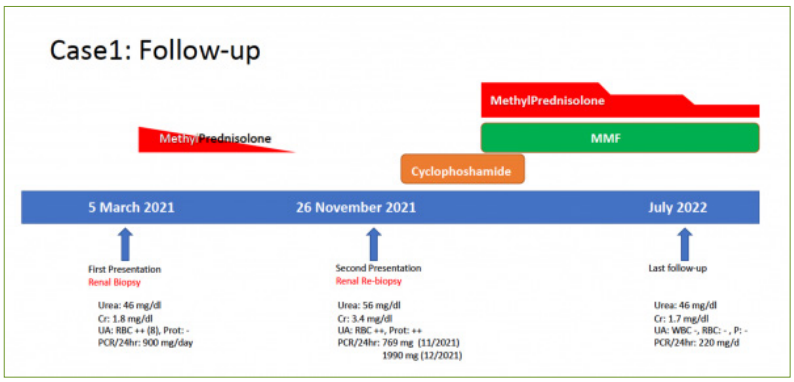

Figure 2: Case 1 Treatment and clinical scenario followup

SPODILODYSCITIS OF THE THORACIS SPINE IN PATIENS WITH PERSISTENT HEMATURIA-CASE REPORT

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Introduction: Spondylodiscitis is a serious infection which, due to a delayed diagnosis, leads to death in hospitalized patients by about 7%. The aim is to present a female patient who was diagnosed with nuclear magnetic resonance (NMR) diagnosis of thoracic spondylodiscitis after numerous examinations in various specialties during the year.

Case: A 37-year-old female patient was hospitalized at the Clinic of Nephrology to clarify the etiology of persistent hematuria and non-nephrotic proteinuria. She mentions pain in the lumbar region, more on the left side, weakness, fatigue, emotional and impulsive reaction as the main problems. The first problems in the form of pain in the lumbar region appeared a year ago. There is a personal history of polycystic ovary syndrome, Hashimoto's thyroiditis and sinus tachycardia. Three years ago, she had generalized furunculosis. During the year, in order to make a diagnosis, she was examined by a neurologist, rheumatologist, physiatrist, urologist, gynecologist, infectologist, psychiatrist and endocrinologist. Laboratory findings showed elevated values of ESR and fibrinogen with normal CRP values, without anemia with preserved renal function. Echosonography and MSCT examination of the abdomen described a cyst on the right kidney. Intravenous urography (IVU) showed left bifid pelvis, without elements for hydronephrosis and calculosis. Cystoscopic examination was orderly. NMR described spondylodiscitis Th8-Th10, and spodilitis Th11 which was understood by neuroradiologists as granulomatous osteomyelitis. The treatment was performed at the Clinic for Infectious and Tropical Diseases with Vancomycin and tuberculostatics. A year later, the patient was without significant problems, with normal clinical, laboratory and morphological findings.

Conclusion: Accurate and early diagnosis with adequate therapy of atypical forms of thoracic spondylodisctitis are key factors in a good prognosis.

Keywords: spondylodiscitis, erythrocyturia, proteinuria, kidney cyst

PP-12 Peritoneal Dialysis

FACTORS ASSOCIATED WITH POTENTIALLY INAPPROPRIATE PRESCRIBING IN PATIENTS ON PERITONEAL DIALYSIS

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Introduction: Inappropriate prescribing is common in patients with end-stage renal disease, especially in those over 65 years of age. The aim of our study was to reveal potentially inappropriate drug prescribing in patients on peritoneal dialysis (PD), and to explore factors associated with this phenomenon.

Methods: The research was designed as an observational, cross-sectional study on a convenient sample of 145 consecutive patients on PD who attended the four tertiary-care hospitals in Serbia. The main outcome was extent of inappropriate prescribing, as assessed by the Medication Appropriateness Index (MAI), and potential predictors were tested by multiple linear regression.

Results: Inappropriate prescribing was very frequent phenomenon among patients on peritoneal dialysis. Main factors that promote inappropriate prescribing in this subgroup of patients on renal replacement therapy are comorbidities (p=0.000), increased body weight (p=0.022), number of prescribed drugs (p=0.000) and hypertension on examination (p=0.030). On the other hand, drinking alcohol and higher systolic blood pressure were associated with lower extent of inappropriate prescribing.

Conclusion: In order to prevent occurrence of inappropriate prescribing and its grave health or economic consequences, clinicians should pay special attention when prescribing new drugs to high-risk patients.

Keywords: inappropriate prescribing, polypharmacy, peritoneal dialysis

IMPACT OF ONLINE-HEMODIAFILTRATION ON MALNUTRITION, INFLAMMATION AND ERYTHROPOIETIN RESPONSE IN HEMODIALYSIS PATIENTS

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Introduction: Low serum albumin, high plasma CRP and malnutrition have proven to be significant predictors of mortality in hemodialysis (HD) patients. Online hemodiafiltration (OL-HDF) as a modality of HD can reduce cytokine responses, and thus improve inflammatory status, malnutrition and response to erythropoietin (EPO) therapy. Aim of our study was to evaluate the impact of OL-HDF on parameters of inflammation, malnutrition and EPO response as compared to standard HD.

Methods: We have conducted clinical observational-comparative study, which included 60 patients on chronic hemodialysis program in the three-year period (2018-2021). Patients were divided into two groups: patients on standard HD and patients on OL-HDF. Patients were matched based on age, gender and type of dialysis. Lab data used were: interleukin 2, interleukin 6, C-reactive protein, β2 microglobulin, prealbumin, albumin, vitamin B12, folates, erythrocytes count, hemoglobin, hematocrit, serum iron, total iron binding capacity, transferrin saturation, ferritin. Values of $p \leq 0.05$ were taken as statistically significant.

Results: Studied data showed significant difference of the mean values of interleukin-2 in the serum, and lower mean values of interleukin-6, but not significantly, in both groups of patients at the end of the study. We have also noticed a significant decline in the mean values of CRP and β2 microglobulin in patients on OL-HDF compared to patients in the HD group. Patients in OL-HDF group had statistically significantly higher values of albumin and prealbumin, erythrocytes, hemoglobin, hematocrit, serum iron, transferrin saturation, total iron binding capacity compared to patients on HD. During the study we have followed a significant decline in the mean values of vitamin B12 in the OL-HDF group, while the study revealed no statistically significant changes in values of folates in both groups of patients.

Conclusions: OL-HDF in combination with high-performance membranes and ultra-pure dialysate is safe and well tolerated by patients. Our study results show marked improvements in parameters of inflammation, malnutrition and EPO response in patients on OL-HDF. Our data offer additional insight in benefits of OL-HDF compared to standard HD, which could be the current method of choice in the treatment of patients on HD.

Keywords: hemodialysis, hemodiafiltration, on-line, inflammation, malnutrition, erythropoietin

THE CLINICAL FEATURES OF NORMOALBUMINURIC DIABETIC KIDNEY DISEASE PATIENTS ARE DIFFERENT FROM THOSE WITH ALBUMINURIA?

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Introduction: The clinical characteristics of diabetic patients presenting with normoalbuminuria with decreased kidney functions were investigated.

Methods: Demographic information of 107 eligible patients was recorded between December 2019 and March 2020. Laboratory tests performed in the last 1 month (Creatinine, Hba1c, Total cholesterol, LDL, HDL, Triglycerides, albumin, uric acid, protein/creatinine ratio in spot urine) were retrospectively taken from their files. They were grouped as normoalbuminuria and albuminuria according to albumin/creatinine ratios in spot urine. Brachialic artery pulse wave velocity (baNDH) and blood pressure measurements were performed using the Mobil-o-Graph 24h PWA monitor. Ultrasonography measured carotid arteries, carotid bifurcation and carotid artery thickness from a distance of 2 cm from the beginning of the internal carotid artery.

Results:107 diabetic kidney patients were included in our study. The mean age of these 107 diabetic kidney patients was 63.57±9.73 years and 55.1% were male. HT was present in 98 patients (91.6%), coranary artrer disease in 72 patients (67.3%), serebrovascular accident in 65 patients (60.7%), retinopathy in 79 patients (73.8%), neuropathy in 80 patients (74.8%). 57 patients were albuminuric (53.3%) and 50 patients were nonalbuminuric(46.7%). The mean age of patients in the normoalbuminuria group was significantly higher (p<0,001). Albuminuric patients had lower BMI values and duration of diabetes (p=0.004 and p=0.021) and systolic blood pressure values were significantly higher. The mean baNDH of albuminuric patients (8.96±1.47) was significantly lower than that of normoalbuminuric patients (9.75±1.55). The highest mean age was found in the normoalbuminuria group (67.48±8.66) and the lowest mean age was in the macroalbuminuria group (56.77±9.6) (p<0,001).The duration of diabetes in the macroalbuminuria group was shorter than in the normoalbuminuria group (p=0.025). The mean baNDH of macroalbuminuric patients was 8.58±1.49 and that of normoalbuminuric patients was 9.75±1.55, and this difference was statistically significant. The resistivity index was higher in the normoalbuminuric group but was not statistically significant. Multivariate logistic regression analysis was performed to determine the independent risk factors associated with albuminuria in patients and it was found that the risk of albuminuria increased as BMI decreased, SBP increased and baNDH decreased.

Conclusion: Normoalbuminuric diabetic kidney patients were older, had a higher BMI, had a higher duration of diabetes and higher baNDH. It was found that the risk of albuminuria increased as BMI decreased, creatinine increased, SBP increased and baNDH decreased. There was no difference between normoalbuminuric and albuminuric groups in terms of microvascular complications.

Keywords: normoalbuminuria, diabetic kidney disease, pulse wave velocity

RARE KIDNEY DISEASE - GITELMAN'S SYNDROME - CASE REPORT

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Introduction: Gitelman syndrome is a rare, hereditary, autosomal recessive kidney disease, which is related to tubule disease. It is most often characterized by hypokalemia, hypomagnesemia, metabolic alkalosis, hyperreninemic hyperaldosteronism, normal blood pressure, which can be lower. It affects men and women equally, approximately 1-10 cases per 40000 inhabitants. The most common cause is mutations in the SLC12A3 gene which encodes the thiazide-sensitive sodium chloride cotransporter (NCCT) and TRPM6 (cation channels subfamily 6 of the protein Claudin 16) gene handles the distal tubular magnesium transport.

Case: We present a 21-year-old man who was hospitalized due to severe pain in his legs, difficulty walking, increased number of formed stools with general weakness and malaise. Routine laboratory findings showed marked hypokalemia (1.6 mmol/L), hypomagnesemia (0.9 mm/L), hypocalciuria (0.28 mmol/L in 24-hour urine), metabolic alkalosis, and normal renal function. Hypotension, TA 100/60mmHg. Endocrinologists and gastroenterologists ruled out other causes of hypokalemia. A geneticist was consulted. A diagnosis of Gitelman's syndrome was made. The therapy was symptomatic, compensation of potassium and magnesium. Symptoms resolved, and electrolyte values improved.

Conclusion: Gitelmann syndrome is a rare hereditary kidney disease that should be considered in a patient with hypokalemia. Patients with symptoms should be treated symptomatically, and those without symptoms should be monitored 1-2 times a year.

Keywords: Gitelman syndrome, autosomal recessive kidney disease, hypokalemia, metabolic alcalosis

ASSOCIATION BETWEEN MALNUTRITION, DEPRESSION AND SURVIVAL IN CHRONIC HEMODIALYSIS PATIENTS

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Introduction: Approximately one-third of all dialysis patients have mild to moderate malnutrition, while 6-8% have severe malnutrition. Depression and anxiety are the most common psychological disorders in patients undergoing hemodialysis. The incidence of depression in dialysis patients ranges from 19-60%, while the incidence of anxiety ranges between 12-52%. The aim of this study was to evaluate wheather depression symptoms and malnutrition in chronic hemodialysis patients predicted survival.

Methods: Eighty-two hemodialysis patients from our hemodialysis center were included in the study. Patients were evaluated with demographics and laboratory data. The nutritional status of the patients was evaluated with the MNA (Mini Nutritional Assessment) test. The sum of MNA score distinguishes between elderly patients with: 1- well nourished, MNA≥24; 2- at risk of malnutrition, MNA:17-23 and 3-malnourished, MNA<17. Blood samples of the patients were taken for prealbumin analysis. Patients completed the Beck Anxiety Inventory (BAI) and the Beck Depression Inventory (BDI). The BAI is a 21 item self-report inventory for assessing severity of clinical anxiety. The BAI is scored by summating the severity ratings across all 21 items; total scores can range from 0-63. Scores are considered to indicate following: 0-7, minimal anxiety; 8-15, mild anxiety; 16-25, moderate anxiety and 26-63, severe anxiety. Similarly, the BDI is a 21 item inventory to measure severity of depressive symptoms. Over the study period (January 2018-July 2022), patients were followed up with all-cause mortality recorded as the end point.

Results: Of 82 hemodialysis patients; 51 were male (mean age 60.8±11.7) Mean hemodialysis duration of the patients' was 43.4±17.6 months. 9.8% of patients were malnourished. Severe depression and anxiety rates were 14.6% and 22% respectively. Baseline characteristics of the patients are shown in Table-1. Forty-two of 82 patients died during follow-up period. Mean follow-up times of survivor and non-survivor patients' were 55.9±9.8 and 31.6±15 months respectively. Clinical features of the patients who survived and died are shown in Table-2. Although it did not reach statistical significance, the number of patients with moderate/severe anxiety/depression was higher in the non-survivor patient group.

Conclusion: Anxiety/depression and malnutrition may be associated with poor prognosis in chronic hemodialysis patients. Further studies will be required to determine the effects of depression and malnutrition on survival in chronic hemodialysis patients.

Keywords: malnutrition, depression, anxiety, hemodialysis, survival

EVALUATION OF TAUROLOCK™ VERSUS COMBINATION OF GENTAMICINE AND HEPARINE IN PATIENTS WITH TUNNELED CATHETER

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Introduction: Catheter-associated infections (CAIs) and thrombosis (CAT) are the most common complications, mentioned in the use of tunneled hemodialysis catheters. The incidence of infections is about 1.8-6.5/1000 catheter-days, and thromboses are the main cause of catheter dysfunction and loss of vascular access in 30-40% of patients. The aim of our study was to determine the incidence of these complications in patients in whom we used prophylactic "locking" of their tunneled catheters.

Metods: The study was conducted in the period 01.10.2021 - 31.03.2022, a total of six months. Twenty-three men and twenty-two women with a mean age of 60.82 (+/-13.629) years. The patients were randomly divided into three groups of 15 (fifteen) people each, a total of 45 (forty-five) participants: group A – catheter locking with TauroLock™ only, group B – locking with gentamicin (10 mg/ml) and heparin (1250 IU/ml) and group C – locking with TauroLock™ for three months, then with heparin and gentamicin for the next three months of the study.

Results: The median duration for tunneled catheters was 8,105 catheter-days (CD). One complication was reported in each of the three groups: group A – one case of CRI, groups B and C – one case of CRT each. No cases of catheter-associated bloodstream infection, requiring prolonged treatment and catheter thrombosis, requiring replacement of the tunneled catheter were reported. Reported costs for patients treated with TauroLock™ were calculated at 3 EUR/dialysis session, and for patients treated with gentamicin and heparin – 0.88 EUR/dialysis session.

Conclusion: The data from our study unequivocally support the thesis that locking the catheter with a solution containing TauroLock™ is comparable to the effect of locking the catheter with a solution containing an antibiotic and anticoagulant.

Keywords: hemodialysis catheters, catheter-related infections and dysfunction, catheter lock solutions, TauroLock™, management of tunneled catheter

THE LUNG ABSCESS – A RARE COMPLICATION OF CATHETER-RELATED BLOODSTREAM INFECTION

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Background: The hemodialysis patients with a central venous catheter have a 2-3 times greater risk of hospitalization than patients with a native arterio-venous anastomosis. The frequency of metastatic infectious complications – endocarditis, vertebral discitis, lung abscesses and others – is estimated at 1.1/1000 catheter-days.

Methods: We describe two clinical cases of young men treated with hemodialysis for end-stage renal disease. As a result of a catheter-related bloodstream infection caused by Staphylococcus aureus a lung abscess was found.

Results: The timely diagnosis of the catheter-related infection and the systematic search for the most common metastatic infection plases allowed us to diagnose lung abscess within 72 hours from the onset of symptoms. Adequate antibiotic treatment – such as antibiotic choice (vancomycine) and duration (more than six weeks), accompanied by removal of the infected catheter helped patients fully recover and did not require surgical treatment.

Conclusions: Adherence to the good clinical practice guaidelines help us timely establishment of an accurate diagnosis in metastatic complications of catheter-related infections in hemodialysis patients. Adequate treatment and behavior in these cases is a condition for a short hospital stay and low mortality.

Keywords: tunneled catheter, catheter-associated infections, lung abscess

SCREENING FOR FABRY DISEASE IN HEMODIALYSIS POPULATION

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Introduction: Fabry disease (FD) is an X-linked lysosomal storage disease that develops as a consequence of genetic variation in the alpha-galactosidase A (GLA) gene. There are more than 1000 known variants in the GLA gene. Some of them are pathogenic, but most of them are benign or represent the genetic change that can be classified as a genetic variant of unknown significance or simply be a representation of genetic polymorphism. There are two main features of FD, classic form and late-onset variants of disease. The main target organs in patients with FD are kidneys, heart and nervous system. One of the best ways for active searching of FD patients is high-risk population screening.

Methods: In this paper, we present results of a multicentric pilot study that represents findings from the screening of hemodialysis patients for FD in six hemodialysis units in Vojvodina. Patients eligible for screening were male patients under 55 years of age with an unknown cause of end-stage renal disease (ESRD), as well as female patients of all ages and unknown cause of ESRD. The screening protocol for FD was based upon genetic analysis of peripheral blood from 117/529 selected patients (22%). Results: During screening process, we have found 1 patient with benign mutation (D313Y) and 16 patients with genetic polymorphisms in GLA gene. We have learned that genetic changes in GLA gene can be frequent, but not always of clinical significance for FD.

Conclusion: The challenges in the establishment of the precise diagnosis of FD and indications for treatment are part of today's clinical practice. Results of this screening study will give us important insights into our future work

Keywords: Fabry disease, hemodialysis, high-risk population screening

PREVALENCE OF CONSTIPATION IN ALBANIAN PATIENTS WITH KIDNEY DISEASE

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Introduction: Although constipation is perceived as a benign condition, it affect negatively the quality of life of patients with this chronic symptom. Accumulating evidence has revealed a relationship between constipation and CKD. Constipation is thought to be a common problem for people with kidney disease because of a diet low in fibre, not getting enough activity, limiting fluid, depression, some medicines. There is currently little data about constipation in Albanian CKD patients therefore the aim of our study is to evaluate the prevalence of constipation in these patients.

Methods: This is a cross sectional study involving 120 CKD patients. We used Rome IV criteria to establish constipation. We measure GFR to determine the stage of CKD.

Results: We examined 120 patients, 40 patients with GFR between 15 to 60 ml/min per 1.73m2 and 80 hemodialysis patients. Mean age was 62 years old. 73% of patients were man and 25% were diabetic. The prevalence of constipation was 10%. The prevalence was respectively 12.5% in hemodialysis patients and 5% in patients stage 3 and 4 CKD. Most common symptoms according to Rome IV criteria were 1. "Fewer than three spontaneous bowel movements per week" found in 83% of patients diagnosed with constipation and 2. "Hard stools for at least 25% of defecation attempts" found in 55% of patients with constipation.

Conclusion: Our study revealed that constipation is a common problem especially for people on dialysis. In an ongoing quest to improve outcomes in CKD the time has come to advance our understanding of constipation in CKD patients.

Keywords: chronic kidney disease, constipation, hemodialysis

A RARE PRESENTATION OF GRANULOMATOSIS POLYANGIITIS WITH PROSTATE INVOLVEMENT

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Introduction: Granulomatosis with polyangiitis (GPA) which is one of the anti-neutrophil cytoplasmic antibody-associated vasculitis is characterized by inflammation of small vessels. Although patients with GPA commonly present with involvement of renal, pulmonary or the gastrointestinal system, prostate involvement is a rare condition. We herein reported a case of GPA presenting with prostate involvement.

Case: A 60-year-old male with hypertension, nephrolithiasis, romatoid arthritis and chronic kidney disease (basal kreatinin level 1.7-2.3 mg/dL) presented with a 3-month history of weight loss and weakness. He was on a calcium channel blocker and 2 mg of methylprednisolone therapy. Physical examination was normal. Laboratory examination revealed anaemia (hemoglobin:9.7 mg/dL) and high free prostate specific antigen (PSA) (0.62 ng/mL) levels (Table 1). Urinary dipstick test revealed 3 (+) leukocyte esterase, leukocyte: 96 cells/HPF, erythrocyte: 23 cells/HPF with no proteinuria. Urine culture was negative. A prostate biopsy was performedto rule out prostate cancer because of weight loss and high free PSA levels. The biopsy showed necrotizing granulomatous prostatitis (Figure 1) and the patient was referred to our vasculitis outpatient clinic.

Upon admission, thorax computed tomography showed a 5x4 cm cavity in the upper right lobe.Sputum samples for tuberculosis were negative; quantiferon was low-positive. Bronchoscopy was normal and broncho-alveolar lavage was negative for mycobacterium tuberculosis complex.PET CT was negative for malignancy.During follow-up, the patient developed acute kidney injury and his creatinine level increased to 4.8 mg/dL. Vasculitis work-up revealed positive c-ANCA and anti-PR3 was 120 (0-19) RU/mL. A kidney biopsy showed acute interstitial nephritis with normal glomeruli and no glomerular hypercellularity, fibrinoid necrosis or crescent formation. Immunofluorescent microscopic examination did not show any deposits of immunoglobulins or complement components. The patient was successfully treated with intravenous 1-gram methylprednisolone for 3 days followed by Rituximab 500 mg weekly for four weeks and his creatinine level decreased to 1.72 mg/dL.

Conclusion: This case demonstrates a rare presentation of GPA with prostate involvement accompanied by an increase in free PSA. Patients presenting with rare forms of GPA are at risk for delayed diagnosis. Timely diagnosis and treatment of GPA may decrease disease associated morbidity and mortality. The awareness of prostate involvement is crucial.

Keywords: granulomatosis with polyangiitis, prostate involvement, prostate specific antigen

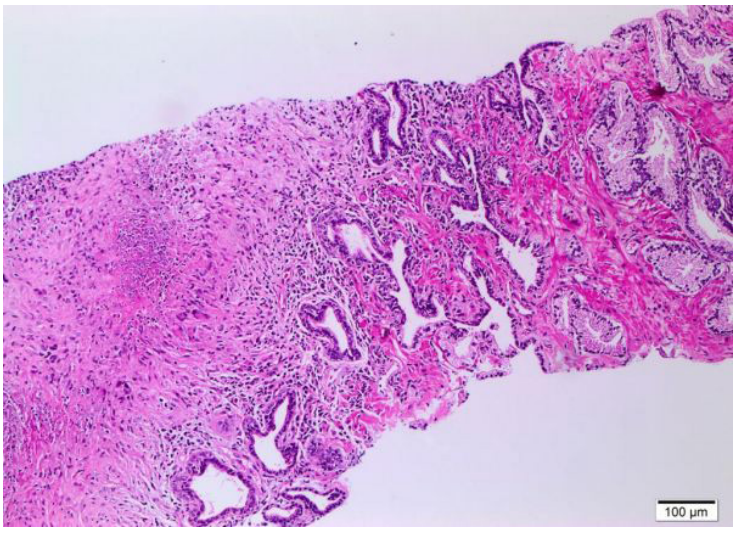

Figure: The prostate biopsy showing necrotizing granulomatous prostatitis (H&E, x100)

Table 1: Laboratory data of the patient at admission

Hemoglobin	9.7 g/dL
Leukocyte	13.9 ×103/mikroL
Platelet	618 ×103/mikroL
Erythrocyte sedimentation rate	42 mm/hour
Glucose	89 mg/dL
Blood urea nitrogen	27 mg/dL
Creatinine	2.03 mg/dL
Albumin	3.9 g/dL
Alanine transaminase	15 U/L
Aspartate transaminase	12 U/L
Sodium	138 mEq/L
Potassium	4.3 mEq/L
Free prostate specific antigen	0.62 ng/mL

COMPLEMENT DYSREGULATION ACCOMPANYING DIABETIC NEPHROPATHY: TWO DISTINCTIVE CASES

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Introduction: Atypical HUS (aHUS) and C3 glomerulopathy may occur as a result of various causes such as malignancies, preeclampsia, malignant hypertension, and infection that cause dysfunction of the alternative complement pathway. While aHUS presents with microangiopathic hemolytic anemia, thrombocytopenia and acute kidney injury mostly due to fluid-phase dysregulation of alternative complement pathway, C3 glomerulopathies are associated with solid-phase dysregulation and present with glomerulonephritis in nephrotic syndrome pattern. In these two cases, diabetic patients diagnosed with aHUS and C3 nephropathy are presented.

Case 1: A 52-year-old female patient, who was followed up with the diagnosis of diabetes mellitus for 20 years and started on renal replacement therapy with hemodialysis approximately 1 month ago, was admitted to our clinic. She had diabetic retinopathy and a history of amputation of the right foot below the knee. It was observed that the creatinine value of the patient was 0.9 mg/dl 6 months ago. Kidney biopsy was performed considering rapidly progressive glomerulonephritis. The biopsy showed crescentic form of C3 glomerulopathy and diabetic nephropathy (Figure 1). Eculizumab treatment was started consequently.

Case 2: A 27-year-old male patient, with the diagnosis of diabetes mellitus for 14 years, was referred to our clinic due to increased serum creatinine values (creatinine in January 2022: 1.4 mg/dl, April 2022 creatinine: 5.69 mg/dl), thrombocytopenia, anemia, and elevated LDH. Plasmapheresis was started with the diagnosis of thrombotic microangiopathy (TMA) after the peripheral smear showed occasional schistocytes. The patient had normal ADAMTS13 enzyme activity and was started on eculizumab treatment with a preliminary diagnosis of atypical HUS. Since the patient also had diabetic retinopathy, a kidney biopsy was performed. The biopsy showed TMA features and diabetic nephropathy (Figure 2). Eculizumab treatment was continued.

Discussion: It is known that diabetic nephropathy basically causes vascular, especially endothelial dysfunction1. In addition, growing evidence suggests that the complement system has a pathogenic role in the development of diabetic nephropathy2. In the light of this information, the fact that the cases mentioned both have diabetic nephropathy and have diseases showing complement system dysfunction increases the importance of the subject.

Keywords: alternative complement pathway, thrombotic microangiopathies, atypical hemolytic uremic syndrome, glomerulonephritis, acute kidney injury

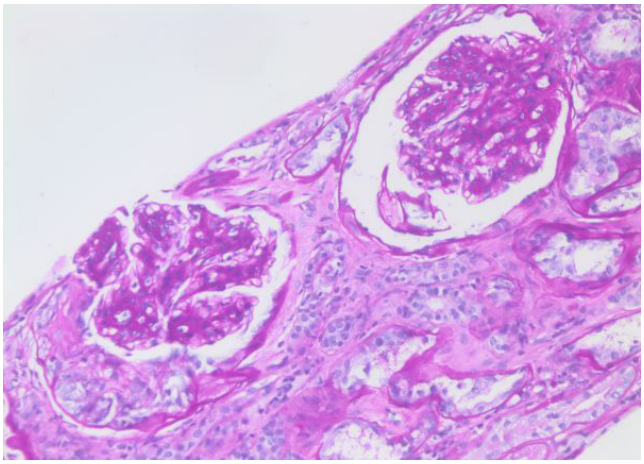

Figure 1: Glomeruli with cellular crescents and nodular appearance. Periodic-Acid Schiff stain x40

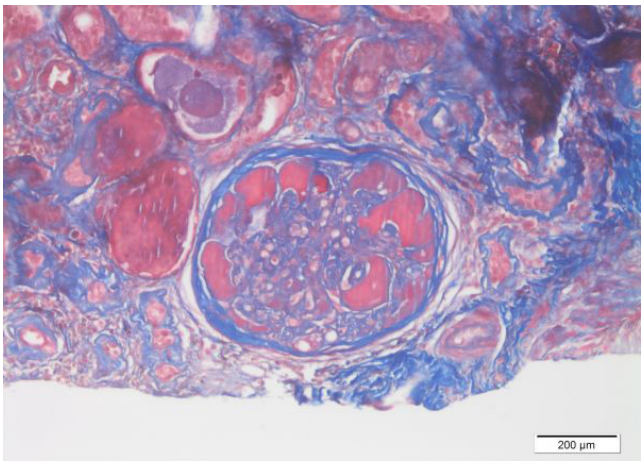

Figure 2: Fibrin thrombi in the glomerular capillary lumina. Trichrome stain x20

HYPOPHOSPHATEMIC STRESS FRACTURE SECONDARY TO FERRIC CARBOXYMALTOSE TREATMENT, A CASE REPORT

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Introduction: Ferric carboxymaltose (FCM) has been frequently used in the treatment of iron deficiency anemia in recent years, due to the low risk of anaphylaxis in parenteral administration and the opportunity for rapid and adequate iron replacement. However, it causes hypophosphatemia at a higher rate than other intravenous iron preparations. In this case, a stress fracture case secondary to hypophosphatemia developed after FCM treatment is presented.

Case: A 40-year-old female patient received 500 mg intravenous FCM therapy 6 times in 3 months due to severe iron deficiency anemia. After the second infusion, complaints of generalized body pain and fatigue developed, and about 3 months after the end of the treatment, severe pain in the hips and heels, especially when walking, emerged. In biochemical examinations; serum level of parathormone was 23 (15-65) ng/L, ALP 157 (33-98) U/L, calcium 9.2 (8.8-10.6) mg/dl and phosphorus 2.5 (2.6-4.5) mg/dl. Phosphorus was 858 (400-1300) mg/day in 24-hour urine analysis. Bone scintigraphy was performed to evaluate hip and heel pain. Scintigraphy revealed stress fractures and high osteoblastic activity especially in bilateral calcaneal bones and both femoral heads (Figure 1-2). Considering hypophosphatemia secondary to FCM treatment, the patient was started on oral phosphorus replacement. During the follow-ups, the patient's phosphorus levels improved, the replacement therapy was discontinued and his symptoms regressed.

Discussion: Parenteral iron treatments can increase phosphate excretion by increasing fibroblast growth factor 23 (FGF23) activity1. Since it may cause hypophosphatemia more frequently than other agents, closely monitoring the serum phosphorus level, especially after FCM treatment, will help to reduce patient morbidity.

Keywords: hypophosphatemia, iron deficiency anemia, stress fracture

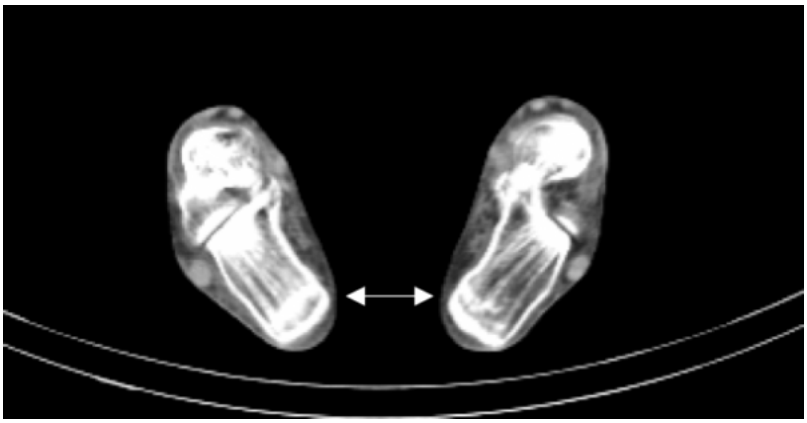

Figure 1: Radiological appearance of bilateral calcaneal stress fractures

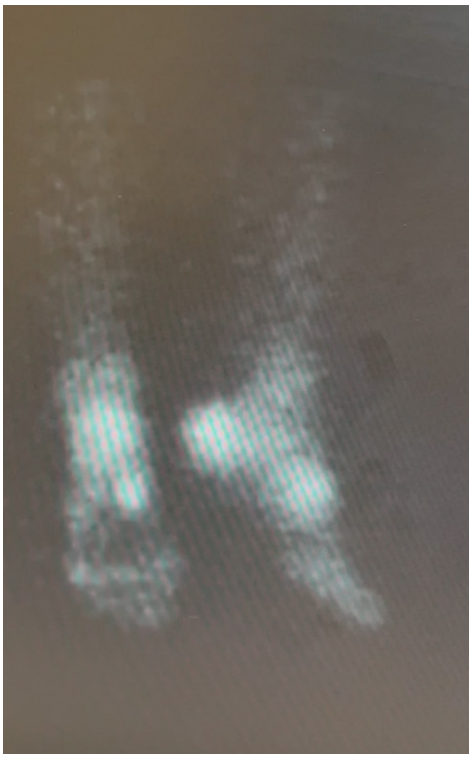

Figure: 2 Scintigraphic appearance of the feet showing increased calcaneal osteoblastic activity

CRESCENTIC GLOMERULONEPHRITIS ASSOCIATED WITH COVID-19: 2 CASES

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Introduction: Coronavirus disease 2019 (COVID -19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection has recently entered the medical literature. Data collected in a short period of time show that acute renal injury is one of the most important complications of it. Acute tubular injury and collapsed glomerulopathy are the most common histopathological findings. However, cases of crescentic glomerulonephritis have been reported much less frequently. In this article, we present two cases who had rapidly progressive renal failure during or shortly after SARS-CoV-2 infection.

Case 1: A 70-year-old male patient who was hospitalized for 15 days with the diagnosis of COVID-19 pneumonia 5 weeks ago was admitted with complaints of hypertension, edema, and decreased urine output. With the examination results shown in Table 1, intermittent hemodialysis was started. A percutaneous renal biopsy was performed. Light microscopic examination revealed global sclerosis in 2 of 13 glomeruli. Active cellular crescents were noted in the remaining 11 glomeruli, occluding Bowman's area. The interstitium was edematous with mononuclear infiltration, moderate fibrosis, and mild tubular atrophy. Immunofluorescence staining (IF) demonstrated granular, codominant IgA, and C3 (+2) deposits in the mesangium. The findings of diffuse extra capillary proliferative and necrotizing glomerulonephritis were interpreted as crescentic IgA predominant post-infection glomerulonephritis (type II crescentic glomerulonephritis).

Case 2: A 70-year-old man presented to a medical center a week ago complaining of cough, dark sputum, and fever. The nasopharyngeal swab was positive for SARS-CoV-2, and pulmonary tomography showed ground-glass opacities suggestive of viral pneumonia. He was hospitalized with favipiravir, enoxaparin, and supportive measures. Serum creatinine increased to 6.05 mg/dL on follow-up. Microhematuria, proteinuria, and a positive PR -3-ANCA test suggested small vessel vasculitis. However, renal biopsy was postponed because of active COVID -19 pneumonia. Plasma exchange with fresh frozen plasma was performed 7 times. Intermittent hemodialysis was performed because of solute instability. After the negative result of the COVID -19 test, 250 mg of methylprednisolone was administered intravenously for three days and continued orally at a dose of 48 mg/day. The patient's general condition improved, and a percutaneous renal biopsy was performed. Examination of the biopsy specimens under a light microscope revealed extra capillary proliferation and crescentic necrotizing glomerulonephritis.

Conclusion: With the cases, we have presented, we would like to draw attention to the risk of severe glomerular damage and crescentic glomerulonephritis resulting from SARS-CoV-2 infection. In addition, we suggest that crescentic glomerulonephritis should be considered in the differential diagnosis of acute kidney injury in infected patients and that clinical and laboratory evidence should be sought. More data need to be collected to define the role of the SARS-CoV virus and its pathogenetic mechanisms in the development of crescentic glomerulonephritis.

Keywords: COVID-19, crescentic glomerulonephritis, rapidly progressive renal failure

Table (PP-24):

	Referenge ranges	Case-1	Case-2
Comorbidities	-	Type II diabetes mellitus, diabetic retinopathy, arteriel hypertension	Arteriel hypertension
Medications	-	Insulin, lercanidipine	Amlodipine
On admission			
Abnormal physical findings	-	Blood pressure: 220/120 mmHg, pretibial edema ++/++, soft exudates and bleeding areas on fundoscopy	Blood pressure: 150/80 mmHg, oxygen saturation: 90%, squeaking sounds in the lung examination
Blood tests			
Serum creatinin, mg/dL	0.7-1.2	8.06 (baseline: 1)	6.05 (baseline (1)
Urea, mg/dL	19-49	118	193
Albumin, g/dL	3.97-4.94	2.5	3.61
Hemoglobin, g/dL	13.2-17.3	9.3	10.3
White blood cell count, x103µ/L	3.5-11.0	7100	18400
Neutrophil count, µ/L	1690-7500	4290	14900
C-reactive protein, mg/dL	<5	61	32
pH	7.35-7.45	7.37	7.31
HCO3	21-26	20.7	23
C3,g/L	0.90-1.80	1.06	1.19
C4,g/L	0.1-0.40	0.45	0.29
Hepatitis C virus	Negative	Negative	Negative
Hepatitis B virus	Negative	Negative	Negative
Human immunodeficiency virus	Negative	Negative	Negative
Anti-nuclear antibody	Negative	Negative	Negative
Anti-glomerular basement membrane antibody	Negative	Negative	Negative
Antinuclear-cytoplasmic antibody	Negative	Negative	Positive (PR-3 ANCA: > 300 mg/dL)
Urinary ultrasonography	-	Normal findings	Normal findings
Urine tests			
Erythrocytes, /hpf	<3	342	95
Daily protein excretion, mg/day	< 150	3560	1611
Albuminuria, mg/day	< 30	1696	1438
Treatment	-	Methylprednisolone: 250 mg intravenously for 3 days, then 48 mg/day orally, cyclophosphamide intravenously, 500 mg once monthly.	Plasma exchange (7 doses), methylprednisolone: 250 mg intravenously for 3 days, then: 48 mg/day orally. 150 mg/day oral cyclophosphamide. Partial improvement in renal function was observed, and the need for hemodialysis was eliminated. However, pulmonary infection caused by Acinetobacter precluded continuation of cyclophosphamide therapy.

TRANSLUMBAL APPROACH TO THE VENA CAVA AS AN UNCONVENTIONAL VASCULAR ACCESS FOR HEMODIALYSIS

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Introduction: Maintenance of vascular access for hemodialysis remains a challenge for every specialist included in the process of its creation. When conventional vascular-access-sites are exhausted, the unconventional sites such as enlarged collateral vessels, hepatic vein, hemiazygos, azygos, renal vein and vena cava inferior, become a necessity and a new chance for life rescue in hemodialysis patients.

Case: We present 55 – year - old Caucasian woman, with a medical history of end-stage chronic kidney disease, on chronic hemodialysis treatment from 2012, with high blood pressure, diabetes mellitus type 2, and obesity. Her maintenance hemodialysis care was complicated. The presence of previous thrombosis and stenosis on the standard vascular access was the main reason for the placement of a percutaneous translumbal catheter in the vena cava inferior for the first time in N. Macedonia. The procedure was performed guided by a computer tomography and fluoroscopy. The puncture site was an above right iliac crest on the lateral of the spine between T12 (thoracic vertebra) and L3 (lumbar vertebra). We placed there a permanent catheter Tesio two-lumens 10F x (27cm and 30cm). The functionality of the permanent catheter was assured via blood aspiration from each lumen of the catheter. Finally, radiographic examination demonstrated the wright position of the catheter in the vena cava inferior. In addition, intra-catheter contrast material (iodinate 15 mL) was injected in order to examine the flow and the patency of the catheter. Taking proper medical care and applying the principles of sterile techniques for vascular access creation, are the most important factors for preventing bloodstream catheter infection.

Conclusion: The procedure we used, is an useful and relatively safe method for providing functional vascular access. It is considered as a potential option in adults and children when conventional approaches are limited.

Keywords: vascular access, vena cava inferior, hemodialysis

THE USE OF BASILIC VEIN IN CREATION OF ARTERIOVENOUS FISTULA FOR HEMODIALYSIS

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Introduction: The basilic vein has a deep location on the upper arm which can be used for creation of arteriovenous fistula (AVF) for hemodialysis (HD). The aim of our study was to determine the risk factors associated with the survival of brachial basilic arteriovenous fistula (BBAVF) with superficialization and transposition of the basilic vein in one surgical act.

Methods: Forty-two patients with chronic kidney disease stage 5 on hemodialysis (CKD5D) , with created BBAVF, were analyzed. This prospective study was performed from 2019 to 2021 at the University Hospital of Nephrology, Skopje N. Macedonia. The BBAVF with superficialization and transposition of the basilic vein in one surgical act, was created in all patients. Evaluation of blood vessels by Doppler ultrasound (DUS) was done before BBAVF creation, as well. The follow-up period of BBAVF survival was 3,6, and 12 months after creation.

Results: The mean age of patients was 59.66 ± 14.24 (range 20-85 years), of which 26% (N 11/42) were males. Diabetes was noticed in 23.8 % (10/42) of patients, and 26% (N 11/42) of patients had previous tunneled jugular or subclavian catheters. The mean hemodialysis vintage of patients was 4.69 ± 4.43 (range 0.2-18 years), as well. During the follow-up period the percentage of BBAVF survival in 3 months was 80.1% (N: 34/42), in 6 months was 78.6% (N: 33/42) and in 12 months was 69% (N: 29/42). The age, gender, hemodialysis vintage, diabetes, and previous tunneled catheters were not statistically associated (p>.05) with the survival of BBAVF in the follow-up period. Also, the comparative analysis of BBAVF survival in 3, 6, and 12 months in respect of previous tunneled catheters was in no statistical association (p>.05).

Conclusion: According to the results obtained in our study, the creation of BBAVF with superficialization and transposition of the basilic vein in one surgical act, provides good survival. The potential benefit of this technique, lies on having better optimization of health resources and shorter duration of the tunneled catheter.

Keywords: arteriovenous fistula, basilic vein, hemodialysis

INFLUENZA AND PNEUMOCOCCAL VACCINATION RATES AND THE FACTORS AFFECTING VACCINATION RATES IN HEMODIALYSIS PATIENTS

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Introduction: This study aimed to investigate the rates of influenza and pneumococcal vaccinations and the factors affecting vaccination rates in hemodialysis patients.

Methods: The study included 360 hemodialysis patients. Patients' data were collected via a questionnaire form applied during a face-to-face interview.

Results: Of the patients, 51.4% vaccinated at least once with influenza vaccine and 14.4% vaccinated with pneumococcal vaccine. While 31.4% of the patients had annual vaccination regularly for influenza, 20% were vaccinated irregularly. Of the patients with missing vaccination, 76.2% reported the reason for not being vaccinated as lack of knowledge about the relevant vaccine. At initial evaluation in the beginning of the study, the percentage of patients vaccinated with both influenza and pneumococcal vaccines was 10.8%. After informing the patients in the face-to-face interview, 89.7% of them reported that they planned to have both vaccines ($p < 0.001$). The rate of vaccine refusal, which was 17.8% at the initial evaluation, reduced to 10.3% at the end of the interview ($p < 0.001$). The most common source of information about influenza and pneumococcal vaccines (44%-43.3%, respectively) was dialysis nurses. Majority of the patients (87%) were vaccinated in the hemodialysis units.

Conclusion: The rates of pneumococcal and influenza vaccinations in dialysis patients were observed to be below the targeted rates and the main reason for such low rates was lack of information/recommend. All health care professionals, providing the patients with information about vaccinations, using communication tools such as media, phone, mails that facilitate to reach large populations more easily may enhance vaccination rates.

Keywords: awareness, hemodialysis patients, influenza, pneumococcal, vaccination

THE RELATIONSHIP BETWEEN THE SYSTEMIC IMMUNE-INFLAMMATION INDEX AND PROTEINURIA IN STAGE 1-2 CHRONIC KIDNEY DISEASE

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Introduction: The aim of our study is to examine the relationship between serum immune-inflammation index (SII), a new marker of inflammation, and proteinuria in stage 1-2 chronic kidney disease (CKD) patients.

Methods: 243 patients with proteinuria level ≥300 mg/day and 125 patients without proteinuria, who were followed as stage 1-2 CKD, were included in the study. Cross-sectionally, patients' gender, age, blood pressure, comorbidities, CKD cause, medications, biochemical tests, complete blood count, and 24-hour urine proteinuria were examined. Statistical analysis was performed using SPSS ver.24.0 program.

Results: A total of 368 patients, 191 (51.9%) female and 177 (48.1%) male, were included in the study. The mean age was found to be 49.45 ± 13.23 years. SII levels were found to be higher in patients with proteinuria than in patients without proteinuria. (p=0.001). No correlation was found between proteinuria and SII in patients with proteinuria (p=0.707). In parallel with the increase in the amount of proteinuria, there was no increase in the SII value (p=0.859). When the SII values of patients with proteinuria and patients with and without DM were compared, no statistically significant difference was found (p=0.292). When patients with and without HT were compared, no statistically significant difference was found in SII (p=0.186).

Conclusion: In this study, SII levels were found to be higher in patients with proteinuria than in patients without proteinuria. However, no significant correlation was found between SII and the amount of proteinuria, diabetes, and hypertension. Larger prospective studies are needed to use SII as an effective marker for proteinuria and CKD prognosis and progression.

Keywords: chronic kidney disease, proteinuria, systemic immune-inflammation index (SII)

EVALUATION OF THE ASSOCIATION BETWEEN BLOOD PRESSURE AND BIRTH WEIGHT: CROSS-SECTIONAL STUDY ON 600 OUTPATIENT CHILDREN

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Introduction: Despite the declining global prevalence of preterm birth, it accounts for a certain proportion of births in developing countries. Those born earlier, are prone to have lower birth weight (BW), smaller kidneys, lower glomerular filtration rate, higher blood pressure (BP) and overall poorer future cardio-metabolic health outcomes.

Methods: The current cross-sectional study was conducted on relatively healthy individuals aged 3-18 years with no PMH of any specific diseases, and not in toxic or ill condition. Recruitment was in 2 phases for the participants with high BP at the first visit (regarding a 2-week follow-up BP assessment) and in 1 phase for the normotensive participants.

Results: Among the total 600 participants, the prevalence of elevated BP, grade 1 hypertension (HTN), and grade 2 HTN was 5.2, 5.5, and 2.3%, respectively. The prevalence of children with very low birth weight, low birth weight, and high birth weight was 1.7, 8.7, and 4.5%, respectively. Chi-square analysis showed no statistically significant association between BW and BP (P-value=0.774). There was a statistically significant association between BP and height, weight, and heart rate (HR) (P-value<0.05).

Conclusions: There is no statistically significant interaction between BP and BW. The association illustrated by previous studies may be caused by other underlying factors including weight or by methodological limitations including nor follow-up BP assessment, neither excluding ill, toxic, and hospitalized children. There is a direct relationship between BP and HR, weight, and height. However, the relationship between BP and the two latter is inverted for BP above grade 2 HTN.Trial RegistrationDesign of the current study was approved by the ethics committee of the Research Institute for Arak University of Medical Sciences. Ethics Code: IR.ARAKMU.REC.1400.271

Keywords: birth weight, blood pressure, children

PP-30 Hemodialysis

CLINICAL PRESENTATION AND OUTCOME IN COVID-19 PATIENTS ON HEMODIALYSIS DEPENDING ON SARS-COV-2 IGG ANTIBODY VALUE

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Introduction: Dubrava University Hospital was, until summer of 2021, the only referral centre for patients on chronic hemodialysis affected by SARS-CoV-2 in Zagreb. We dialysed 175 positive patients on chronic hemodialysis during this pandemic.

Methods: For 38 vaccinated patients we measured the value of SARS-CoV-2 IgG antibodies (positive > 50 AU/ml) on the first dialysis session after the positive PCR test. Patients were stratified in 3 groups according to disease severity classification (mild, moderate, severe/critical), while asymptomatic patients were put in category 0. They were also stratified regarding the chest x-ray finding of pneumonia, hospitalization and mortality.

Results: The asymptomatic group had the mean antibody level of 7929 AU/ml (11 patients), the group with mild disease 6739 AU/ml (18 patients), the group with moderate disease 7268 AU/ml (6 patients), and the group with severe/critical disease (3 patients) 12,885 AU/ml. The mean antibody level of all patients was 6921 AU/ml. The group of patients who had pneomonia the mean IgG level was 8680 AU/ml. The group with bilateral pneumonia had the mean level of 8703 AU/ml, while the group of patients without pneumonia had the mean IgG level of 6205 AU/ml. Patients who were hospitalized had the mean IgG level of 7900 AU/ml, and the patients who died had 7787 AU/ml. Patients vaccinated with Pfizer vaccine (19 patients) had the mean IgG level of 8320 AU/ml, with Moderna vaccine (17 patients) 6458 AU/ml and with AstraZeneca vaccine (2 patients) 4981 AU/ml. In all groups similar percentage of patients had IgG levels lower than 1000 AU/ml (around 35%), with the slight difference in value below 200 AU/ml (Pfizer 31%, Moderna 23%). 37% of all patients had IgG level below 1000 AU/ml, but 64% of patients with pneumonia had IgG below 1000 AU/ml.

Conclusion: Our observation is that there was no significant difference in clinical presentation in COVID-19 with chronic hemodialysis patients based on IgG antibody levels at the beginning of the infection.

Keywords: COVID-19, hemodialysis, SARS-Cov-2 IgG

PP-31 Hemodialysis

THE EFFECT OF PLASMA EXCHANGE IN THYROTOXICOSIS AND ROLE IN PREVENTION OF THYROTOXIC STORM - REPORT OF TWO PATIENTS

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Introduction: Therapeutic plasma exchange (TPE) is an extracorporeal blood purification method designed to remove larger molecules or those bound to plasma proteins (antibodies, cryoglobulins, endotoxins, plasma protein related thyroid hormones). Patients with thyrotoxicosis have been shown to benefit from TPE even though it's not first line therapy. Especially those in which standard medical treatment, as antithyroid drugs, have failed. TPE is used as an alternative therapeutic option as well as for preparation of surgical treatments. Patients' blood is extracted via a vascular access and divided extracorporeally into plasma and blood cells. TPE includes the extraction of whole plasma, demanding substitution due to the plasma loss, which is done by fresh frozen plasma or 5% albumin solution with additional electrolytes and buffer substances like bicarbonate.

Methods: In Dubrava University Hospital TPE was performed on 2 patients with thyrotoxicosis.

Results: The first patient presented with asymmetric enlargement of the thyroid, on the right side enlarged cystic lesion with a smaller solid component, axial measurement 10.3 x 11.6 cm. In the left there were calcified nodes, axial measurement 1 x 17mm. Laboratory findings showed TSH 0.01 mIU/L, FT-4 >77.20 pmol/L, FT-3 11.5 pmol/L. The initial plasma exchange was performed with 1 plasma volume of 5% albumin replacement fluid, while the second and third were performed with 1 plasma volume of fresh frozen plasma. TSH levels rose to 0.07 mIU/L and thyroid hormone levels dropped, FT-4 63.34 pmol/L, FT-3 7.0 pmol/L. The second patient was hospitalized due to worsening dilative cardiomyopathy and was on heart transplantation list (Eurotransplant). Amiodarone induced thyrotoxicosis was diagnosed. Laboratory showed TSH < 0.01 mIU/L, FT-4 72.1 pmol/L, FT-3 6.0 pmol/L. TPE and anti-thyroid drugs were ordered before total thyroidectomy was performed. TPE was performed once, with 1 plasma volume of 5% albumin solution, thyroid hormones dropped - FT-4 67.1 pmol/L, FT-3 6.0 pmol/L and TSH stayed undetectable.

Conclusion: After TPE a reduction in FT-4 and FT-3 was shown thereby reducing the patients' risk of thyroid toxic storm. Good clinical course followed with no additional complications, and it can be assumed that the procedure accelerated their recovery while shortening the hospital stay and reduced the thyrotoxicosis complications. TPE can be beneficial in patients with thyrotoxicosis.

Keywords: Therapeutic plasma exchange, thyrotoxicosis, thyroid storm

PARAMETERS OF INFLAMMATION IN PATIENTS ON HEMODIALYSIS WITH SARS-COV2 INFECTION

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Introduction: As with other infectious diseases, inflammatory parameters increase during Sars-Cov2 infection. Fontana et al found relationship between C reactive protein (CRP) and mortality during infection. Ahmed et al found that procalcitonin (PCT) is a good prognostic biomarker in Sars-Cov2 patients.

Methods: The retrospective, observational study was done on 70 patients (pts) on chronic intermittent haemodialysis, with Sars-Cov2 infection, who were dialyzed at Clinical centre of Vojvodina. Inflammatory parameters (IP) (leucocyte (WBC), lymphocyte (Ly) and neutrophil (Nph) count, level of CRP, PCT and D dimer) were collected on the day of Sars-Cov2 infection diagnosis and compared with demographic data and the infection course and outcome parameters. The NLR and PLR ratio was calculated due to the formulas.

Results: The study included 70 pts (av.age 63.89 years, 57.14% men). Diabetes had 32.86% pts and 7.14% pts malignancy. At the Sars-Cov2 infection onset, 34.29% pts had good general condition (GGC), 55.71% pts moderately good (MGGC), and 10% pts bad (BGC) (number and clinical condition of comorbidities, concomitant chronical therapy). During the infection 75.71% pts had X ray confirmed pneumonia. Out of 70 observed pts, 28.57% died during the 60 days follow up period. IP baseline data are shown in Table 1. Positive relationship was found between the age and the WBC count (p=0.030) and the Nph count (p=0.037). No effect of gender on the IP value was found. Diabetic pts had higher WBC count (av. 7.32x109/L) compared with non-diabetics (av. 5.61x109/L, p=0.013). No difference in IP in patients with malignancy was found. Pts with bad GC had higher WBC count (av. GCG 5.38x109/L, MGGC 6.25x109/L, BGC 8.47x109/L, p=0.028), higher Nph count (av. GCG 3.80x109/L, MGGC 4.65x109/L, BGC 7.88x109/L, p=0.005), and the higher NLR ratio (av. GCG 5.19, MGGC 7.08, BGC 13.14, p=0.041). Pts who developed X-ray confirmed pneumonia during infection, had higher CRP level (av. 112.32mg/L, p=0.003) and NLR ratio (av. 7.98, p=0.019), with lower Ly count (av. 0.86x109/L, p=0.018) compared with pts without pneumonia (av. 20.18mg/L, 3.70, 1.20x109/L, retrospectively). We divided pts into groups according to the CRP level and found difference in distribution of pts with or without pneumonia (Table 2). Pts who needed hospitalization had higher WBC and Nph count, lower Ly count, higher CRP and PCR levels, and higher NLR and PLR ratio (Table 3). In pts who were hospitalized and survived the infection, no influence of any IP level, on the number of hospital days was determined. Pts who died had higher WBC (av. 8.04x109/L, p=0.000) and Nph count (av. 7.21x109/L, p=0.000), higher PCT (av. 6.46ng/ml, p=0.022) and D dimer level (av. 2910.15mg/L, p=0.023) and NLR ratio (av. 12.53, p=0.000), compared to survivors (av. 5.43x109/L, 3.85x109/L, 1.71ng/ml, 1641.54mg/L, 5.25, retrospectively). Bahat et al did not confirm the association of CRP level and better survival, and neither did we.

Conclusions: In dialysis pts with Sars-Cov2 infection development of pneumonia was associated with a lower Ly count, higher CRP level and NLR ratio. Patients who needed hospitalization had higher WBC and Nph count, lower Ly count, higher CRP and PCR level and NLR and PLR ratio. Mortality risk was associated with higher WBC and Nph count, higher PCT and D dimer level and NLR ratio.

Keywords: sars-Cov2, hemodialysis, inflammatory parameters

Table 1: Distribution of patients according to inflammatory parameters

No of pts	low	normal	high	average
WBC	17	48	5	6.17x10/9/L
Nph	5	57	8	4.58x10/9/L
Ly	30	40	0	0.95x10/9/L
CRP	/	10	60	89.94mg/L
PRC	/	1	69	3.07ng/ml
D dimer	/	9	61	2004mg/l

Table 2: CRP levels and pneumonia

CRP	normal	less then 100mg/l	over 100mg/l
no pneumona	6 (60%)	11 (27.5%)	0
pneumonia	4 (40%)	29 (72.5%)	20 (100%)
total	10 (100%)	40 (100%)	20 (100%)

Table 3: Need for hospitalization and inflammatory parameters

HOSPITAZATION	NO	YES	ICU	p
WBC (av. x10/9/L)	5.05	7.16	6.41	0.01
Nph (av. x10/9/L)	3.25	5.88	5.04	0.000
Ly (av. x10/9/L)	1.19	0.72	0.86	0.002
CRP (av. mg/L)	25.47	133.07	132.59	0.000
PCR (av. ng/ml)	0.62	6.22	1.28	0.016
NLR (av.)	3.23	10.43	7.87	0.000
PLR (av.)	157.86	295.23	261.72	0.001

IS IT POSSIBLE TO PREDICT RENAL IMPACT WITH SERUM PERIOSTIN IN FABRY DISEASE?

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Introduction: Fabry is a chronic inflammatory lysosomal storage disease caused by alpha-galactosidase-A deficiency. Periostin is a new protein associated with organ fibrosis. This study aims to determine serum periostin levels in Fabry disease and investigate the importance of periostin levels for early recognition and monitoring of CKD.

Methods: A total of 18 patients(10 male/8 female) with Fabry disease were included in the study. Diagnosis of male patients was made by alpha-galactosidase-A levels. The presence of a genetic mutation in female patients is accepted as a diagnostic criterion. Serum samples were taken when diagnosed with Fabry and stored at -80°C. Periostin levels were studied in serum samples. Proteinuria levels and biochemical analyses of the patients at the diagnosis were retrospectively analyzed.

Results: The mean age of the patients was 33.33(±14.76), mean age at first diagnosis was 30(±14.26). The mean GFR of patients was 91.87(±53.62), and the mean proteinuria was 1041.46(1340.24) mg/day. Mean alpha-galactosidase-A level 1.53(±0.77). Periostin levels were negatively correlated with age at first symptom and GFR, positively correlated with proteinuria and LyzoGb3. Periostin level was found to be the only independent predictor of proteinuria.

Discussion: Periostin levels increase in CKD. Periostin may be a reparative molecule for renal damage or maybe a mediator molecule for interstitial fibrosis. Our study is the first to reveal the relationship between periostin levels and lyzogb3 accumulation, and proteinuria in Fabry patients. It will be interesting to investigate the role of periostin in the development of CKD and possible treatment targets through periostin pathways.

Keywords: fabry disease, serum periostin, kidney functions, proteinuria

PP-34 Other

DOBRAVA-BELGRADE HANTAVIRUS INFECTION MIMICKING ACUTE APPENDICITIS: DIAGNOSTIC CHALLENGE

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Case: We present a case of Hantavirus infection with hemorrhagic fever and renal syndrome mimicking acute appendicitis in North Macedonia. The 37-years old man was first admitted to the abdominal surgery department because of increasing appendicitis-like abdominal pain, localized mainly at the right lower quadrant of the lower abdomen and with fever, nausea, headache, vomiting and diarrhea. Based on these findings supported by ultrasound and plain abdominal radiology, acute perforated appendicitis was suspected and an explorative laparotomy was performed, which did not confirm the diagnosis. Next day he developed acute oliguric renal failure accompanied with a clinical picture including influenza like syndrome, fever, conjunctival hyperemia and thrombocytopenia, raising the possibility of Hantavirus infection and was transferred to the department of Nephrology where hemodialysis treatment was initiated. Specific serum IgG and IgM antibodies against Hantavirus were identified and by molecular methods (ELISA) and the presence of Dobrava-Belgrade virus was proven. This case describes a rare clinical manifestation of hemorrhagic fever with renal syndrome (HFRS), and shows that HFRS might be difficult to diagnose especially when symptoms mimic those of an acute appendicitis.

Keywords: hantavirus, Dobrava-Belgrade virus, hemorrhagic fever, renal syndrome, acute appendicitis

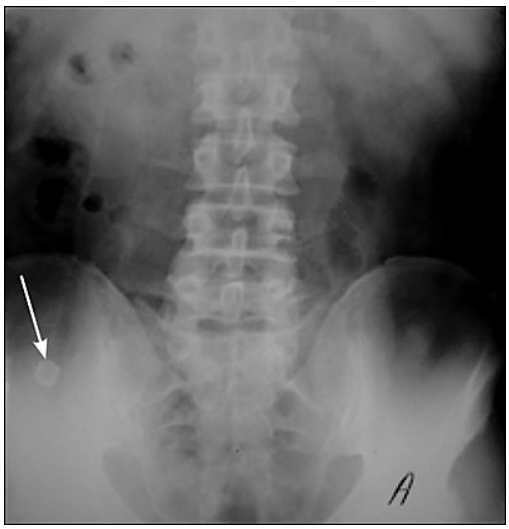

Figure 1: Plain radiographic image of the abdomen-appendicolith in the right lower quadrant.

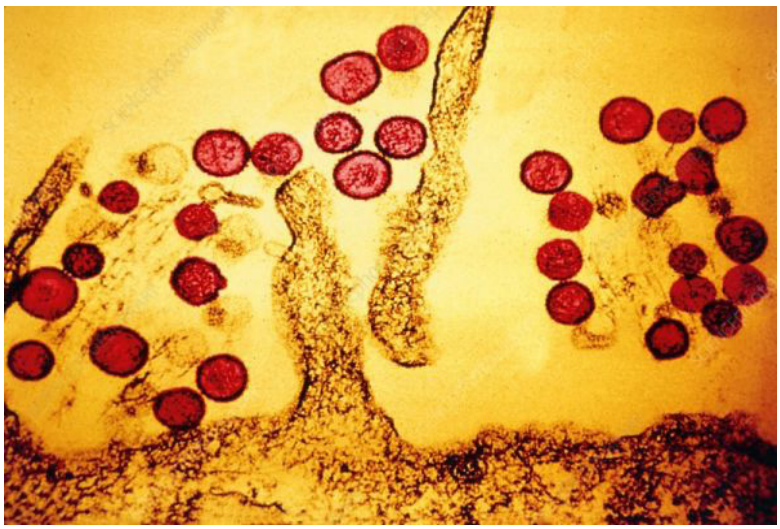

Figure: TEM of Hantavirus

	days after admission	UREA	CREATININE
1	1	26,5	307
3	3	29	611
5	5	28,7	725
7	7	28,6	821
9	9	30,4	874
11	11	23	795
15	15	20	622
17	17	17	733
19	19	15,6	519
21	21	12	107

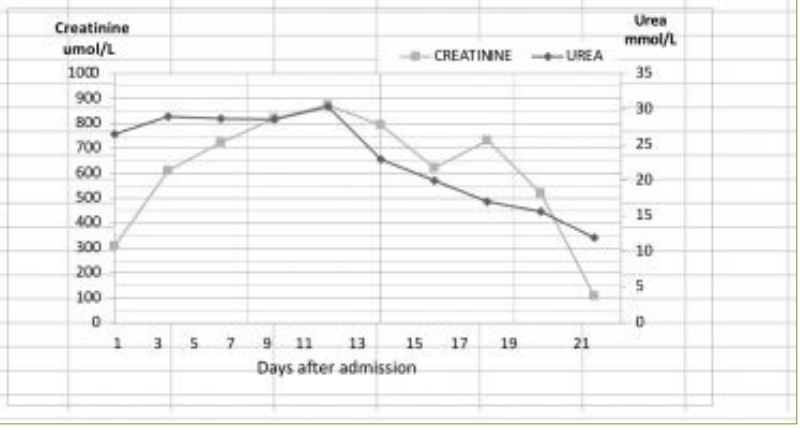

Figure 2: Progression of selected laboratory parameters: Creatinine and urea

Table 1: Progression of laboratory parameters

Day	1	2	3	4	5	6	7	8	9	10	11	12
BUN	26.5	29	28.7	30.4	23	15.6	13.5	13.0	12.7	11.9	11.5	10.4
Creatinine	307	611	725	821	874	795	622	733	519	277	200	107
Thrombocyte	29	30	34	66	75	171	233	267	298	300	311	315
WBC	16.5	10.1	7.5	6.6	7.2	5.8	6.1	6.4	7.2	6.5	6.2	6.1
Hgb	153	121	112	95	90	87	82	90	98	105	112	120
CRP	53	54	54	42	42	38	35	33				10.4
Proteine/Albumins	41/25	39/25	44/24	49/26	50/25	47/23	49/21	52/23	55/25			
Arterial pressure	85/50	80/50	84/55	90/60	100/70	110/70	115/80	120/80	130/86	130/80	127/80	130/85
Diuresis	-	-	-	250	800	9700	6500	4000	5500	7500	7000	5000
D-dimer	-	-	4464	6100	-	-	-	11056	12056	-	-	6000

PERCUTANEOUS NEPHROSTOMY AS A METHOD OF CHOICE IN THE TREATMENT OF HYDRONEPHROSYS IN TRANSPLANT KIDNEY

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Introduction: Ureteral stenosis is frequent urological complication following renal transplantation with reported incidence from 3% to 8%. Percutaneous nephrostomy (PCN) is highly effective minimal invasive technique for management of the ureteral obstruction in kidney allografts.

Case: We present two patients with acute decline in urine output after renal transplantation with radiologically verified hydroureteronephrosis of the allograft caused by stenosis of distal ureter. In both patients, nephrostomy was placed within 48 hours after the diagnosis as a temporary salvage therapy that ameliorates renal function and prevents graft loss. The permanent nephrostomy was only possible solution for preservation of the graft's function in one of the patients because of the recurrences of ureteral stenosis after several percutaneous interventions and open-surgery ureteral reconstruction. After acute decompression of kidney collecting system with PCN, the other patient was permanently treated with open ureteroneocystostomy with resection of stenotic segment and reinsertion of the ureter because of the length of the involved ureteral segment. Both patients have stabile graft function in the follow-up period.

Conclusion: The percutaneous nephrostomy is first-line treatment option for ureteral obstruction following kidney transplantation, with high effectiveness and low complication rate. PCN might be used as a temporary salvage therapy that prevents graft loss, or as a permanent and sometimes only possible solution in transplant patients with frequent recurrences of ureteral stenosis.

Keywords: renal allograft, transplantation, ureteral obstruction, nephrostomy

NON-INVASIVE EVALUATION OF KIDNEY ELASTICITY AND VISCOSITY IN A HEALTHY COHORT

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Introduction: There is currently a lack of published data on kidney elasticity and viscosity. Non-invasive techniques, such as two-dimensional shear-wave elastography (2D-SWE PLUS) and viscosity plane-wave ultrasound (Vi PLUS) have emerged as novel techniques that promise to offer improved renal stiffness and viscosity measures due to advanced processing algorithms. This study aims to be the first one to assess the normal range values in normal renal function subjects and to investigate the factors that impact them.

Methods: We performed a cross-sectional study of 50 healthy subjects (29 women, 21 men) with a mean age of 42.22 ± 13.17, a mean kidney length of 10.16±0.66cm, and a mean body mass index (BMI) of 24.24±3.98. For every kidney, we obtained five measures of renal cortical stiffness and viscosity (obtained from five different frames in the middle portion of the subcapsular cortex), with a C6-1X convex transducer using the Ultra-Fast™ software available on the Hologic Aixplorer Mach 30 ultrasound system. The median values of the ten measures have been correlated with the participant's demographical, biological, and clinical parameters.

Results: The mean kidney elasticity was 31.88±2.89 kiloPascal (kPa) and the mean viscosity was 2.44±0.57 Pascal.second (Pa.s). Renal stiffness seems to be influenced by age (r=-0.7047, p<0.0001), depth of measures (r=-0.3776, p=0.0075) but not by BMI (r=-0.2150, p=0.1338) while viscosity appears to be impacted by age (r= -0.4251, p=0.0021), depth of measures (r= -0.4642, p=0.0008) and BMI (r= -0.3676, p=0.0086). Our study showed good intra-operator agreement for both 2D SWE PLUS measures with an intraclass correlation coefficient (ICC) of 0.8365 and a 95% CI of 0.7512 to 0.8990 and also for Vi PLUS with an ICC of 0.9 and a 95% CI of 0.8515 to 0.9397.

Conclusion: The results show that 2D-SWE PLUS and Vi PLUS are highly feasible methods that both decrease with age progression, are influenced by the depth of measures, and therefore could serve as a low-cost approach for providing additional diagnostic information in chronic kidney disease (CKD) patients, but further investigation is needed to establish their role in clinical practice.

Keywords: chronic kidney disease; stiffness; viscosity; 2D SWE PLUS; Vi PLUS

EXTRACAPILLAR AND ENDOCAPILLAR PROLIFERATIVE GLOMERULONEPHRITIS IN ADULT MALE WITH EPIDERMOLYSIS BULLOSA- A CASE REPORT

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Introduction: Epidermolysis bullosa (EB) is a rare group of genetic disorders involving mutations in genes that encode structural proteins required to maintain skin integrity. Patients with EB might have secondary consequences, such as extracutaneous manifestations involving also the renal system. There are previous reports of EB in adults associated with postinfectious glomerulonephritis, immunoglobulin (Ig) A nephropathy, chronic interstitial nephritis, secondary amyloidosis and leukocytoclastic vasculitis. Accourding to our knowledge there are rare data on Extracapillar and endocapillar proliferative glomerulonephritis (GN).

Case: we present a 36-years old male with EB with proteinuria 4.7 g/24h, hematuria, nephrotic syndrome and chronic kidney disease with serum creatinine levels 155…299 umol/l. Past medical history: arterial hypertension and EB. Viral markers (hepatitis-B, C, and HIV), complement C3 and C4 levels and auto-immune antibody profile were negative or within normal limits. Renal biopsy revealed 9 glomerulli, all with extracapillary fibrous growths in various stages of organization with glomerular basement membrane collapse and increased endocapillary cellularity to varying degrees of sclerosis, with diagnosis extracapillary and endocapillary GN in organization. The treatment included corticosteroids, cyclophosphamide, angiotensin converting enzyme inhibitor and lipid lowering agents, with lowering of the proteinuria 2,1 g/24h, followed by withdrawal of the oedema. The kidney function was not improved and after several months of follow up, the patient started treatment with haemodialysis.

Conclusion: Our observation emphasizes the importance of recognizing Extracapillary and endocapillary proliferative GN in patients with EB , esspecially due to the existence of new therapeutic possibilities.

Keywords: epidermolisys bullosa, extracapillar and endocapillar proliferative glomerylonephritis, nephrotic syndrome, proteinuria

WHY DIALYSIS PATIENTS CHOOSE OR REFUSE KIDNEY TRANSPLANTATION AS RENAL REPLACEMENT THERAPY: A QUALITATIVE STUDY

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This aim of this paper is to identify what are the reasons why dialysis patient choose or refuse kidney transplantation as renal replacement therapy among patients with Chronic Kidney Disease (CKD). The paper represents a qualitative research of 125 patients in our hospital. Data were collected during 1 year, through individual interviews with CKD patients treated by dialysis in our hospital. Doctors, nurses and psychologist were also interviewed. A thematic analysis was used to analyze the data. The results showed a variety of reasons which, according to them, play an important role in their decision-making for refusing to have kidney transplant as: lack of proper medical information about the transplant process, previous negative experiences and complications of different patients affects by creating a perception that having an allograft isn't as safe and efficient. There are also situations such as the lack of organ which in our case is the main reason, also the age factor and other contraindications to kidney transplantation that not allow some CKD patients to be a candidate for a kidney transplant. On the other site, among the patients who choose kidney transplantation, the most of them see kidney transplantation hardly as the last chance to return to normal life. This paper shows that the choice of kidney transplantation depends on the patients' information and perceptions of its final outcomes , but other circumstances, such as the lack of an available organ, age factor or specific medical criteria, reduce CKD patients' participation in the decision-making process.

Keywords: kidney transplantation, dialysis patient, choose or refuse , qualitative study

IMMUNOTACTOID GLOMERULOPATHY: A RARE DIAGNOSIS IN PATIENTS WITH DIABETES AND NEPHROTIC SYNDROME – CASE STUDY

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Introduction: Immunotactoid glomerulopathy (ITG) is a rare glomerular disease characterized by organized deposits composed of parallelly arranged microtubules in the glomerulus. ITG is a progressive disease with variable responsiveness to the immunosuppressive therapy, often progressing to kidney failure within a few years.

Case: ITG was diagnosed in two patients with type 2 diabetes mellitus with nephrotic syndrome and chronic kidney disease. The absence of diabetic retinopathy in the first patient and the recent onset of diabetes in the second patient accompanied with sudden increase in the 24-hour proteinuria and rapid decline in kidney function, prompted us to perform kidney biopsy. The electron microscopy set the diagnosis of ITG in both cases. There were no signs of underlying malignancy, dysproteinaemia or autoimmune diseases. There is no consensus for the treatment of ITG. The first patient was treated with combination of steroids and mycophenolate mofetil with reduction of the 24-hour proteinuria, but with persistence of the chronic kidney disease. The second patient received high doses of steroids with continuous deterioration of kidney function with the need of hemodialysis treatment.

Conclusion: Other causes of proteinuria should be considered in patients with diabetes with new onset of nephrotic proteinuria when there is no evidence of microvascular disease.

Keywords: chronic kidney failure, electron microscopy, glomerulonephritis, immunosuppression therapy, nephrotic syndrome

PREDICTIVE RISK FACTORS AND CLINICAL FEATURES AT ADMISSION IN COVID-19 HOSPITALIZED PATIENTS WITH ACUTE KIDNEY INJURY

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Introduction: Kidneys demonstrate high vulnerability in COVID-19 patients. The occurrence of the acute kidney injury (AKI), as the most frequent manifestation, couldn't be explained only by the traditional pathophysiological pathways. The aim of our study was to estimate the rate and the predictive factors of AKI involvement among hospitalized COVID-19 patients on the day of admission.

Methods: We performed a retrospective cohort study to investigate COVID-19 patients, admitted in our nephrology department. Patients with transplanted kidney were excluded from the analysis. Data were obtained from the medical charts and Electronic Health Records, regarding demographics, comorbidities, medical history-medications and admission laboratory results. The diagnosis of AKI was established using KDIGO criteria and classified accordingly as stage 1,2 and 3. Pre-existed CKD was defined as baseline eGFR< 60 ml/min/1.73m2. Historical baseline creatinine was recorded as the most recent measurement within 8 to 365 days prior to hospital admission. When this was not available and there was no documentation of CKD, the lowest creatinine during admission in the absence of RRT was recorded as baseline provided this was within the normal range. Laboratory covid severity indicators such as D-Dimers, C-reactive protein, lactate dehydrogenasis(LDH), creatine kinase(CK) and neutrophil/lymphocyte ratio(NLR), also admission blood oxygen saturation, X-ray findings and concomitant multiorgan affection, were accountable for defining the infection severity status of the patients. Binary logistic regression was used to identify factors associated with AKI.

Results: Out of total 115 admitted patients included in the final analysis, 62(53,9%) presented with AKI. 21(33,9%) met KDIGO criteria for stage 1, 7(11,3%) stage 2 and 34(54,8%) stage 3. Most of the patients suffered from saturation below 85% and more than a half had severe pneumonia on X-ray, at admission. The median NLR of 9 indicated severe form of COVID 19 in most of them. The univariate logistic regression analysis revealed that older patients, those with pre-existed CKD, hypertension, heart disease, anemia, hypoalbuminemia and thrombocytopenia were more prone to AKI. Also, Higher NLR, CK and D-dimer levels were more associated with AKI. In the multivariate analysis pre-existing CKD was associated with a 13-fold risk of AKI (OR 13.04; 95% CI:3.85–44.06, $p < 0.0001$) adjusted for demographics and comorbidities. Other variables independently associated with increased AKI risk were low albumin (OR 0.895; 95% CI: 0.797–0.970, $p = 0.017$), thrombocytopenia (OR 0.994; 95% CI:0.988–0.999, $p = 0.022$), increase of CK over 350UI (OR 3.60; 95% CI:1.184–10.95, $p = 0.024$).

Conclusion: Hospitalized patients with COVID-19, especially those with more severe form of the disease are associated with greater risk of developing AKI. Although the exact severity based pathophysiology ways are not completely understood, the aberrant immunological response (cytokine storm), kidneys ischemia because of the hypoperfusion, the lung-kidney cross-talk, rhabdomyolysis and the coagulation disorders seems to be important contributing mechanisms.

Keywords: acute kidney injury, COVID-19, predictive factors

KIDNEY TRANSPLANTATION OUTCOMES IN LUPUS NEPHRITIS: A 35-YEAR EXPERIENCE

Milica Popović[1-2], Lada Petrović[1-2], Dejan Ćelić[1-2], Tatjana Ilić[1-2], Sonja Golubović[1-2], Slobodan Šajinovć[1], Igor Mitić[1-2], Gordana Stražmešter Majstorović[1-2], Nikola Glogonjac[1], Vladimir Đurović[1]

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Introduction: Systemic lupus erythematosus (SLE) is a systemic autoimmune disease, characterized by the production of auto-antibodies to nuclear and cytoplasmatic antigens and affection of different organs and organic systems. The most common cause of death in SLE patients are cardiovascular events, cancer, infections and renal failure. The affection of kidneys, lupus nephritis (LN), occurs in up to 60% of SLE patients, and it is a significant cause of morbidity and mortality. Clinical manifestations of LN range from asymptomatic urinary abnormalities to nephrotic syndrome and rapidly progressive renal insufficiency. Pathohistological classification of LN includes six classes: class I (minimal mesangial LN), class II (mesangial proliferative LN), class III (focal LN), class IV (diffuse LN), class V (membranous LN) and class VI (advanced sclerosing LN). 10-30% of patients with LN will develop end-stage kidney disease (ESKD) and will require renal replacement therapy (RRT): hemodialysis, peritoneal dialysis or kidney transplantation. Previous findings suggest that outcome of kidney transplantation in patients with LN is similar to those in other renal diseases.

Methods: We assessed patients with SLE and LN who undergo kidney transplantation in our center from 1986 to 2021. Besides basic demographics, we examined data on LN classes, medical treatment before kidney transplantation, type of the transplantation, signs of SLE flair after the transplantation, function of kidney grafts, as well as grafts and patients' survival. Descriptive statistics were calculated for patient-level factors. Categorical variables were presented as percentages (frequencies), and continuous variables were presented as medians.

Results: From 1986. To 2021. 331 patients undergo kidney transplantation in our center, and in 12 of them (3,62%) the major cause of ESKD was LN. Those 12 patients were retrospectively evaluated. 75% of them were female, and the median age at the time of SLE diagnosis was 22,5 years. LN occurred after approximately 8,5 years. Three patients (25%) had Class III of LN, eight patients (66,67%) had class IV LN and one patient (8,33%) had class VI LN. Five patients (41,7%) had preemptive kidney transplantation, and seven patients (58,3%) needed hemodialysis after 2 years of the LN diagnosis. The median time on hemodialysis was 4,5 years. Six patients (50%) had living-related kidney transplantation, and six patients (50%) had cadaveric donor kidney transplantation. The median age at the time of kidney transplantation was 39 years. They were observed from 4 to up to 19 years, a median value of observation was 12 years. The primary endpoint of the study was terminal graft failure or death of the patient. Two patients returned to hemodialysis 9 and 12 years after the kidney transplantation. Three patients (25%) died, after a median time of 13 years. One patient died 14 years after transplantation, due to COVID-19 pneumonia, with the functioning graft. One patient returned to hemodialysis 12 years after the transplantation and died one year later due to non-COVID-19 pneumonia. One patient returned to hemodialysis after 7 years and died two years later, due to COVID-19 pneumonia. He was the only patient (8,33%) with recurrent LN.

Conclusion: Kidney transplantation is a very good therapeutic option in patients with LN and ESKD.

Keywords: systemic lupus erythematosus, lupus nephritis, kidney transplantation

DIABETIC NEPHROPATHY AND MEMBRANOPROLIFERATIVE GLOMERULONEPHRITIS-CASE REPORT

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Introduction: Glomerular basement membrane GBM thickening is a mandatory morphological substrate seen in patients with diabetic nephropathy (DN), as well as in patients with membranoproliferative glomerulonephritis (MPGN). However, there are a number of specificities related to the diagnosis of both diseases.

Case: A patient with nephrotic syndrome with nespecific symptoms was examined by a nephrologist. The patient has a family history of diabetes, but her diabetes was treated in the last few years. The patient had high proteinuria and erythrocyturia. A biopsy was performed. The tissue was evaluated by optical microscopy (OM) and immunofluorescence (IF). Diffuse glomerular basement membrane (GBM) thickening was found in OM. In 2 glomeruli, hyalinosis of afferent and efferent arterioles was present. Diffuse mesangial expansion was present in all glomeruli. Subendothelial lipohyaline deposits were seen on the periphery of capillary loops. Prominent endocapillary proliferation was also seen on the periphery of capillary loops and in several foci the GBM was double contoured. In the tubulointerstitium, there was moderate tubule atrophy, with PAS+ material in the lumen of the tubules. In the interstitium, there was the same degree of fibrosis. Immunofluorescent findings showed IgG immunofluorescence along the GBM and along the tubular basement membrane. However, in the mesangium there was also granular immunoreactivity along the capillary loop and in the mesangium. The microscopic image and immunofluorescent findings contained the morphological substrate of diabetic nephropathy and membranoproliferative glomerulonephritis. A clinical-pathological correlation was made and the diagnosis was reached: diabetic nephropathy and membranoproliferative glomerulonephritis. After that, the patient was treated and the biochemical and clinical parameters were under control.

Conclusion: Renal biopsy is the gold standard for establishing a precise diagnosis in nephrology, which is a prerequisite for adequate therapy and a favorable prognosis. The existence of two independent diseases in nephrology must be ruled out both clinically and by pathohistological analysis.

Keywords: diabetic nephropathy, membranoproliferative glomerulonephritis, renal byopsy

PP-43 Hemodialysis

EFFICACY OF INTRAVENOUS PARICALCITOL IN THE TREATMENT OF SECONDARY HYPERPARATHYROIDISM IN HEMODIALYSIS PATIENTS

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Introduction: Secondary hyperparathyroidism (SHPTH) is a common complication in end-stage renal disease and hemodialysis patients. It is associated with vascular and visceral calcifications, disturbances of bone turnover and poor outcomes. In this prospective study we aimed to assess the efficacy and safety of intravenous paricalcitol treatment of SHPTH in maintenance hemodialysis patients.

Methods: Intact parathyroid hormone (iPTH), total serum calcium (Ca), phosphate (P), alkaline phosphatase (ALP), dosage of intravenous paricalcitol were followed during 6 months in 30 maintenance hemodialysis patients (70% males, 40% ≥65 years old, 26.7% with diabetes, dialysis vintage 12-168 months). The primary outcome indicator was the percentage of patients with a >30% decrease in iPTH. The secondary outcome indicators were standard-reaching rate of iPTH (150-675pg/mL), changes in serum calcium (Ca), phosphate (P), alkaline phosphatase (ALP), C-reactive protein (CRP), parameters of anemia and mortality. Data were analyzed with paired t test and Pearson's Hi-square test.

Results: Average serum iPTH decreased significantly after 6 months of follow up (611.3±80.5 pg/mL vs. 416.3±305.7 pg/mL; $p<0.01$). More than 30% iPTH decline was observed in 46.7% after 4 weeks, 30% patients after 12 weeks, and 40% patients after 24 weeks of treatment. The average iPTH decline from baseline levels after 4, 12 and 24 weeks of treatment were 25.7±57.3%, 29.3±53.5% and 31.2±49.2% respectively. The standard-reaching level of iPTH was 73.3% after 24 weeks. Serum calcium was significantly higher after 24 weeks compared to baseline (2.2±0.2 mmol/L vs. 2.3±0.3 mmol/L; $p<0.01$). There was no significant difference between the red blood cell count, hematocrite, and serum levels of P, ALP, hemoglobine and CRP compared with the baseline ($p>0.05$). Hypercalcemia and hyperphosphatemia appeared in 36.7% and 43.3% of patients at any time during the follow-up respectively. Mortality rate was zero.

Conclusion: Paricalcitol treatment appears effective and safe in maintenance hemodialysis patients. Patients should be motivated to adhere to an adequate dietary regimen during therapy.

Keywords: hyperparathyroidism, hemodialysis, paricalcitol, hypercalcemia, hyperphosphatemia

GENDER-SPECIFIC DIFFERENCES IN PERITONEAL DIALYSIS

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Introduction: Gender-specific differences between patients on renal replacement therapy so far have been rarely investigated. In the present study we analysed gender specific differences and their influence on otcome in peritoneal dialysis (PD) patients.

Methods: This prospective clinical study included 60 incident patients on peritoneal dialysis. Demographic data were analyzed, and clinical data, treatment characteristics, and patient outcomes were followed 48 months after starting peritoneal dialysis.

Results: A greater number of male patients - 35 (58%) started peritoneal dialysis There was no difference in age between the sexes at the start PD (men vs women - 58.77±12.28 vs 58.60±12.43; P=0.958). There was no statistically significant difference in the etiology of ESRD (P=0.652), either in the number of comorbidities before starting PD (P=0.176). Patients started peritoneal dialysis with an average residual diuresis without difference between sexes (1111±,492 vs 994 ± 608 ml P=0.456). However, men had better preserved residual diuresis during follow up period. ((960 ± 740ml vs 645 ± 769 ml; P=0.047). Men had significantly worse weekly Kt/V at the start of PD treatment (2.0±0.4 vs 2.2± 0.5; P= 0.043). After 4 years follow up period, Kt/V was sligltly better, but without significant differece (2.2±0.7 vs 2.1±0.4; P=0.639). Men had better CrCl, at the beginning of PD treatment (75.8±23.10 vs 65.09±15.95; P=0,054), and at the end of the follow-up period (87.10 ±29.09 vs 60.54±16.10; P=0.001). There were no difference between the sexes in dialysate-to-plasma ratio of creatinine at 4-h PET, and glucose level of PET (D4/D0) at the end of the follow-up period P=0,512. Regarding the infectious complications of peritoneal dialysis, there was no difference between the sexes in the prevalence of exit site infections (P=0.226), tunnel infections (P=0.198), and peritonitis (P=0.357).There was no difference between the sexes in technical survival rates (P= 0.198), incidence of cardiovascular events (P= 0.083) and mortality rate (P=0.412) .

Conclusion: Our data indicate that more male patients with ESRD start peritoneal dialysis. Both sexes were of similar age at the start of peritoneal dialysis treatment. Despite the better preserved residual diuresis, and adequacy of PD in male patients, there was no difference between the sexes in technical survival rates, number of complications and survival of patients. Also, the influence of gender on the occurrence of infectious complications of peritoneal dialysis was not observed. A better analysis of the influence of gender on the outcome of PD treatment requires a larger number of patients and longer follow-up period.

Keywords: gender, end stage renal desease, peritoneal dialysis

VI PLUS-A NEW ELASTOGRAPHY TECHNIQUE FOR DETECTING INFLAMMATION IN A HEALTHY COHORT VERSUS A KIDNEY TRANSPLANTED GROUP

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Introduction: Inflammation is a key factor in the progression of fibrosis. A non-invasive technique, such as viscosity plane-wave ultrasound (Vi PLUS), has emerged as a novel elastography method that promises to measure tissue viscosity and inflammation by estimating shear wave dispersion characteristics.

Methods: We performed a cross-sectional study including 100 participants: 50 healthy subjects (29 women, 21 men) with a mean age of 42.22 ± 13.17, a mean kidney length of 10.16±0.66cm, and a mean body mass index (BMI) of 24.24±3.98 and 50 kidney transplanted patients (16 women, 34 men) with a mean age of 47.5±12.5, a mean kidney length of 11.6±0.14cm and a mean BMI of 27.8±5.55. For every kidney, we obtained five measures of renal cortical viscosity (obtained from five different frames in the middle portion of the subcapsular cortex), with a C6-1X convex transducer using the Ultra-Fast™ software available on the new Hologic Aixplorer Mach 30 ultrasound system. The mean values of the measures have been correlated with the participant's demographical, biological, and clinical parameters.

Results: The mean viscosity value for the healthy group is 2.44±0.57 Pascal.second (Pa.s) appears to be impacted by age (r= -0.4251, p=0.0021), depth of measures (r= -0.4642, p=0.0008) and BMI (r= -0.3676, p=0.0086), with a statistically significant difference (p=0.0012) from the mean viscosity value for the kidney transplanted group 2.81±0.54 Pa.s which seemed to be influenced by mean estimated glomerular filtration rate(eGFR) (r=0.3335, p=0.0180), time from transplant (r=0.2697, p=0.05) and not by the age of the patient (r=-0.02901, p=0.8415) nor by mean depth of measures (r=-0.04089,p=0.7780). As expected we found a statistically significant difference between the mean depth of measures among the two groups: for the healthy one 4.58±1.02cm and for the transplanted one 3.04±1.57cm (p<0.0001). Our study showed good intra-operator agreement for both the healthy group with an intraclass correlation coefficient (ICC) of 0.9 and a 95% CI of 0.8515 to 0.9397 and also for the transplanted patients' group with an ICC of 0.8323, 95% CI of 0.7457 to 0.8959.

Conclusion: Vi PLUS is a highly feasible method with good reproducibility that declines with age progression and eGFR. The variation in the depth of measures could explain the differences between Vi PLUS values among the two groups. This could prove to be a low-cost approach to provide additional diagnostic information in kidney transplanted patients, but further investigation is needed to establish their role in clinical practice.

Keywords: Vi PLUS; inflammation; chronic kidney disease, viscosity

PP-46 Hemodialysis

CKD-MBD MARKERS AND SURVIVAL IN HEMODIALYSIS PATIENTS

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Introduction: Hemodialysis patients are known to be susceptible to a wide range of early and long-term complications such as mineral bone disorders (CKD-MBD) and cardiovascular disease that significantly affect the mortality. The aim of this study is to assess the presence of traditional risk factors of mortality such as diabetes mellitus or cardiovascular disease on one hand and to assess a link between these factors and CKD- MBD (including sKlotho) and circulating angiogenic factors, such as vascular endothelial growth factor (VEGF), on the other hand.

Methods: We conducted a single-center study that included 63 CKD G5D patients (hemodialysis for 1-5 years) followed up for 48 months. All patients have been assessed at baseline, regarding cardiovascular disease (medical history, echocardiography and ECG), we performed using standard methods blood biochemistry, complete blood count and markers of CKD-MBD (sKlotho, iPTH, serum Calcium, serum phosphorus, alkaline phosphatase) and VEGF.

Results: SKlotho showed no statistically significant correlation with other elements of CKD-MBD (Vitamin D, iPTH, Ca, P, CaXP), there was however a positive correlation with hemodialysis efficiency (eKTV) (r=0.26, p-0.04), but no correlation with hemodialysis vintage. Decreased levels of sKlotho at baseline correlated significantly with the presence of signs of ischemia on ECG (190.3 vs. 381.57 pg/ml; p=0.028). Regarding serum VEGF (mean value 137.13+/- 78.74 pg/ml), higher values were found in patients with diabetes (154.2 vs 122.8 pg/ml, not statistically significant). After 24 months of follow up we found a mortality rate of 22.23%, while after 48 months the mortality rate was of 50.73%. Using a Cox proportion-hazards regression analysis of predicting factors of mortality we found some cut-off values associated to a significantly lower survival: VEGF >1041.37 pg/ml (p=0.035), iPTH<329 pg/ml (p=0.012), PO4<3.87 mg/dL (p=0.002)- the distribution in quartiles showed for PO4 a U shaped curve (increased mortality in the first and forth quartile). Patients with higher levels of sKlotho (>481.54 pg/mL), lower levels of alkaline phosphatase (<129 IU/L) and with lower levels of Calcium (<8.48 mg/dL) showed a decreased risk of mortality, however not statistically significant. Regarding traditional risk factors we found a higher risk of all cause- mortality in patients older then 51 ages (p=0.006), with history of DM (p=0.058), with left ventricular hypertrophy (p=0.017), peripheral vascular disease (p=0.06) and especially with a history of cerebro-vascular disease (p<0.001), but other cardiovascular markers did not influence mortality statistically significant in our patients (coronary heart disease, valvular calcifications, ejection fraction <50%).

Conclusion: In our study, increased mortality, was influenced by traditional risk factors such as age, diabetes mellitus or history of vascular disease (especially cerebro-vascular disease) and also by increased VEGF. Regarding the markers of CKD-MBD, surprisingly low values of iPTH and phosphorus led to an increased mortality. Decreased sKlotho has been shown to be associated to some cardiovascular changes and a tendency to an increased mortality.

COEXISTENCE OF STEROID RESISTANT MINIMAL CHANGE DISEASE AND FAMILIAL MEDITERRANEAN FEVER: A CASE REPORT

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Introduction: Familial Mediterranean fever (FMF) is an autoinflammatory and genetic disorder characterized by recurrent episodes of fever and/or polyserositis (peritonitis, pleurisy, and arthritis). One of the most common complications of FMF is secondary amyloidosis of the kidneys. However, much less commonly, it is reported to be associated with various types of glomerulonephritis. This article presents a patient with FMF whose renal biopsy findings were consistent with minimal change disease (MCD).

Case: A 30-year-old female patient was diagnosed with FMF (with heterozygous polymorphism R202Q and heterozygous mutation M680I) six years ago after investigations for abdominal pain and febrile episodes. Treatment with colchicum dispert was started, but the patient never took it regularly. Physical examination revealed rales at the base of both lungs, diffuse edema of the lower extremities, palms, and abdominal wall, and ascites in the abdomen. Laboratory tests are listed in Table 1. Urinalysis revealed ++++ protein, fat cylinders. Daily protein excretion was 17000 mg. Renal ultrasonography was within the normal range. Autoimmune antibodies were negative. Complement levels were within the normal range. No compatible findings were noted on rectal biopsy, which was performed with a provisional diagnosis of secondary amyloidosis. In addition, colchicum dispert 1.5 mg/day and ramipril 5 mg/day were started. Renal biopsy was performed to clarify the etiology. Light microscopic examination revealed no pathologic findings, Congo red and immunofluorescence staining were negative (Figure 1). The biopsy findings were considered compatible with MCD. Possible secondary causes were excluded, and oral treatment with 1 mg/kg/day of methylprednisolone was started. However, despite 16 weeks of treatment, remission was not achieved. With the diagnosis of steroid-resistant MCD and after reexamination of other causes of nephrotic syndrome, treatment was switched to cyclosporine-A and the glucocorticoid dose was gradually tapered. During 4-month follow-up period, proteinuria decreased to 240 mg/day, and remission was achieved (Table 1).

Discussion: Patients with FMF may exhibit a variety of renal disorders. Although renal amyloidosis comes to mind first, non-amyloid pathologies may also rarely develop in these patients. Colchicine may have a preventive and therapeutic effect for non-amyloid glomerulonephritis as well as for renal amyloidosis. Considering this possibility in cases of proteinuric FMF may be beneficial in the short and long term on a patient basis.

Keywords: Familial Mediterranean fever, non-amyloid renal disorders, minimal change disease

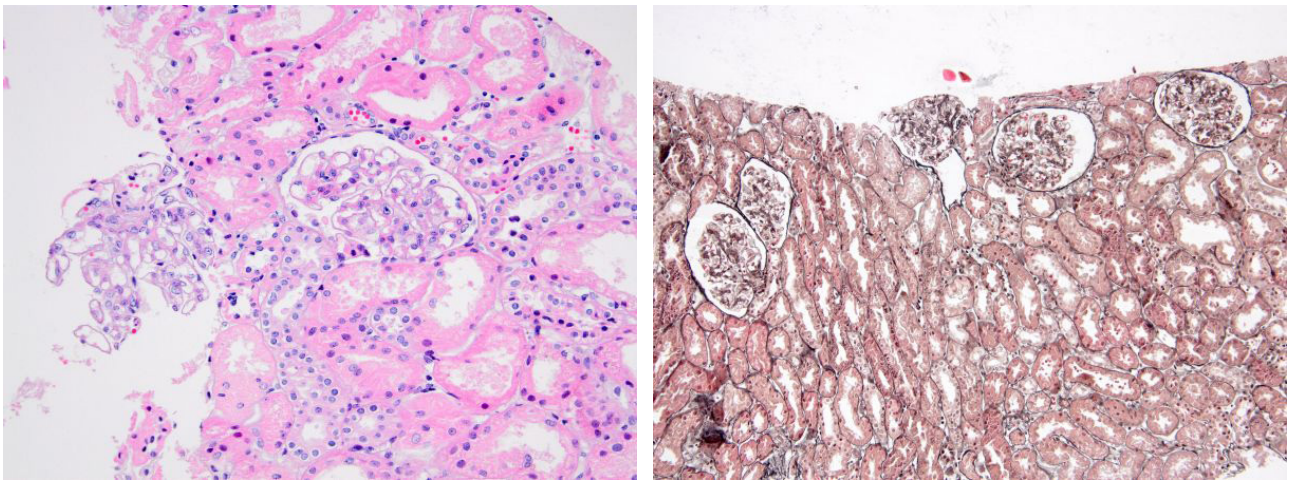

Figure 1

Table 1: Laboratory results at the time of admission and the end of cyclosporine treatment

	Referenge rates	The time of admission	The end of cyclosporine treatment
Hemoglobin (g/dL)	11.7 - 15.5	13.1	13.4
White blood cell (mL/mm³)	4 - 10	5.6	8.45
Blood urea nitrogen (mg/dL)	17 - 43	20	22.8
Creatinine (mg/dL)	0.66 - 1.09	0.58	0.53
Sodium (mEq/L)	135 - 145	136	142
Potassium (mEq/L)	3.5- 5.0	4.36	4.47
Calcium (mEq/L)	8.6 - 10.2	8.61	8.72
Total protein (g/dL)	6.6 - 8.3	4.36	6.34
Albumin (g/dL)	3.5 - 5.5	1.14	4.2
Microalbumin (mg/day)	0 - 30	8866	90
Daily protein excretion (mg/day)	0 - 150	17000	241
Erythrocyte sedimentation rate (mm3/h)	0-25	88	23
Fibrinogen (g/L)	200 - 393	891	329
C-reactive protein (mg/L)	0 - 5	18	3
C3 (g/L)	0.79 - 1.52	1.21	1.19
C4 (g/L)	0.16 - 0.38	0.28	0.27
LDL cholesterol (mg/dL)	0 - 100	358	130
Triglyceride (mg/dL)	0 - 150	249	195

PP-48 Hemodialysis

ARE CHRONIC INFLAMMATION AND PLASMA KIM-1 RISK FACTORS OF MORTALITY IN HEMODIALYSIS PATIENTS?

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Introduction: Hemodialysis patients are known to be susceptible to a wide range of early and long-term complications such as chronic inflammation, infections, malnutrition that significantly affect the incidence of mortality.. Plasma KIM1, a marker of renal tubular injury, has been mentioned in some previous studies to be associated to cardiovascular risk factors. The aim of this study is to assess the presence of anemia, chronic inflammation as risk factors of mortality.

Methods: We conducted a single-center study that included 63 CKD G5D patients (hemodialysis for 1-5 years) followed up for 48 months. All patients have been assessed at baseline, regarding cardiovascular disease (medical history, echocardiography and ECG), we performed using standard methods blood biochemistry, and markers of inflammation (CRP, IL-6) and markers of anemia (complete blood count, serum ferritin, transferrin saturation- TSAT).

Results: Mean plasma KIM1 levels were 267.1 +/-482.9 pg/ml, and showed a statistically significant correlation with mean CRP (r=0.28, p=0.02) and IL6 (r=0.36, p=0.005). We found out using ANOVA that patients with left ventricular hypertrophy showed decreased levels of KIM1 (155.51 vs 432.12 pg/ml; p=0.026), and also patients with vascular calcifications on echocardiography had lower levels of serum KIM1 (210.01 vs 462.58 pg/ml, p=0.04). There was no statistically significant correlation between plasma KIM1 and ejection fraction, but patients with ejection fraction below 40% have been excluded from the study. We also did not find any correlation between inflammation markers and the studied cardiovascular markers in our patients. After 24 months of follow up we found a mortality rate of 22.23%, while after 48 months the mortality rate was of 50.73%. Using a Cox proportion-hazards regression analysis of predicting factors of mortality we found some cut-off values associated to a significantly lower survival: IL-6 >9.8 pg/ml (p=0.079), CRP >1.22 mg/dl (p=0.093), ferritin >1360 ng/mL (p=0.063), TSAT >35 % (p=0.038), Hg>11 g/dl (p=0.002), albumin <4.04 g/dL (p=0.01), KIM-1<81.98 pg/ml (p<0.001). From the dialysis related factors only the presence of a central venous catheter (p=0.038) and dialysis vintage (p=0.007) and not kT/V influenced 4 year mortality.

Conclusion: In our study, increased inflammation in hemodialysis patients was associated to a significantly higher risk of mortality. Surprisingly low levels of the marker of tubular injury (KIM1) were associated with cardiovascular changes and also to an increased risk of mortality.

IGG4 RELATED DISEASE IN THE PATIENT WHICH WAS APPLIED WITH A STENT FOR AORTIC ANEURYSM

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[1]*Ankara Şehir Hastanesi*

Intruduction: Igg4-related disease is a rare and a difficult disease to diagnosis. Elevated serum IgG4 concentration and tumefactive lesions are the most common clinical manifestations of this disease. IgG4-positive lymphoplasmacytic cell infiltrations accompanied by storiform fibrosis, obliterative phlebitis, and eosinophil infiltration are typical histopathological features of IgG4-Related disease. We prepared ıgg4 related disease in our patient with aortitis.

Case: Patient with history of hypertension (4 years), stroke (2006,2021), coronary artery disease came to emergency service with dispepsia three months ago. The patient was diagnosed with aortic aneurysm and aortic thrombosis on ultrasound and a stent was inserted. He has jaundice and itching in the body since stent was inserted. Laboratory values at the time of admission; urea: 28, creatinin:1,52 hco3:27, na:139 , k: 3,7 , spor urine t.protein/cre: 453 mg/g cre, esr: 59 mm/saat, crp:20 mg /L, C3c :1,7 g/l , c4: 0,3 g/L, ANA: +1 (1:100), IGG4:2,880 g/L ,total ıgE: 1267,8 IU/mL.

USG: Infrerenal level aneurysm+ , bilateral grade 1-2 dilatation

Thoracoabdominal Angiografy: Aneurysmatic dilatation was observed in the abdominal aorta in a segment of approximately 14,5 cm extending from the infrarenal level to bifucation. The diameter of the AP reaches 78 mm in its widest place. A mural thrombus reaching 30 mm in length was observed in the widest part of the aneurysm wall. Aneurysm wall diffuse thickened. In the peraneursymal area, there is a granulation tissue about 1 cm thick. Left CFA shows focal aneurysmatic dilatation in the distal. Both main iliac arteries are wide.

Due to the high level of ıge and ıgg4, salivary gland biopsy and pet ct were taken.

PET CT: Aeurysmatic dilatation in the abdominal aorta, reaching a front-posterior diameter of about 8 cm, along a segment of about 16 cm at infrarenal level. There is a compatible apperance with the trouser graft in the aneurysm sac. Thickening of aneurysm sac wall and patchy increased F-18 FDG involvement throughout the wall (aortitis)

We are following salivary gland biopsy result. We started prednol 36 mg.

Result: Immunoglobulin G4-related disease (IgG4-RD) is a newly recognized chronic fibro-inflammatory autoimmune disease, and its recognition has been constantly increasing worldwide over the last few years. A correct and timely recognition, as well as appropriate intervention, is crucial for the treatment of IgG4-RD. Although recurrence is very common in IgG4-RD, glucocorticoid is still the first-line treatment for the majority of patients. The factors that affect the likelihood of disease relapse are multifaceted.

Keywords: IGG4 related disease , aortitis , aortic aneurysm , steroid therapy

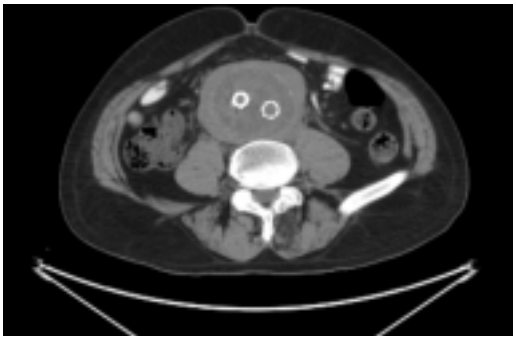

Figure: pet ct - aortic stent

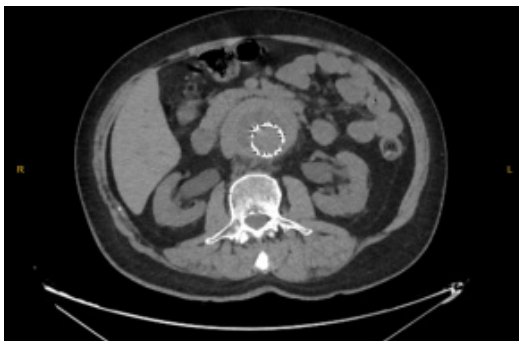

Figure: abdomen ct - hydroureteronephrosis

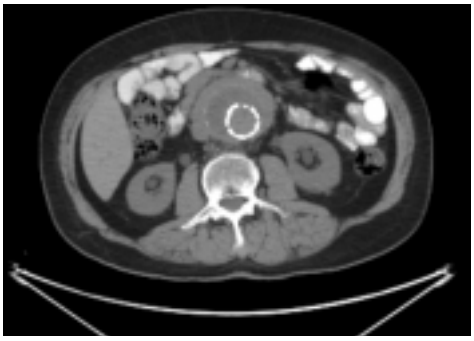

Figure: pet ct - aortic stent

COMPLICATIONS ASSOCIATED WITH ORAL ANTICOAGULANT THERAPY IN PATIENTS WITH MODERATE TO ADVANCED CHRONIC KIDNEY DISEASE

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Introduction: Prescription of oral anticoagulant (OAC) therapy in patients with moderate and advance chronic kidney disease (CKD) is challenging, since these patients are at high risk of thromboembolic episodes, but are also prone to bleeding events. The aim of this study was to determine the frequency of complications associated with used OAC therapy in patients with moderate and advance CKD (eGFR<44ml/min/1,73 m2), including patients treated with hemodialysis (HD).

Methods: The retrospective study included patients treated from 2018-2022 in our institution, with a follow-up period of at least 1 year. 62 dialysis patients who used OAC therapy (HD-OAC group) and 60 patients with moderate-to-advanced CKD (stage 3b-4) on the same therapy (CKD-OAC group) were included. The following were analyzed: demographic parameters, indication for OAC therapy, creatinine and eGFR or Kt/V, heparin dose per individual dialysis, comorbidities (arterial hypertension, heart failure, diabetes, vascular and liver diseases, cerebrovascular accidents); CH2DS2-VASc and HAS-BLED score, frequency of bleeding and ischemic/thrombotic events, patient outcome. INR was dosed at least every two weeks for HD patients and according to specialist prescription for outpatients.

Results: In the HD-OAC group, 62.9% of patients were on OAC therapy due to atrial fibrillation, 12.9% due to frequent thrombosis of vascular accesses, 11.29% due to previous thromboembolism, 9.67% due to a mechanical heart valve replacement and 3.24% due to antiphospholipid syndrome, Kt/V was 1.28±0.27 and heparin dose was 4899.3±1093.8 per individual dialysis. In the CKD-OAC group, 76.67% of patients had OAC therapy due to atrial fibrillation, 8.33% due to previous deep vein thrombosis or pulmonary thromboembolism, 15% due to a mechanical heart valve replacement. In this group average creatinine was 206.7±57.5 μmol/l and eGFR was 27.68±7.75 ml/min/1.73m2. All patients in the HD-OAC group were dialyzed via permanent vascular access. The CHA2DS2-VASc score was 4.29±1.42 in the HD-OAC group and 4.15±1.26 in the CKD-OAC group ($p>0.05$), HAS-BLED score was 3.24±0.76 and 3.43±0.84 respectively ($p>0.05$). The incidence of bleeding was lower in the CKD-OAC compared to the HD-OAC group, but without statistical significance (8.33% vs 20.96%, $p>0.05$). There were not ischemic/thrombotic events in any examined group. The incidence of mortality was 40.32% in HD-OAC group and was higher, but not statistically significant, compared to the CKD-OAC group in which it was 15% ($p>0.05$).

Conclusion: The use of OAC therapy in patients with moderate and advance CKD increases the risk of bleeding, especially in patients on hemodialysis. Multidisciplinary approach is needed when OAC therapy is prescribed in this population, with careful weighting of the risks and benefits of these drugs, and with close monitoring during therapy.

Keywords: chronic kidney disease, hemodialysis, anticoagulants, atrial fibrillation, bleeding, stroke, mortality

PP-51 Clinical Nephrology

HANTAVIRUS RARE CASE WITH BOTH RENAL AND PULMONARY AFECTION -CASE REPORT

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Introduction: Hantavirus hemorrhagic fever with renal syndrome (HFRS) and hantavirus pulmonary syndrome (HPS) are caused by hantaviruses, specifically when humans inhale aerosolized excrements of infected rodents. Both diseases appear to be immunopathologic, and inflammatory mediators are important in causing the clinical manifestations

Case: 14-year-old patient of hantavirus-induced renal and pulmonary involvement, referred from the Digestive Surgery Clinic-Skopje, where he was admited due to severe abdominal pain, nausea, vomiting and malaise. Symptomatology started three days ago and with fever.Conservative treatment was started and a CT-scan of the abdomen was performed without signs of acute abdominal pain. Lab tests with sCr 137, umol/L low platelet count-Plt 34-10^9/L, and serologically confirmed Hantavirus-IgM. . Due to an increase in serum urea level and creatinine, he was transferred to our clinic, nephrology clinic - Skopje for further treatment and follow-up. At our clinic, during the hospitalization, the patient was managed conservatively with parenteral, electrolyte, vitamin, diuretic, corticosteroid and anticoagulant therapy. Diarrheal syndrome treated with appropriate therapy. Diuresis for the whole time preserved up to 1800 ml/24 hours, but with a rapid increase in serum urea and creatinine. On the second day of hospitalization, there was a sudden worsening of the general condition with dyspnea and a drop in saturation up to 80%. Immediately placed on supplemental oxygen. Despite the given therapy, a continuous drop in saturation was notice. The patient was transferred to the department for intensive care and treatment - KARIL in Skopje with saturation 88% under maximum supplemental oxygen.The patient was intubated, placed on mechanical ventilation with continuous sedation. Hemodialysis treatment was started and two hemodialysis treatments were carried out. Maintained diuresis all the time. X-ray finding and CT finding of lung in addition to bilateral pleural effusions. Treated with parenteral antibiotic, bronchodilator, gastroprotective, vitamin and infusion therapy. Due to the improvement of the patient's overall condition, after 6 days of treatment, he was transferred to our clinic for further evaluation of the kidney function and there was treated with double antibiotic therapy (Vancomycin and Imipenem), anticoagulant, gastroprotective, hepatoprotective and vitamin therapy. Due to sinus bradycardia, a cardiologist was consulted, an echocardiography was performed, without the need for therapy. Intensively hydrated, diuretic response up to 8000ml/24h with a drop to normalization of the degradation products in the blood. Femoral venous catheter for hemodialysis was removed, patient discontinued from HD.. All the time patient was hemodynamically and respiratoryly stable, and afebrile. He was discharged in good general condition with normal renal function.

Conclusion: Despite the severity of the disease and the rarity of involvement of both renal and pulmonary conditions, persistence and team treatment, careful monitoring of vital and laboratory parameters result in success in treatment. We present the case because of its specificity of renal and pulmonary function involvement.

Keywords: hantavirus, Hantavirus hemorrhagic fever with renal syndrome (HFRS), hantavirus pulmonary syndrome (HPS)

Tables: Laboratory exams

Urea: 17..11...8.3..5,2..6,6 mmol/L	Creat:328.. 172...123..98...86 umol/L	Acid. Uric..: 366...285...375
Na: 140..141...138mmol/L	K: 3,7..3.8...3.9...4,3mmol/L	Ca: 1.8...2.0...2,3mmol/L
HPO4: 1.2...1.2...1,3mmol/L	Hgb: 111...114 ...107 g/L;	Hct: 0.3...0.3...0,3 rv
PLT: 275...260...240 10^9/L	Wbc: 9.5...6.6..5,310^9/L	Glik:5,8… 4.9...4.8..4,9 mmol/L
CRP: 28...11...1,4 mg/L	AP 39...59..90	AST 27...52...50
ALT 17...43...88	LDH 314...216	CK 38...32
alb. 23..29...33...45	tot.prot. 44..58...62..79	Proteinuria: 0.08 g/l;

PIK3CA GENE VARIATIONS AND BREAST CANCER IN KIDNEY TRANSPLANTATION: SINGLE CASE REPORT

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Introduction: The incidence of carcinomas in transplanted patient is significantly increased since the improvement of immunosuppression therapy. Transplanted patients have a higher life expectancy but also increased incidence of carcinomas, as compared with the general population. The aim of our work is to present a patient with breast cancer after kidney transplantation treated with Pembrolizimab (KEYTRUDA). To describe the effect of humanized immunoglobulin G4 kappa monoclonal antibody directed against PD-1 on and its possible immune-related adverse events.

Methods: We present a 43 year, nonsmoking white female patient with transplanted kidney. For a period of 8y she was followed regularly by nephrologist, and patient had non-complicated post-transplanted course. Immunosuppressive regimen consisted of a triple combination of prednisone, cyclosporine and mycophenolate and successful for all long the years. Eight years after kidney transplantation we have noticed prolactinemia increase on 3.69mmol/L. The patient also developed secondary anemia and chronic allograph nephropathy with mild increase of serum creatinine and proteinuria 0.19g/L. Mammal biopsy was performed and we have obtained adenoid cystic carcinoma, triple negative.

Results: Genetic analysis confirmed a variation of c.3140A>G, pHis1047Arg in PIK3CA. After performing bilateral total mamectomy with implants put in place, diagnosis of adenoid cystic carcinoma was confirmed. Immunosuppressive treatment was adapted and patient was switched to mTOR inhibitor (Everolimus). Moreover, we implemented a cytostatic course treatment by pembrolizumab. The serum kidney parameters were preserved and graft function protected. Six months later the patient developed ovarian cyst and a cyst adenoma was put as a diagnosis.

Conclusion: Early detection of possible carcinoid changes and switch to mTOR inhibitors and early chemoprevention should be in a consideration for a treatment of selected patients with transplanted kidneys.

Keywords: PIK3CA gene, kidney transplantation, breast cancer, pembrolizumab

POSTOPERATIVE ACUTE KIDNEY INJURY (AKI) IN ONE LUNG VENTILATED PATIENTS

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One lung ventilation (OLV) complicate ventilation/perfusion ratio in the lungs, has overall impact on the whole body and it indirectly leads to kidneys hypoperfusion and injurie. The aim of our study is to evaluate the level of postoperative Acute Kidney Injurie (AKI) who underwent OLV

We included in prospective study 60 patients that underwent lung resection in OLV, BMI<30 m2, without hepatic, renal endocrinal diseases, aged 45-65. Patients who underwent prior hemotherapy or radiotherapy were exuded. In all patients we evaluate the demographic, clinical, preoperative state, duration of OLV, operation data, fluid assessment. Primary we evaluate the occurrence and staging of AKI, according KDGIO criteria, 72 h postoperatively in all patients and post hoc we corelate its occurrence to several factors.

Patients were 59.7+5.9 sd years old. More males were operated (80%). Overall AKI stage I occurred in total of 13.3 % (8 patients), AKI stage II in 3.3% (2 patients) and AKI stage III in 1.6% (1 patient). OLV longer than 60 minutes was in 85% of the patients and all sages AKI were after this time of OLV. Lobectomy was done in 65% of the patients while pulmectomy in 18.3% and bilobectomy in 16.7 %. In relation to type of surgery done most of the patients that had pneumectomy had AKI I(27.2%) and additional only in this analyzed surgery AKI III occurred in one patient(9%).In correspondence to the side operated right side was operated in 57.7% of the patients and most of the AKI occurred in the right sided surgery. Most of the patients who developed AKI preoperatively had hypertension,

Acute kidney injury occurs after one lung ventilation, in relation to the type of thoracic surgery. Mainly when right side surgery is done. However more severe AKI occurs when pulmectomy is done. Fluid regiment, OLV longer than 60 minutes and some preoperative cardiovascular diseases may contribute to its occurrence.

Keywords: lungs surgery, Acute Kidney Injury, lung resection

EPIDEMIOLOGICAL ANALYSIS AND CLINICAL OUTCOMES FOR PATIENTS WITH PERITONEAL DIALYSIS-RELATED PERITONITIS

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Introduction: Peritoneal dialysis related peritonitis represents a common infective complication in patients with end stage renal disease (ESRD) who treated by Continuous Ambulatory Peritoneal Dialysis (CAPD). It is an important cause of hospitalization in these patients. The most common presentation included a cloudy dialysis effluent, which may or may not be followed by abdominal pain, vomiting and high fever. The aim of this retrospective study is to assess epidemiological aspects and clinical outcomes for patients with acute CAPD peritonitis during 5-year period.

Method: Patients included in this study were all treated by CAPD between the 1st of January 2017 and 31st of December 2021 in the Clinical Hospital Center Zvezdara. Our study included prevalent patients on CAPD, and we analyzed demographic, clinical and microbiological data and patients outcomes during 5 year period. The data was collected from patient records, medical history and processed in SPSS.

Results: The study included 119 patients received peritoneal dialysis as kidney replacement therapy of which 24 (8.13%) had one or more acute episodes of CAPD peritonitis in the designated period. The mean age of the population was 69±9 year, 54% were male, 20% had diabetes mellitus and 60% arterial hypertension as cause of end stage renal disease. During 5-year period it was diagnosed 46 episodes of CAPD peritonitis. The main characteristics of patients with peritonitis were turbid liquid (100 %), abdominal pain (73 %) and fever (43%). Gram staining revealed that 53 % were gram-positive, and 10 % were gram-negative. The most frequent bacterial specimen was Staphylococcus epidermidis (11) followed by Streptococcus viridans (6), sterile culture (9), Staphylococcus aureus (3) and other organisms less than 2 episodes. The peritonitis rate was 1 episode per 27.36 patient-months, or 0.44 episodes per patient year. Out of 24 patients, 2 (8.33%) had 4 episodes of peritonitis, 3 (12.5%) had 3 episodes of peritonitis, 6 (25%) had 2 episodes of peritonitis, and the rest (54.16%) were had only one each. During 5-year period, 1 (4%) patient died of acute CAPD peritonitis caused by Proteus mirabilis, 7 (29%) died of other causes, 11 (46%) were transferred to hemodialysis and 5 (21%) are still receiving treatment by CAPD modality. CAPD peritonitis was the reason for technical failure in 20% patients.

Conclusion: Peritoneal dialysis-associated peritonitis is serious infective complication which could influence the outcome of PD patients, including technique survival. The rate and outcomes of peritonitis in our patients were in accordance with our expectations.

Keywords: peritoneal dialysis, CAPD, infections, peritonitis

PP-55 Other

COVID 19 AND MULTISYSTEM INFLAMMATORY SYNDROME IN 20 YEAR OLD: A CASE REPORT

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Introduction: In comparison to older adults, SARS-CoV-2 leads to a mild illness in children and young adults typically manifested with fever, cough and gastrointestinal symptoms. But the multisystem inflammatory syndrome in children and young adults (MISC) emerged during the coronavirus disease in 2019 pandemic. It seems to be a post infectious disease with onset between 2 to 4 weeks after infection, its clinical symptoms overlap with classical Kawasaki disease (systemic vasculitis) or Kawasaki-like syndrome (atypical) with fever, gastrointestinal symptoms, rash, conjunctival injection, hypotension, sore throat, mucosal changes with a relative lack of severe respiratory disease, myocarditis, hypoalbuminemia and elevated inflammatory markers.

Methods: We report a case of a 20 year old female patient with signs and symptoms of multisystem inflammatory syndrome and SARS-CoV-2 infection. First symptoms included sore throat and fever, treated with antibiotics with no improvement. After two weeks of positive SARS-CoV-2 test she was admitted to hospital due to blood in stool, body rash, severe anemia, elevated liver enzymes, elevated D-dimers, hypotension, tachycardia and an ultrasound find of hepatomegaly. Before admission, the patient was examined by a hematology and gastroenterohepatology specialist. The treatment included antibiotics, low molecular weight heparin, several blood and plasma transfusions, cryoprecipitate, somatostatin analogue, proton pump inhibitors and corticosteroids. After administration of antibiotics the rash increased and in consultation with pulmonologist, the therapy was stopped. Hemoculture and procalcitonin were negative. The fever and inflammation subsided after treatment with corticosteroids. Due to repeated rectorrhagia, gastroscopy and colonoscopy was performed. The gastroscopy finding was multiple ulcers in esophagus and stomach. The colonoscopy showed multiple ulcers in colon with suspicion of Crohn's disease and enteropathy due to coagulopathies. The patient underwent serological tests for systemic diseases due to suspicion for vasculitis, but the tests came back negative. CT was performed with findings of viral pneumonia, bilateral pleural effusion and pericarditis. The patient was on minimal oxygen support, therapy continued, the condition gradually improved, and there was an improvement in laboratory analyses.

Results: The patient was discharged after 10 days in stabile health condition, afebrile, with corrected anemia, normal liver enzymes, no signs of active bleeding with recommendation to continue the therapy with corticosteroids, low molecular weight heparin and proton pump inhibitors.

Conclusion: In conclusion clinical signs overlap form Kawasaki disease with gastrointestinal manifestations to severe inflammation with myocarditis. SARS-CoV-2 screening, follow up, clinical evaluation and treatment with combination therapy of antibiotics, corticosteroids, anticoagulation therapy and other therapies lead to a successful cure.

Keywords: coronavirus disease, young adults, pneumonia, effusion, rash, Kawasaki like disease

CORRELATION BETWEEN PHQ-9 SCORES AND UREA AND CREATININE SERUM LEVELS IN HEMODIALYSIS PATIENTS

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Introduction: Depression is the most common psychiatric disease in dialysis patients. The PHQ-9 questionnaire is self-administered version of diagnostic instrument which objectifies and assesses degree of depression severity.

Methods: Study included patients (n=89) undergoing hemodialysis for more than 6 months and without any diagnosed psychiatric disease. General data was admited and they completed PHQ-9 questionnaire at the beginning and at the end of dialysis week by voluntary agreement. Urea and creatinine serum levels were measured at the begining and the end of the dialysis week. Microsoft Word Excel 2020 was used for statistical analysis.

Results: Sex distribution was approximately equal (52.6% male) with an average age of 63.2 years. Average patients' time on hemodialysis was 3.2 years. 69 patients (77.5%) were dialysed 3 times per week and 20 patients were dialysed two times per week. 79 patients (88.7%) are consuming cigarettes everyday and 80 patients (89.9%) are consuming alcohol at least once per week. Education level of patients was: elementary school 29.4%, high school 43.7% and college 26.9%. In total, 56 patients (62.7%) were married, 22 were widowed, 9 were single and 2 were divorced. At the beginning of the dialysis week, depression analysis was minimal in 9 patients (10.1%), mild in 27 patients (30.3%), moderate in 29 patients (30.3%), moderately severe in 16 patients (18%) and severe in 8 patients (9%). Average PHQ-9 score at the begining of the dialysis week was 10.02 which indicates moderate depression severity. The most common simptoms were: feeling tired/having little energy, poor apetite and trouble at falling or staying asleep. 13 patients (14.6%) had self-destructing thoughts. At the end of the dialysis week, depression analysis was minimal in 25 patients (18.1%), mild in 43 patients (48.3%), moderate in 10 patients (11.2%), moderately severe in 8 patients (9%) and severe in 3 patients (3.4%). Average PHQ-9 score at the end of the week was lower (6.47), indicating mild depression severity. The most common simptoms were approximately equal as at the beginning. In total, 3 patients (3.3%) had self-destructing thoughts. At the beginning of the week, average urea and creatinine serum levels were 20.4 mmol/l and 894 μmol/L. However, at the end of the week, average urea and creatinine serum levels were 9.2 mmol/l and 323 μmol/L. There was strong positive Pearson correlation coefficient between PHQ9 scores and urea and creatinine serume levels at the beginning and the end of the week. (R 0.998, $p<0.05$).

Conclusion: The use of self-administered rate scales such as PHQ-9 is as feasible screening tool to identify patients which have higher risk for depression developement, but may lead to misdiagnosis due to overlapping symptoms of depression and uraemia. There is a significant difference between depression scores at the beginning and the end of the dialysis week. Patients had less depressive symptoms at the end of the dialysis week which correlates positively with lower urea and creatinine serum levels. Maintaining lower urea and creatinine serum levels and using PHQ-9 score for recognising risky patients for depression developement can contribute to better quality of life in dialysis patients.

Keywords: hemodialysis, depression, PHQ-9 questionnaire

FIBRILARY GLOMERULONEPHRITIS: A NEWLY RECOGNIZED GLOMERULAR DISEASE

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Introduction: Fibrillary glomerulonephritis (FGN) is a primary glomerular disease characterized by the deposition of randomly arranged polyclonal immune deposits in the glomerular matrix. FGN could be associated with malignancy, autoimmune disorders, monoclonal gammopathies, and hepatitis C virus infection. It is a progressive disease with the development of kidney failure within a few years.

Case: we present a 56-year-old hypertensive patient with a nephrotic range of proteinuria (3.04 g/24 hours) and chronic kidney disease (serum level of creatinine 391 μmol/L). Underlying malignancy, dysproteinemia, autoimmune diseases, and hepatitis were excluded. The electron microscopy analysis of the kidney biopsy specimen revealed the diagnosis of FGN. There is no consensus on the treatment of FGN. The patient was treated with angiotensin-converting enzyme inhibitors with a reduction of the 24-hour proteinuria, but with the persistence of the chronic kidney disease.

Conclusion: There is currently no approved therapy to treat FGN with an unknown cause. The prognosis is poor, although remission may occur in a minority of patients without immunosuppressive therapy.

Keywords: nephrotic syndrome, renal insufficiency, angiotensin-converting enzyme inhibitors

PERITONEAL DIALYSIS AFTER KIDNEY TRANSPLANT FAILURE: A SINGLE-CENTER EXPERIENCE

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Introduction: Although no difference between peritoneal dialysis (PD) and haemodialysis (HD) in terms of patients and technique survival had been shown, there is a hesitation in returning PD after kidney transplant failure.

Methods: We conducted a retrospective study about 19 patients who started PD after kidney transplant failure (PDpostTx group) between January 2010 and August 2022 in Ankara University School of Medicine who were compared with 17 matched never-transplanted patients having started PD during the same period (PDnoTx group). Patients and PD technique survival as well as peritonitis episodes were analysed.

Results: Mean age was 45 years and continuous ambulatory peritoneal dialysis was the treatment of choice (77.8%) (Table 1). Mean duration of transplantation was 117±87 months for PDpostTx group. Peritonitis was more common in PDpostTx group compared with PDnoTx group (42.1% vs 5.9%, p=0.005). The reduction of diuresis was significant in PDpostTx group (p<0.001). The mean time on PD was shorter for patients in the PDpostTx group (45 months) compared with the PDnoTx group (56 months), which was not statistically significant (p=0.506).

Conclusions: PD is a worthy dialysis alternative after a failed kidney transplant, providing similar outcomes, but a higher peritonitis risk, when compared to patients who started PD for other reasons.

Keywords: kidney transplantation; peritoneal dialysis, transplant failure

Table 1. Demographic and Clinical Data of Peritoneal Dialysis Patients, According to Transplantation Status

Parameters	PDpostTx (n=19, 52.8%)	PDnoTx (n=17, 47.2%)	P-Value	Total (n=36, 100.0%)
Gender, n (%)			0.923	
Female	7 (36.8) *	6 (35.3)		19 (52.8)
Male	12 (63.2) *	11 (64.7)		17 (47.2)
Age (Years) (Mean±SD)	43.2±12.6	47.0±12.8	0.364	45.0±12.6 (20-69)
ESRD Etiology, n (%)			0.339	
Hypertension	5 (26.3)	7 (41.2)		12 (33.3)
Glomerulonephritis	4 (21.1)	3 (17.6)		7 (19.4)
Unknown	4 (21.1)	1 (5.9)		5 (13.9)
Diabetes Mellitus	1 (5.3)	3 (17.6)		4 (11.1)
VUR+ON+PN	4 (21.1)	0 (0.0)		4 (11.1)
Other	1 (5.3)	3 (17.6)		4 (11.1)
Comorbidities, n (%)			934	
Hypertension	15 (78.9)	13 (76.5)		28 (77.8)
Diabetes Mellitus	2 (10.5)	3 (17.6)		5 (13.9)
Cardiovascular Diseases	1 (5.3)	0 (0.0		1 (2.8)
PD modality, n (%)			1.000	
CAPD	15 (78.9)	13 (76.5)		28 (77.8)
APD	4 (21.1)	4 (23.5)		8 (22.2)
Duration PD (Months) (Mean±SD)	45.4±45.6 24.0	55.9±48.8 4.5	0.506	50.4±46.7 (5-182)
Complications, n (%)			**0.005**	
None	9 (47.4)	14 (82.4)		23 (63.9)
Peritonitis	8 (42.1)	1 (5.9)		9 (25.0)
Exit-site/ Tunnel infection	1 (5.3)	1 (5.9)		2 (5.6)
Catheter malfunction	1 (5.3)	1 (5.9)		2 (5.6)
Residual renal function, n (%)	4 (21.1)	15 (88.2)	**<0.001**	19 (52.8)
Kidney Transplantation Characteristics				
Age at Transplant (Years) (Mean±SD)	27.6±9.8 (12-45)			
Transplant Type, n (%)				
Living	15 (78.9)			
Deceased	4 (21.1)			
Duration Tx (Months) (Mean±SD)	117.4±87.2 (13-297)			
Retransplantation, n (%)	4 (21.1)			

APD, automated peritoneal dialysis; CAPD, continuous ambulatory peritoneal dialysis; ESRD, end Stage Renal Disease; HD, hemodialysis; ON, obstructive nephropaty; PD, peritoneal dialysis; PN, pyelonephritis; SD, standard deviation; Tx, transplantation; VUR, vesicoureteral reflux.

THE RELATIONSHIP BETWEEN SEVERITY OF INTERSTITIAL FIBROSIS DETECTED IN PRIMARY GLOMERULOPATHY AND PROGRESSION OF DISEASE

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Introduction: In patients with glomerulopathy, it may be useful to assess tubule and interstitium damage with detailed and standardized scoring. The aim of this study is to investigate the relationship between the degree of interstitial fibrosis at the time of biopsy and the parameters of disease activity in primary glomerulonephritis and to determine whether it is useful in determining the outcome of the disease.

Methods: The study was planned as a retrospective, cross-sectional, and single-center. Patients diagnosed with primary glomerulonephritis in the Department of Nephrology between January 2014 and December 2021 were included. Patient sex, age at the time of biopsy, concomitant diseases (diabetes mellitus, hypertension, atherosclerotic heart disease), laboratory results at the time of diagnosis, renal biopsy findings, whether they had received immunosuppressive therapy or renin-angiotensin system blocker therapy, and renal survival were recorded. Patients were divided into four groups according to the degree of interstitial fibrosis detected in diagnostic kidney biopsies (I: absent, II: mild, III: moderate, IV: severe). Percent changes during the follow-up period of the study were calculated based on the patients' first and last control values.

Results: A total of 176 adult patients were included in the study. 64.2% of them were male and 35.8% were female. The median age at the time of biopsy was 48.5 (37-57.75) years, and the median follow-up time was 27.63 (10.40-45.47) months. Membranous nephropathy was found in 18% of patients, focal segmental glomerulosclerosis + minimal change disease in 42%, and immunoglobulin A nephropathy in 39%. Significant differences between groups were noted in the estimated glomerular filtration rate, serum albumin, creatinine, and hemoglobin levels. Also, differences in the percentage of estimated glomerular filtration rate, serum creatinine, and 24-hour proteinuria were significant among the groups. Proteinuria and serum creatinine levels increased with the increasing severity of fibrosis. The Kaplan-Meier curve showed that patients in the high interstitial fibrosis group had a higher risk of disease progression. In multivariate Cox models, the severity of interstitial fibrosis was associated with the risk of disease progression.

Conclusion: In this study, in 4 primary glomerulopathies, the severity of interstitial fibrosis was found to correlate with chronicity and worsening of basal renal function. In addition, the severity of interstitial fibrosis was found to be an independent risk factor for disease progression in primary glomerulopathy.

Keywords: glomerulonephritis, interstitial fibrosis, kidney biopsy

Figure: Description of the Figure: Diagnoses, Comorbidities, Follow-up Periods, Biopsy Findings of the Patients and Distribution of Patients by IF Group

Parameters	All Cases	Group 1 (n:42) (IF%0-4)	Group 2 (n:91) (IF%5-25)	Group 3 (n:35) (IF%26-50)	Group4 (n:8) (IF>%51)	P
HT (n) (%)	104 (%59,09)	21 (%50)	50 (%54,94)	26 (%74,28)	7 (%87,5)	0,04
DM (n) (%)	33 (%18,75)	7 (%16,66)	20 (%21,97)	5 (%14,28)	1 (%12,5)	0,71
ASHD (n) (%)	12 (%6,8)	2 (%4,76)	6 (%6,59)	3 (%8,57)	1 (%12,5)	0,82
Biopsy Diagnosis (n) (%)						
FSGS+MCD	74 (%42,04)	19	42	11	2	0,03
IgA Nephropathy	70 (%39,77)	10	35	20	5	
Membranous Nephropathy	32 (%18,18)	13	14	4	1	
Tubular Atrophy (n)						
Mild (%0-25)	129	40	88	1	-	<0,001
Moderate (%26-50)	39	2	3	34	-	
Severe (>%51)	8	-	-	-	8	
Glomerulosclerosis (%)						
Global	20 (9,31-35,38)	7,69 (3,12-17,42)	18,33 (10-29,28)	50 (29,16-61,53)	61,60 (52,08-76,19)	<0,001
Segmental	16,66 (6,25-30,76)	6,06 (0-13,50)	15,47 (6,11-25,75)	27,27 (18,18-40)	16,02 (13,57-36,96)	
Follow-up Time (month)	27,63 (10,40-45,47)	29,76 (8,5-51,27)	30,31 (11,67-46,48)	26,33 (10,11-41,33)	8,96 (2,07-24,12)	0,10

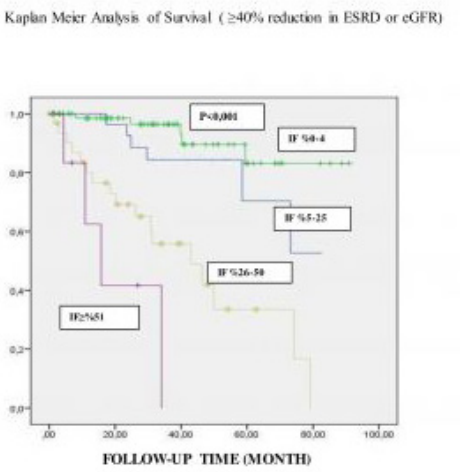
FSGS: Focal segmental glomerulosclerosis, MCD: Minimal change disease, HT: Hypertension, DM: Diabetes Mellitus ASHD: Atherosclerotic heart disease

Figure: Multivariate Cox Regression Analysis to Evaluate the Effect of Increase in IF on Endpoints

	Model 1 (unrevised)			Model 2 +Global Glomerulosclerosis			Model 3+All Factors*		
	Beta	HR (%95 CI)	P	Beta	HR (%95 CI)	P	Beta	HR (%95 CI)	P
40% reduction in eGFR or ESRD	1,14	3,15 (1,99-4,97)	<0,001	1,03	2,81 (1,66-4,76)	<0,001	1,02	2,79 (1,71-4,53)	<0,001
Complete Remission	-0,75	0,47 (0,24-0,89)	0,03	-0,25	0,77 (0,34-1,77)	0,55	-0,55	0,57 (0,23-1,44)	0,23

*All Factors: Age, Basal eGFR, 24-hour proteinuria, Global glomerulosclerosis, RAS blocker therapy, Immunosuppressive therapy

Figure: Probability of a Primary Outcome (Kaplan Meier Analysis of Survival)



Tables 1: Demographic and Laboratory Data at the Time of Biopsy and Distribution of the Patients by IF Groups

Parameters	All Cases n:176	Group 1 (n:42) (IF%0-4)	Group 2 (n:91) (IF%5-25)	Group 3 (n:35) (IF%26-50)	Group 4 (n:8) (IF>%51)	P
Age(year)	48,50 (37-57,75)	50 (34,5-57,0)	49 (38-57)	49 (40-58)	41 (28,5-55)	0,63
Gender (M/F)	113 (%64,2) / 63 (%35,8)	27/15	58/33	24/11	4/4	0,8
eGFR (ml/dk)	68,50 (40,25-96,75)	93 (75,50-109,25)	72 (52-97,0)	34 (26-50)	19 (10,25-30,25)	<0,001
Albumin (mg/dL)	3,7 (2,9-4,11)	2,86 (2,03-3,90)	3,88 (3,23-4,16)	3,76 (3,40-4,0)	3,65 (3,24-4,07)	0,02
Fasting Blood Glucose (mg/dl)	93,51 (86-104)	98,50 (89,0-118,5)	94 (86-103,0)	90 (81-98)	91 (87,75-125,25)	0,17
Total Cholesterol (mg/dL)	233 (190-284,5)	263 (184,5-343,75)	233 (190,25-294,5)	216 (191-237)	221 (136-283)	0,06
Hemoglobin (g/dl)	13,75 (12,30-15,08)	14,0 (12,7-15,4)	14 (12,75-15,10)	12,6 (10,90-14,10)	12,75 (8,92-14,10)	0,003
C-reactive protein (mg/L)	3,85 (2,33-7,66)	3,7 (2,37-6,64)	3,70 (2,51-6,91)	5,83 (3,07-9,89)	2,26 (1,02-12,99)	0,32
Creatinine (mg/dL)	1,24 (0,86-1,78)	0,92 (0,74-1,21)	1,19 (0,86-1,40)	1,93 (1,59-2,64)	4,02 (2,27-5,68)	<0,001
Proteinuria (mg/day)	3320 (1789-5885)	5265 (2440-8038)	2986 (1634-4972)	3275 (1800-5420)	3560 (2201-6997)	0,06
Basal Interstitial Fibrosis (%)	34,36±18,00	3,25±0,5	19,79±4,99	42,58±8,55	65,71±7,86	<0,001

Table 2: Percentage of Changes in Renal Function Tests Based on the Initial and Final Control Values of the Patients and their Distribution by IF Groups

Percentage of Changes	Total	IF Group 1	IF Group 2	IF Group 3	IF Group 4	P
eGFR (ml/min)	-0,05 (-0,2/0,08)	-0,02 (-0,19/0,07)	-0,008 (-0,11/0,12)	-0,24 (-0,43/-0,03)	0,1599 (-,02/1,90)	0,002
Proteinuria (mg/day)	-0,50 (-0,83/-0,10)	-0,67 (-,0,92/-0,27)	-0,62 (-0,84/-0,15)	-0,23 (-0,49/0,07)	1,04 (-,4114/1,04)	0,025
Creatinine (mg/dL)	0,05 (-0,09/0,26)	0,03 (-0,08/0,24)	0,024 (-0,12/0,13)	0,26 (-0,03/0,6)	0,15 (-,02/1,90)	0,002

LATE-ONSET PULMONARY VASCULITIS IN A CASE OF RENAL TRANSPLANT PATIENT

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Introduction: Vasculitis, an immune reactive inflammation in vessel walls, often presents as serious and sometimes fatal diseases that require prompt diagnosis and therapy. Small vessel vasculitis (SVV) affects the kidney and can progress to end-stage renal disease (ESRD) in approximately 20% to 40% of cases. Of these ESRD patients, around 30% have received a renal transplant in the last 2 decades. Patients with renal transplant have often undergone cytotoxic treatments for their disease and generally have longer exposure to immunosuppressive medications, which may increase their risk of cancer and infection.

Case: A 37 year-old female patient was admitted due to cough. She was diagnosed with chronic kidney disease with unknown etiology in 2004. Renal transplantation was made from her mother in 2008. Due to graft failure, she has been followed up by peritoneal dialysis since april 2021. A mass lesion was detected in the lung x-ray at the patient's nephrology polyclinic control. Considering malignancy in the foreground, the patient was hospitalized for further examination and treatment. A chest CT revealed multiple metastatic mass lesions in the lung parenchyma, with multiple pleural and parenchymal localizations. PET CT scans showed Increased F-18 FDG uptake is observed in multiple parenchymal/subpleural nodules in both lungs (SUVmax: 11.98). We performed all examinations with imaging findings of possible cancer, and no malignancy was found. Finally, a biopsy was taken from the lesions. Histologic evidence of the suppurative exudate, fibrin deposition, multinuclear giant cells were observed in the interstitial area and in some areas in the alveoli. A focus consistent with the suspicion of vasculitis and coagulative necrosis adjacent to this area was observed. Laboratory data showed negative results for MPO/PR3 ANCA. We started methylprednisolone at 1 mg/kg/day.

Conclusion: This is a rare case characterized by a late appearance of vasculitis, which occurred after more than twelve years after the onset of renal failure. In this case, we think that the immunosuppressive treatment that the patient received during the transplant suppressed the vasculitis, and the disease was activated with the discontinuation of the treatment.

Keywords: vasculitis

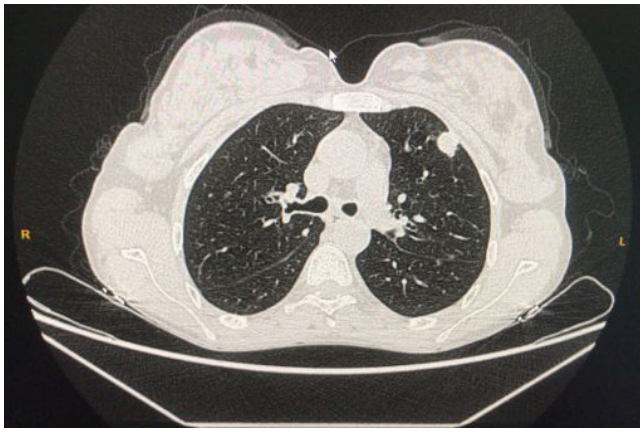
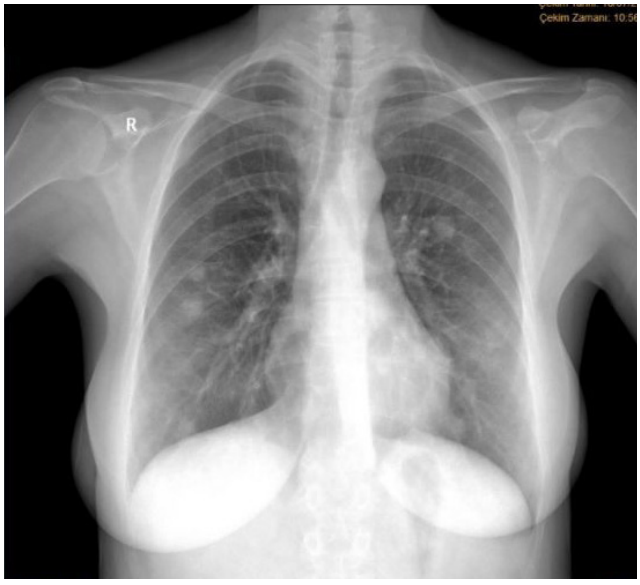


Figure: Multiple metastatic mass lesions were observed in the lung parenchyma, with multiple pleural and parenchymal localizations, the largest being 20x16 mm in mediastinal base at the lingular level on the left and 13 mm in the upper lobe posterior on the right



A mass lesion in the lung x-ray

PP-61 Other

COMPARISON BETWEEN PANDEMIC "WAVES" PARAMETERS IN CRITICALLY ILL PATIENTS WITH SARS-COV-2 INFECTION TREATED BY CRRT

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Introduction: Critically ill patients with multi organ failure in AKI with the SARS-CoV-2 infection demand treatment with some of the renal replacement therapy (RRT) modalities. Considering that the pandemic comes in waves, the aim of the study is to compare the clinical and laboratory parameters before and after continous RRT (CRRT) between the first and second and third wave.

Methods: The study included 101 patients admitted for SARS-CoV-2 infection treated with CRRT at the Clinic for Infectious Diseases at the Clinical Center of Vojvodina, in Novi Sad from March 6, 2020 to june 20, 2021. We analyzed laboratory, clinical characteristiscs and treatments using methods of descriptive and inferential statistics.

Results: From the total sample (101), the predominant part were men, in the first wave 21 (72.4%) and in the second and third wave there were 62 (86.1%). The mean age of the patients was 64.7±9.71 without difference between the groups. The most common comorbidities were hypertension 76 (75.2%) and previous kidney diseases 67 (66.3%). Aside from obesity all of the studied comorbidities were more present in the first wave. 96.6% of patients in the first wave and 90.3% of patients in the second and third wave were on mehcanical ventilation and vasopressor therapy. In the second and third wave there were almost 50% of anuric patients, and only about a third of all patients started CRRT within 7 days of hospitalization. The average CRRT dose was similar, while the average bolus dose of unfractioned heparin (UFH) was bigger in the first wave than in the second and third wave. The majority of the patients 27 (93.1%) that were from the first wave demanded initial admission into the Intensive/Semi-intensive care unit, although the average length of time in the hospital was similar (Table 1). The values of activated partial thromboplastin time, prothrombin time and potassium were significantly higher after CRRT in both groups compared on urea, creatinine, fibrinogen whose values were significantly lower. In the group of the first wave, platelets, C-reactive protein and magnesium were significantly lower after CRRT, while in the group of patients of the second and third waves, hemoglobin values were significantly lower (Table 2).

Conclusion: The analysis of pandemic waves characteristics enabled us to view the percentage of anuric patients before CRRT from which only a third began treatment procedures within 7 days of admission. That leaves us te potential of continuing the research of optimal time for beginning CRRT, as well as the potential of bolus dose of UFH correction in regards to intensifying the thromboprofilactic dose in the second and third wave of the pandemic. Comparing waves, high complexity in clinical and laboratory results in critically ill multi organ failure patients is confirmed, in regards to the dynamics of treatment strategies and the start of vaccination during the second wave of the pandemic.

Keywords: SARS-CoV-2 infection, continous renal replacement therapy, acute kidney injury, critical ill patients

Table 1. Comparison demographic and clinical parameters between patients before and after CRRT

	All patients (n=101)	First wave (n=29)	Second and third waves (n=72)
Men	83 (82.2%)	21 (72.4%)	62 (86.1%)
Mean age, SD	64.7±9.71	65.1±9.90	64.5±9.69
Comorbidities			
Hypertension	76 (75.2%)	26 (89.7%)	50 (69.4%)
DM	26 (25.7%)	8 (27.6%)	18 (25.0%)
CD	20 (19.8%)	8 (27.6%)	12 (16.7%)
COPD	9 (8.9%)	7 (24.1%)	2 (2.8%)
Obesity	24 (23.8%)	3 (10.3%)	21 (29.2%)
PRD	67 (66.3%)	22 (75.9%)	45 (62.5%)
VT and MV support	93 (92.1%)	28 (96.6%)	65 (90.3%)
Anuria before CRRT	42 (41.6%)	8 (27.6%)	34 (47.2%)
Start of CRRT ≤ 7 (days) from admission	33 (32.7%)	9 (31%)	24 (33.3%)
Dose of CRRT, Mean, SD	30.89±6.42	31.72±4.28	30.56±7.10
Bolus dose of UFH (IU), Mean, SD	3,897.03±923.52	4,337.93±1,172.42	3,719.44±740.12
Initial admission PICU/SICU	66 (66.0%)	27 (93.1%)	39 (54.9%)
Lenth of hospitalization (days), Mean, SD	17.03±12.44	16.59±10.25	17.21±13.29

Legend: CRRT-continuous renal replacement therapy; MV-mechanical ventilation; VT-Vasopressors thrrapy; ICU-intensive care unit; SICU-Semi-intensive care unit; UFH-unfractionated heparin;

Table 2. Comparison laboratory values between patients before and after CRRT

	All patients (n=101)			First wave (n=29)			Second and third waves (n=72)		
Variables	Before CRRT (IQR)	After CRRT (IQR)	p	Before CRRT (IQR)	After CRRT (IQR)	p	Before CRRT (IQR)	After CRRT (IQR)	p
Leukocytes (10^9mm^3/l)	14.8 (9.4-21.7)	15.4 (10.3-22.7)	0.465[b]	16 (8.32-22.5)	15.4 (8.8-20.6)	0.888[b]	14.5 (9.5-21)	15.4 (11-22.9)	0.431[b]
Hemoglobin (g/L)	105 (88.5-118.5)	100 (86.5-111.0)	**0.001**[c]	93 (78.5-109.0)	89 (79-105.5)	0.243[c]	108 (95-121.7)	103 (90.2-111)	**0.001**[c]
Platelets (10^9mm^3/l)	198 (126-245.5)	159 (110.5-223)	**0.008**[c]	183 (135.5-257.5)	140 (81.5-193.5)	**0.002**[c]	200 (122.7-244.5)	163 (115.2-231.7)	0.203[c]
CRP (mg/l)	143.8 (61.2-240.8)	104 (39.5-221)	**0.031**[c]	241.1 (152.2-309.5)	166 (95.6-248.5)	**0.008**[c]	97 (40.5-182.7)	71.8 (30.9-183.2)	0.389[c]
PCT (ng/l)	2.5 (0.6-7.2)	1.93 (0.6-4.6)	**0.023**[c]	4.3 (2.3-11.7)	4.03 (1.48-6.00)	0.100[c]	1.55 (0.4-5.7)	1.33 (0.5-4.2)	0.163[c]
Urea (mmol)	26.9 (19.6-36.5)	18.4 (13.2-25.1)	**<0.001**[c]	32.2 (21.3-40.5)	19.2 (13.3-25.6)	**<0.001**[c]	24.6 (19.2-32)	18 (13.2-24.9)	**<0.001**[c]
Creatinine (umol)	312 (208-437.5)	233 (163.5-303)	**<0.001**[c]	400 (249-486)	223 (172.5-284.5)	**<0.001**[c]	302 (189.7-396.7)	236.5 (133.2-307.7)	**<0.001**[c]
Potassium (mmol)	4.8 (4.05-5.8)	5.4 (4.6-6)	**<0.001**[b]	4.7 (3.8-5.4)	5.6 (4.6-6.1)	**0.004**[b]	4.9 (4.1-5.8)	5.2 (4.5-6)	**0.003**[b]
Sodium (mmol/l)	141 (138-147)	140 (138-142.5)	**0.002**[c]	141 (135.5-147)	139 (137.5-141)	0.478[c]	141.5 (138.2-147)	140 (138-143)	**0.001**[c]
Chlorine (mmol)	106 (101.5-110)	105 (101-108)	0.074[c]	106 (99.5-109.5)	104 (101-105.5)	0.089[c]	105.5 (102.2-110)	106 (102-108)	0.335[c]
Magnesium (mmol)	0.88 (0.79-0.94)	0.86 (0.79-0.90)	0.191[c]	0.90 (0.81-1.06)	0.86 (0.79-0.90)	**0.041**[c]	0.84 (0.79-0.92)	0.86 (0.77-0.90)	0.800[c]
APTT (R)	1.07 (0.92-1.30)	1.79 (1.38-3.38)	**<0.001**[b]	1.13 (1.05-1.36)	2.97 (1.70-4.54)	**<0.001**[b]	1 (0.86-1.30)	1.60 (1.28-2.66)	**<0.001**[b]
PT (R)	1.12 (1.02-1.18)	1.18 (1.06-1.31)	**<0.001**[b]	1.13 (1.03-1.23)	1.22 (1.08-1.43)	**0.010**[b]	1.12 (1.02-1.17)	1.16 (1.06-1.28)	**0.008**[b]
Fibrinogen (g/L)	5.04 (3.75-6.25)	3.90 (2.80-5.00)	**<0.001**[c]	4.80 (3.68-5.90)	3.90 (2.50-4.65)	**<0.001**[c]	5.20 (3.82-6.52)	3.85 (2.90-5.25)	**<0.001**[c]
D-dimer (mg/L)	2,145 (1,239.5-4,727)	3,336 (1,345.5-6,311.5)	0.162[b]	1,951 (1,234-5,003)	2,367 (1,490-6,544.5)	0.145[b]	2,183 (1,247.2-4,686)	3,356.5 (1,275.7-6,128)	0.342[b]

Legend: CRRT-continuous renal replacement therapy; aPTT-activated partial thromboplastin time; PT-Prothrombin time; R-Ratio; CRP-C-reactive protein; PCT-procalcitonin; DM-diabetes mellitus; CD-Coronary diseases; COPD-Chronic obstructive pulmonary disease; PRD-Previos renal disease; b-based on negative ranks; c-based on positive ranks

LAPAROSCOPIC CHOLECYSTECTOMY IN A PATIENT WITH END STAGE RENAL DISEASE UNDERGOING CONTINUOUS PERITONEAL DIALYSIS

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Introduction: Peritoneal dialysis (PD) is a treatment of choice in end stage renal disease (ESRD) patients, especially those with vascular access problems. However, occasionally, these patients' condition may be complicated by cholecystopathy, including either cholelithiasis and/ or cholecystitis. Importantly, surgical interventions for a disease that disturb the integrity of abdominal cavity boundaries can disrupt the regular PD schedule.

Case: We present a case of a 19-year-old white female, presented at our Nephrology Clinic with dyspepsia, vomiting, and intermittent right upper quadrant abdominal pain for already a couple of weeks. She was with ESRD on maintenance peritoneal dialysis program since 2017. The history of a recurrent right upper quadrant abdominal pain with the laboratory data at the hospital admission, suggested that a gastroenterohepatologist should be contacted for ultrasonography examination of the abdomen. The evidence of a gall-bladder mass, indicated the need for cholecystectomy. Abdominal surgeon was contacted, and cholecystectomy was scheduled. The patient underwent laparoscopic cholecystectomy. The peritoneal catheter was still placed in the peritoneal cavity regardless of the surgical procedure. No complications during surgery were reported. Post - operative course was also uneventful.

Conclusions: Recent reports suggest that it is possible to successfully and safely perform laparoscopic procedures in patients on PD without removing the PD catheter and with a relatively short period of HD in the interim period before resuming PD.

Keywords: laparoscopic cholecystectomy, peritoneal dialysis, PD catheter

THE IMPACT OF VACCINES ON THE OUTCOME OF SARS COV- 2 INFECTION IN PATINTES WITH A TRANSPLANTED KIDNEY

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Introduction: Patients with a transplanted kidney belongs into high-risk population for infection with SARS CoV -2 and the development of severe COVID 19. Due to immunosuppressive therapy, the response to vaccination is also uncertain. The aim is to investigate how vaccination status affects the outcome of SARS CoV -2 in patients with kidney transplant.

Methods: We included 65 patients with a transplanted kidney and positive RT- PCR nasofharyngeal swab for SARS CoV- 2 . Administration of two doses of approved vaccines is taken as a definition of completed vaccination status. Data for home treatment and hospitalization were analysed. The severity of the clinical presentation is determined by oxygen saturation and the need for oxygen therapy. The outcome has been recorded as cured or deceased. Standard descriptive statistics are used to display the residues.

Results: Out of 65 patients , 36 were vaccinated (group 1) and 29 unvaccinated (group 2). Hospital treatment was required in 75% and oxygen support in 48% of the patients. When comparing groups 1 and 2, no significant difference was found in the number of patients who needed hospitalisation (25 vs. 24, p= 0.0058) or oxygen support (15 vs. 16, p= 0.0061). The number of deceased patients was significantly lower in vaccinated patients (group 1) than in unvaccinated patients (group 2) (4 vs. 10, p< 0,05).

Conclusion: Vaccines do not change the course of infection with SARS KOV 2, as well as the severity of the clinical presentation, but significantly reduce mortal outcomes in patients with a transplanted kidney.

Keywords: kidney transplant, SARS CoV- 2 vaccine, outcome

A CASE OF CAPD DEVELOPING MASSIVE HYDROTHORAX

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Introduction: Massive hydrothorax is a rare but severe complication in patients with peritoneal dialysis (PD). It usually develops as secondary to a pleuroperitoneal defect, and it is recommended to interrupt PD. However, the patient should also be evaluated for pleurodesis, surgical diaphragmatic repair, or transition to haemodialysis. We reported a case in which a patient with massive hydrothorax underwent continuous ambulatory peritoneal dialysis (CAPD). We decided to go on with automated peritoneal dialysis (APD) in the semi-recumbent position.

Methods: A 36-year-old female patient with end stage renal disease secondary to hypertension was admitted to the emergency department with sudden onset and increasing dyspnea. From the patient's history, we knew that she had been doing PD for 6 months and had urine output, but ultrafiltration had begun to decrease gradually in recent days. In the physical examination, the patient was tachypneic, and respiratory sounds could not be heard in the right hemithorax. The chest X-ray of the patient showed massive effusion in the right lung. (Figure 1) The pleural fluid of the patient who underwent excretory and therapeutic thoracentesis was compatible with transudate in terms of Light's criteria. Glucose value was 560 mg/dL and concurrent serum glucose was 130 mg/dL. In the scintigraphy performed with Tc99m-DTPA, an appearance consistent with a peritoneal-pleural shunt was identified in the right pleural cavity. The PD treatment of the patient who did not accept surgical repair was changed to APD in the semi-recumbent position. It was observed that pleural effusion did not recur in the follow-ups. (Figure 2)

Conclusion: Peritoneal-pleural leak should always be considered in the differential diagnosis of pleural effusion in patients with peritoneal dialysis . In cases where surgery or pleurodesis cannot be performed after the diagnosis is confirmed and with patients who want to continue with peritoneal dialysis, APD in the semi-recumbent position should be considered among the treatment options.

Keywords: CAPD, peritoneal-pleural leak, APD

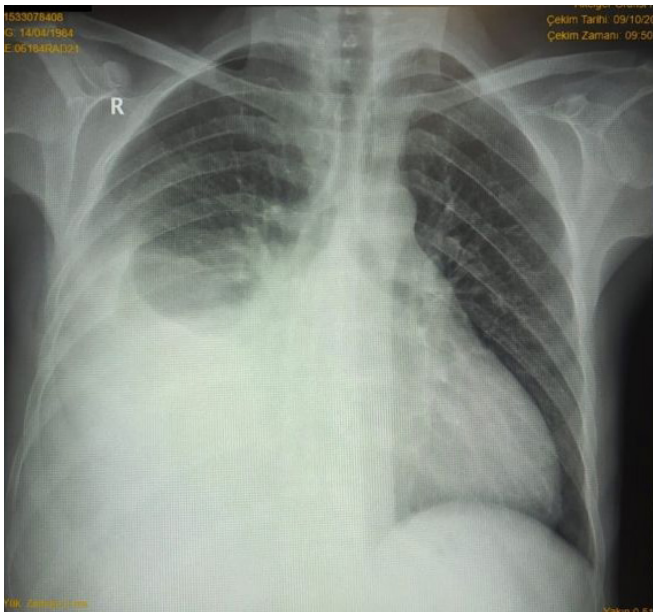

Figure: 1

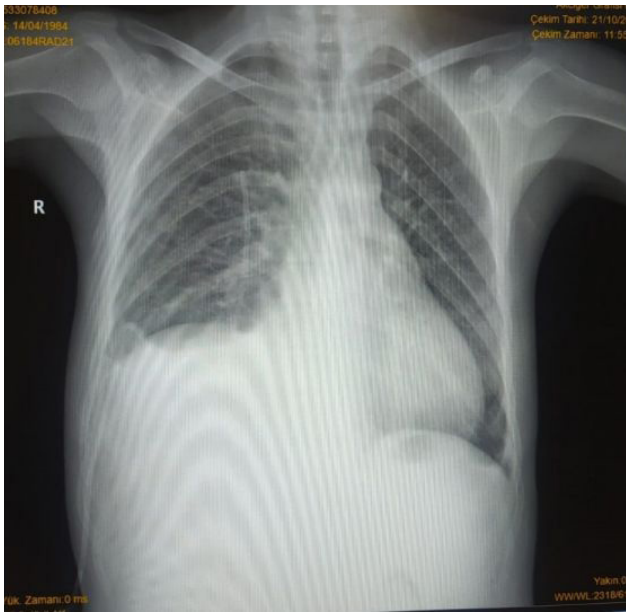

Figure: 2

CASE OF SJOGREN PRESENTED WITH ACUTE KIDNEY INJURY

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Introduction: Primary Sjogren's syndrome (PSS) is a systemic autoimmune disease that mainly affects the exocrine glands. Kidney involvement is rare in PSS and is estimated to affect less than 10% of patients. The most common form of nephropathy is tubulointerstitial nephritis (TIN), in which the kidney is infiltrated by plasma cells and resembles lymphoplasmacytic infiltration of the salivary glands. A case presented with acute kidney injury (AKI) and diagnosed with PSS is reported.

Case: A 66-year-old female patient with no disease other than hypothyroidism presented with widespread back pain, nausea, and loss of appetite. Physical examination was normal. In the laboratory , urea was 94 mg/dl, creatinine was 4.45 mg/dl eGFR was 10 ml/min/1.73 m2, na was 143 mE/L k-4.9 mE/L, spot urine protein was seen, creatinine rate was 2.7 mg/g. In her thorough urine examination, erythrocyte was 6 leukocyte was 24 protein was +2. pH/hoc3-7.32 hco3-19 mmol/L pco2-38 mmHg was seen in her blood gas. No pathology was seen in renal imaging. Autoimmune markers were negative. Renal biopsy for the aetiology of AKI was reported as tubulointerstitial nephritis and weak amyloid staining with Congo red. The patient, whose aetiology was not found to cause TIN and amyloid in the history, was examined in terms of possible malignancy, chronic inflammatory diseases, and collagen tissue diseases. Salivary gland biopsy and ENA panel were consistent with Sjogren's syndrome. The patient, who was thought to have Sjogren's syndrome with renal involvement, started to use 32 mg Prednol, Mycophenolate Mofetil 2x500 mg, and Plaquenil 1x1 after 3 days of pulse steroid by rheumatology clinic. During follow-ups, creatinine returned to normal.

Conclusion: TIN is a clinically silent pathology that may go unnoticed in patients with primary SS. Studies have shown that interstitial nephritis in primary SS occurs in the early course of the disease and is effective in the prognosis of the disease. While investigating the aetiology of AKI, we wanted to emphasize that collagen tissue diseases may also present with renal involvement.

Keywords: Primary Sjogren's syndrome, tubulointerstitial nephritis

A RARE CAUSE OF ACUTE TUBULAR NECROSIS; DROWNING

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Introduction: Acute kidney injury (AKI) associated with near-drowning is rare and its incidence among survivors is unknown. While widespread organ damage due to hypoxia is expected in the near-drowning, there are a limited number of cases with isolated kidney damage in the literature. We present a case of AKI with isolated renal damage secondary to drowning, in which we detected acute tubular necrosis (ATN) in renal biopsy.

Case: A 42-year-old male patient with no known systemic disease was referred to our centre due to the near-drowning and a progressive increase in creatinine after a 1-day follow-up in the external centre intensive care unit. From the patient's history, we know that he was underwater for 10 minutes, but he did not need intubation. It was observed that creatinine at admission was -1.18 mg/dl and increased up to 4.21 mg/dl. The patient's general condition was good, vitals were stable, and 02-free spo2 was >90 in the intensive care and service follow-ups. During the auscultation, there were rales in the lower zones of the lung upon listening. The thorax tomography was consistent with aspiration. During the follow-ups of the patient, urea and creatinine increased up to 143 mg/dl and 9.16 mg/dl, respectively. +3 haemoglobin, +1 protein, spot urine protein and creatinine ratio of 1 mg/g were detected in urine. He needed multiple intermittent hemodialyses. Urinary USG and renal doppler were normal. A renal biopsy was performed with severe acute tubular necrosis. Creatinine decreased to 1.67 mg/dl with hydration. He was discharged with outpatient service.

Conclusion: It is not known why kidney damage predominates in the absence of other organ damage after suffocation. The proposed possible mechanism is the fluctuation in the renin-angiotensin-aldosterone system that develops after diving. We wanted to emphasize that isolated acute kidney injury that is severe enough to require dialysis can be seen in patients who present with near-drowning or diving.

Keywords: acute kidney injury, acute tubular necrosis, drowning

KIDNEY OUTCOMES, SURVIVAL AND MORTALITY IN HOSPITALIZED COVID-19 PATIENTS WITH ACUTE KIDNEY INJURY

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Introduction: The incidence of the Acute Kidney Injury(AKI) in COVID-19 patients is much higher than in any other infectious disease. AKI is recognized as a negative prognostic factor, cause of poor outcome and high mortality, especially in those who require hospitalization. The aim of our study was to estimate the incidence of AKI in COVID-19 hospitalized patients on the admission day, RRT requirements, AKI recovery, predictive factors of mortality and impact of AKI on survival.

Methods: We conducted a retrospective cohort study in COVID-19 patients, hospitalized in our nephrology hospital, during the first pandemic wave. We analyzed patients' medical history, comorbidities, demographics, admission and peak laboratory results, X-ray and clinical findings on the day of hospitalization. AKI was defined using KDIGO criteria and the history of CKD was validated by historical estimated glomerular filtration rate(eGFR). Outcome data were recorded, including need for RRT and inpatient mortality and/or at 30 days. Recovery from AKI was defined as the absence of any stage AKI in the last recorded creatinine during hospitalization (i.e., serum creatinine < 1.5 times the baseline creatinine), in the absence of RRT. Kaplan-Meier curve and Cox regression were used to analyse survival and mortality.

Results: 62(53,8%) from total 115 patients included, fulfilled criteria for AKI. 21(33,9%) of them were defined as stage 1, 7(11,3%) stage 2 and 34(54,8%) stage 3. RRT was required in 26 patients (22.6% of total, 41.9% of all AKI). Of those discharged alive, AKI had resolved in 76 % of them and 24% still needed RRT following hospital discharge. A total of 46.1% of the whole study population died in hospital. Mortality rates were significantly higher among patients who developed AKI than the ones who did not (59.6% vs 30.2%, $p < 0.003$). In the univariate model increased mortality was associated with age, gender, AKI, heart and neurological diseases, oxygen saturation, eGFR, albumen serum levels and neutrophil/lymphocyte ratio. The multiple Cox regression analysis for 30-day mortality demonstrated that older age and male gender were independently associated with risk of death(OR 1,059; 95%CI: 1.025–1.053, $p = 0.001$; OR 2.21; 95%CI: 1.207–4.056, $p < 0.001$, respectively). The low oxygen blood saturation at admission and albumin were also powerful predictors of mortality(OR 0.937; 95%CI: 0.917 – 0.958, $p = 0.000$; OR 0.987; 95%CI: 0.885–0.991, $p < 0.024$, respectively). What differs from what is seen so far, is that CKD outreached the significance of AKI itself(p=0,059 v.s. p>0,05,respectively). This we explained by the high prevalence of CKD patients(41%) in the study group. The Kaplan-Meier curve illustrated that patients without AKI survived longer than patients with AKI (22.01± 1.703 vs 16.69 ± 1.54, log rank p= 0.009). Also, patients in all stages of AKI survived less than patients without AKI (21.42 ± 2.60; 9.857 ± 3.26; 15.76 ± 2.017; vs 22.01 ± 1.703, log rank p= 0.006).

Conclusion: AKI in COVID-19 patients is a major factor of concern, because of it's lower rate of recovery and significant risk for mortality. Patients' survival is much worse in those with AKI compared with those without. Identification and management of the factors of prediction of AKI incidence and mortality, should prioritize our actions in order to prevent worse outcome in these patients.

Keywords: COVID-19, acute kidney injury, mortality, outcome

CORRELATIONS BETWEEN BLOOD PRESSURE AND ARTERIAL STIFFNESS IN DIABETIC HYPERTENSIVE PATIENTS FROM DALMATIA, CROATIA

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Introduction: Hypertension leads to an accelerated aortic stiffening considering that elevated blood pressure aortic wall stress and, therefore, accelerates elastin degradation. The aim of our study was to determine correlations between central blood pressure and arterial stiffness (AS) in diabetic hypertensive patients (DHP) from Dalmatia, Croatia.

Methods: This research was carried out at the Outpatient Clinic for Department of Nephrology and Dialysis at the University Hospital of Split. For each study subject central systolic (sSBP) and diastolic blood pressure (cDBP), peripheral systolic (pSBP) and diastolic blood pressure (pDBP) as well as puls wave velocity (PWV), as a parameter of AS, were measured using Agedio B900. Data about duration of arterial hypertension (AH) and type 2 diabetes mellitus (T2DM) were obtained from their medical records.

Results: This research included 248 DHP with median age 68 (IQR: 60 – 74) of whom 143 (57.7%) were male and 105 (42.3%) were female. Median duration was 10 (5 – 20) years for AH and 10 (5 – 20) years for T2DM. Significantly positive correlations were found between PWV and cSBP ($p<0.001$), pSBP ($p<0.001$) and duration of AH ($p=0.002$). No significant negative correlations were found for any observed parameter.

Conclusion: Our results imply that arterial sitffness correlates with systolic blood pressure indicating the need to focus on structure and function of large artery.

Keywords: blood pressure ,diabetes, hypertension, arterial stiffness

DOES DIETARY PHOSPHORUS INTAKE AFFECTS THE DEVELOPMENT OF HYPERPHOSPHATEMIA IN PATIENTS ON PERITONEAL DIALYSIS?

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Introduction: Hyperphosphatemia is associated with increased cardiovascular morbidity and mortality among the patients with end-stage kidney disease. The aim of this study was to evaluate factors associated with phosphate control in PD-treated patients including the relevance of phosphorus amount ingested by food.

Methods: Estimation of daily phosphorus intake was performed together with determination of weekly phosphorus (Ph) and creatinine (Cr) clearance calculated from 24-hour peritoneal effluent in 50 prevalent PD patients.

Results: Hyperphosphatemia was noticed in 22 patients (44%). Average daily Ph intake was 1028.56 ± 345.4 mg. Serum Ph level was not correlated with either daily Ph intake or PTH value. Patients with hyperphosphatemia had lower weekly peritoneal Ph clearance (38.8 ± 12.36 vs. 46.23 ± 12.01 L/wk; P<0.038), but greater peritoneal Ph mass removal (340.1 ± 128.1 vs. 264.1 ± 80.2 mg/day; P=0.015) and daily CaCO3 dose (4.88 ± 1.88 vs. 2.26 ± 1.61 g; P=0.00) comparing to patients with normal serum Ph level. There were no differences in renal Ph clearance, Cr clearance, Kt/V and daily Ph intake between these two groups. Comparing to patients with residual renal function, anuric patients had greater weekly peritoneal Ph clearance (51.81 ± 9.47 vs. 41.01 ± 12.45 L/wk; P<0.011), but no significant difference was observed in peritoneal Ph mass removal (324.6 ± 85.9 vs. 294.8 ± 114 mg/day; P=0.49) and Ph serum level (4.18 ± 0.93 vs. 4.89 ± 1.24 mg/dL; P=0.06). Although daily peritoneal ultrafiltration correlated with peritoneal Ph mass removal (P=0.001), it was not confirmed on multivariate analysis which showed the independent associations of serum Ph level (β-0.61; P=0.00) and peritoneal Ph clearance (β-0.618; P=0.00) with peritoneal Ph mass removal.

Conclusion: Hyperphosphatemia developed in patients with lower weekly peritoneal Ph clearance in spite of good PD adequacy. The quantity of ingested Ph was not associated with serum Ph level. Additional studies conducted in greater number of patients are needed to investigate the role of increased ultrafiltration and convective peritoneal Ph transport in peritoneal Ph removal.

Keywords: hyperphosphatemia, peritoneal dialysis, phosphorus intake, peritoneal phosphorus clearance

CORRELATIONS BETWEEN ADVANCED GLYCATION END PRODUCTS AND BODY COMPOSITION PARAMETERS IN HEMODIALYSIS PATIENTS

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Introduction: Advanced glycation end products (AGEs) in end-stage renal disease have been associated with malnutrition. One of the reasons is involuntary weight loss due to increased inflammation, protein catabolism and energy expenditure. Therefore, the aim of this study was to assess nutritional status in hemodialysis (HD) patients and determine the association between AGEs and body composition parameters.

Methods: This research was carried out at the Department of Nephrology and Dialysis at the University Hospital of Split. For each study subject, body composition was assessed using Tanita MC-780 Multi Frequency Segmental Body Analyzer and data about body mass (kg), body mass index (BMI), fat mass (kg), fat mass (%), fat-free mass (kg), muscle mass (kg), sarcopenic index (SMI) and phase angle were collected. Furthermore, waist (WC), hip (HC) and middle-upper arm circumference (MUAC) were measured using flexible, non-stretchable measuring tape. Device (AGE Reader mu, Diagnostic's Technologies BV, Groningen, The Netherlands) based on skin autofluorescence was used to measure AGEs.

Results: This research included 55 HD participants aged 66±13.1 years, 38 (69.09%) male and 17 (30.91%) female. The median dialysis vintage was 47 months. 15 (27.3%) participants had BMI <23 kg/m2 and median AGE value was 4.75 (4.0-5.45). Negative correlations were determined for AGE and phase angle (R=-0.327, p=0.01) and MUAC (R=-0.346, p=0.02).

Conclusion: AGEs negatively correlated with phase angle and MUAC indicating an association between malnutrition and oxidative stress.

Keywords: advanced glycation end products , body composition, hemodialysis

ADHERENCE TO THE MEDITERRANEAN DIET IN CHRONIC KIDNEY DISEASE PATIENTS - SEX DIFFERENCES

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Introduction: Mediterranean diet provides multiple benefits for patients with chronic kidney disease (CKD)- reduction of cardiovascular risk, mortality, reduced phosphate load and reduced oxidative stress. The main aim of this study was to determine adherence to the Mediterranean diet (MeDi) and differences in dietary pattern between male and female CKD patients.

Methods: This cross- sectional study was conducted at Outpatient clinic for nephrology and dialysis , Clinical university hospital Split and included 96 participants with CKD, 57 (59%) male and 39 (41%) female, mean age 64, ranging from 20-86 years. Mediterranean Diet Serving Score (MDSS) was used to determine adherence to the MeDi. Maximum score is 24 and greater score means better adherence to the MeDi.

Results: Only 2% of men and 10 % of women with CKD were adherent to the MeDi. Regarding sex differences, our results showed that men eat potato (p=0,006), red meat (p=0,03) and drink fermented beverages (p=0,009) significantly more frequent than women. No statistically significant difference was found for other components of MDSS between men and women.

Conclusion: We found low overall adherence to the MeDi among patients with CKD. Traditionally in Dalmatia men are more prone to drinking wine than women. The impact of dietary westernization could be seen in red meat and potato intake. More attention should be brought to educating patients with CKD about MeDi.

Keywords: mediterranean diet, chronic kidney disease, sex differences

THE PROGNOSTIC SIGNIFICANCE OF THE BIRMINGHAM VASCULITIS ACTIVITY SCORE IN PATIENTS WITH ANCA-ASSOCIATED VASCULITIS

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Introduction: ANCA-associated vasculitides (AAV) are chronic multisystem autoimmune diseases with substantial mortality and morbidity, and frequent kidney involvement. In addition to the degree of kidney function at start of the treatment, the outcome is also significantly affected by the number of affected organs.

Methods: In order to evaluate factors predicting 2-year mortality a retrospective study was carried out in 78 patients with systemic AAV who were treated at Nephrology Clinic. Disease activity was assessed at time of admission using the Birmingham Vasculitis Activity Score (BVAS). Survival analysis was performed by Kaplan-Meier method.

Results: The average age of the patients was 56.01 + 12.01 years, with equal representation of both sexes. Microscopic polyangiitis (MPA) was diagnosed in 57 (73.08%) patients, granulomatosis with polyangiitis (GPA) in 19 (24.36%) patients and eosinophilic granulomatosis with polyangiitis (EPGA) in 2 patients (2.56%). Lung involvement was observed in 31 (39.74%) patients, more often in the group of patients with GPA (P=0.039). MPA patients had higher CRP value comparing with other AAV patients (91,29±109,27 vs. 45,17±49,02 mg/L; P=0.019). After 2 years of monitoring and treatment of patients, 30 patients were on dialysis and 11 (14.1%) deaths were recorded. Dialysis-dependent patients had significantly higher values of serum creatinine at time of admission (702,46±273,02 vs. 388,83±229,56 μmol/L; P=0.00). The mortality of patients with AAV was significantly associated with BVAS >12 (P=0.007) and serum creatinine value>650 μmol/L (P=0.021) determined at time of admission.

Conclusion.: Involvement of multiple organ systems in ANCA-associated vasculitis significantly reduces patient survival. BVAS appears to be an excellent tool to predict mortality in patients with AAV. The degree of renal damage at the beginning of treatment is not only a predictive factor for subsequent dialysis dependence, but also for the survival of patients with AAV.

Keywords: ANCA, vasculitis, mortality, Birmingham Vasculitis Activity Score (BVAS)

MULTIPLE SCLEROSIS ASSOCIATED WITH NEPHROLITHIASIS AND ACUTE KIDNEY INJURY

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Introduction: Multiple Sclerosis (MS), is a neurodegenerative disease of the central nervous system, characterized by recurrent relapses (an acute inflammatory demyelinating event) ranging from mild to severely disabling. Most patients with MS (80%) present with bladder hyperreflexia and failure to empty the bladder secondary to detrusor-distal sphincter dyssynergia, as a consequence of a pontine and cervical spinal cord lesion. A bladder emptying dysfunction, and the specific therapy for progressive MS with acute relapse (pulse corticosteroid doses) can lead to a urinary tract infection (UTI), formation of mineral deposits, causing kidney stones and bone disease. The prevalence of renal disease (unspecified) in MS ranged from 0% to 0.78%. The etiology of the decreased in GFR is likely multifactorial and may represent the combined effects of chronic neurogenic bladder, as well as exposure to other nephrotoxic drugs.

Methods: We present a case of 36-years old female patient with medical history of MS for 10 years, with two relapses (2016, 2021), on therapy with Dimethyl fumarate (Tecfidera), Corticosteroids and high dose of Vit D3 9000IE. Since 2019, the patient complained of persistent pain in the lower lumbar spine. In 2020, an endoprosthesis was implanted on the right hip, after femoral neck fracture. Few months ago she addmited to Urological department with a finding of kidney and bladder stones. Ultrasound lithotripsy was performed, with prolonged hematuria as a complication of blood vessel rupture, and presentation of severe anemia and secondary thrombocytosis. The patient was examined by hematology specialist and nephrology specialist due to elevated serum creatinine values and right nephrolithiasis. One month after, she was admitted to Nephrology unit due to acute kidney injury, hematuria and severe anemia. Immediately after admission, due to anuria, high degradation products and potassium, hemodialysis treatment was started. The overall treatment included parenteral antibiotics, vitamin therapy, substitution with erythrocyte mass and plasma, with gradual clearing of hematuria, decrease of inflammatory markers and afebrile state, sterile urine and blood culture under antibiotics were obtained. Due to hepatic lesion, hepatoprotective and gastroprotective therapy was included. In consultation with a neurologist, the basic therapy for MS was rationalized due to a potential nephrotoxic effect (Tecfidera excluded, Decortin in continuity). Renal ultrasound presented with bilateral kidney stones but normal values were obtained for serum vitamin D, ionized calcium and parathormone. With hydration, a diuresis of up to six liters was achieved. Reduction in body weight, continuous decrease in degradation products and stable status of electrolytes were sustained. After five HD treatments the patient was discontinued from hemodialysis.

Results: Continuous monitoring and treatment, with combined therapy of hemodialysis, antibiotics and symptomatic therapy, as well as correction of the specific neurological therapy, lead to recovery of renal function. The patient after 12 days of hospitalization in the nephrology department, was discharged for outpatient follow-up.

Conclusion: Patients with MS are endured by complex multiorgan risk affection. The need of multidisciplinary approach in the treatment and monitoring is mandatory in respect of preserving renal and other organs long term health.

Keywords: Keywords: multiple sclerosis, acute kidney injury, nephrolithiasis, hemodialysis, nephrotoxicity

PP-74 Other

PERCUTANEUS CORONARY INTERVENTION IN PATIENTS WITH CHRONIC KIDNEY DISEASE

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Introduction: Chronic kidney disease (CKD) is one of the most important factors for adverse outcomes in patients with coronary artery disease undergoing percutaneous coronary intervention. These patients have poorer outcomes compared with patients without CKD. The strategy for the best revascularization technic in patients with CKD and coronary artery disease is still unknown because these patients are usually excluded from most clinical trials, especially in patients with moderate or severe CKD. This case report aims to bring attention to percutaneous coronary intervention as a necessity and a lifesaving procedure in CKD patients that are in critical condition regardless of the possibility of worsening the renal function or complications.

Case: We present a 76 years patient with medical history of CKD stage 4, Diabetes Mellitus type 2 on insulin therapy, hypertension, one year ago she got a drug-eluted stent on the left anterior descendent (LAD) coronary artery and heart failure with reduced EF (23%). The patient came to the emergency department with pulmonary edema and acute myocardial infarction. She was hospitalized, medically stabilized and underwent delayed percutaneous coronary intervention (PCI) with stenting to LM/LAD. After the coronary invasive procedure and stenting the patient's kidney condition worsened. Degradation products increased including Creatinin 456.8..498…701.5 umol/L, Urea 22.6..23.4…27 mmol/L. She underwent hemodialysis after which previously kidney function was obtained and she was dismissed in good health.

Conclusion: Percutaneous coronary intervention is risky but a lifesaving procedure in patients with CKD. This report shows the importance of multidisciplinary approach in these patient.

Keywords: chronic kidney disease, contrast-induced nephropathy, coronary artery disease, percutaneous coronary intervention

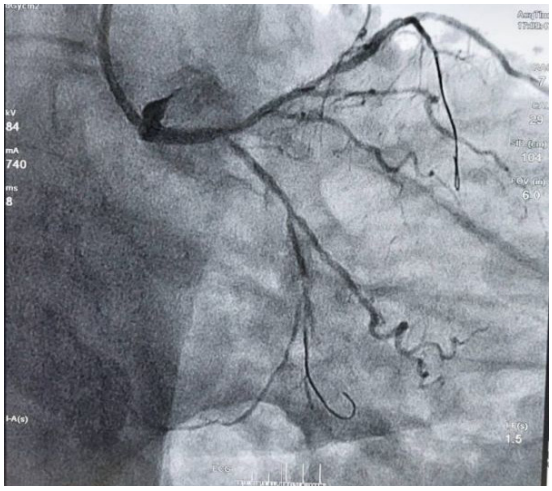

Figure: Basic coronarography

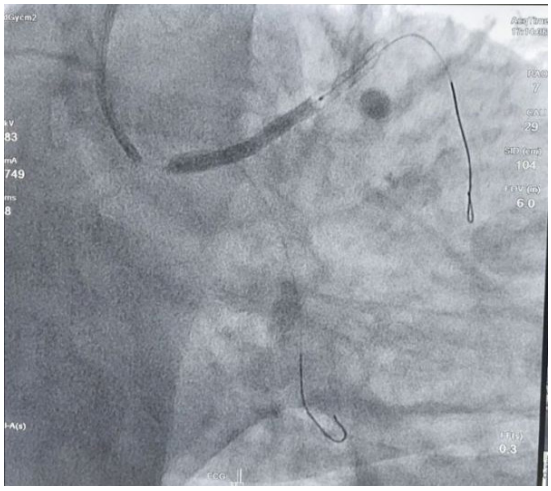

Figure: Stent placement

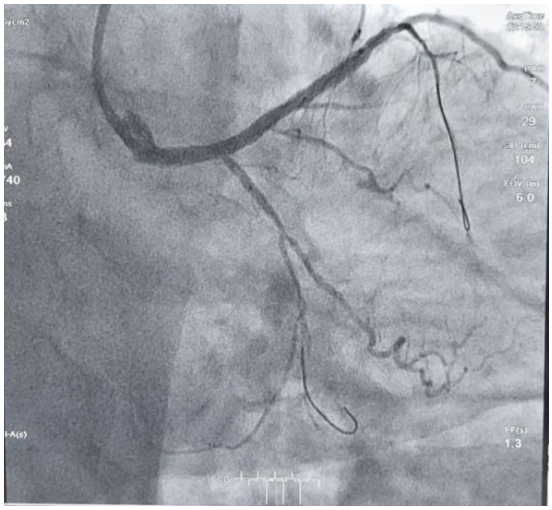

Figure: Finale coronarography result

HYPONATREMIA: MORE THAN JUST AN ELECTROLYTE FOR COVID-19 PATIENTS

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Introduction: Hyponatremia is the most common electrolyte disturbance among infections, especially among pneumonia patients. COVID-19 infection stands with life-threatening poor outcomes and its effects on electrolyte metabolism and how relate to mortality are unclarified. To analyze the presence of hyponatremia among COVID-19 patients along with its relation to mortality.

Methods: 636 patients admitted and hospitalized to the COVID-19 pandemic clinic between 24 March 2020 and 31 December 2020 have been analyzed retrospectively. Patient demographics, laboratory tests at admission, and all-cause of in-hospital mortality were obtained.

Results: A total of 636 patients, a mean age of 50± 18 years, 48 % of the female with a median duration of hospitalization of 5.5 (IQR, 2,11) days were included. Of those 553 (%87) were detected COVID-19 PCR positive and 298 (47%) of those with pneumonia. The median serum sodium concentration was lower in COVID-19 PCR positive patients [134 (IQR, 130,137) mEq/L] compared to negatives [139 (IQR, 136, 140) mEq/L] (p<0.001). The median serum sodium levels were significantly lower in patients with pneumonia [136 (IQR, 133.138) mEq/L] than without pneumonia [139 (IQR, 137, 145) mEq/L] (p<0.001) (Figure 1). All deaths occurred in patients with pneumonia [(n=40 (13.4 %)]. Patients with hyponatremia had increased mortality on unadjusted (OR, 3.85, 95%CI: 1.73, 8.53, P<0.001) and adjusted [OR, 3.58, 95%CI: 1.58, 8.1, P=0.002] in Cox proportional hazard models (Figure 2).

Conclusion: Hyponatremia at admission is prevalent and an independent risk factor for in-hospital mortality among COVID-19 patients particularly those with pneumonia. It might be an important laboratory clue for both the diagnosis and survive of these patients.

Keywords: COVID-19, hyponatremia, pneumonia, mortality

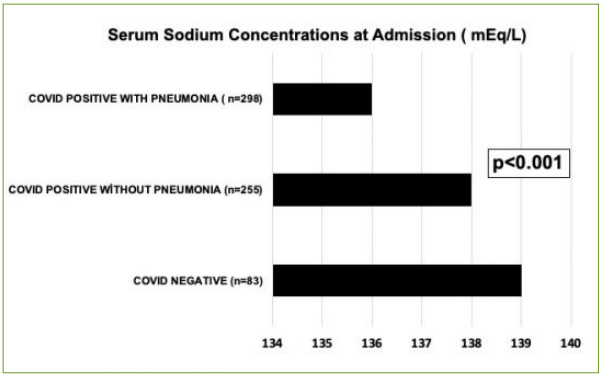

Figure 1: The comparison of serum sodium concentrations of the study population

	Univariate		Multivariate*	
	Beta (95 %CI)	**P values**	**Beta (95 %CI)**	**P values**
Gender (n, %, male)	0.77 /0.38, 1.56)	0.48	-	-
Age (years, mean±sd)	1.03 (1.00,1.06)	**0.01**	-	-
Diabetes Mellitus (n, %)	1.51 (0.77,2.90)	0.22	-	-
Coronary Heart Disease (n, %)	2.03 (0.97, 4.20)	**0.06**	-	-
Hypertension (n, %)	1.29 (0.65, 2.58)	0.45	1.39 (0.65, 2.97)	0.38
Chronic Kidney Disease (n, %)	1.90(0.88, 4.12)	0.10	1.66 (0.76, 3.63)	0.19
Viral Pneumonia (n,%)	5.54 (1.90, 15.5)	**<0.001**	5.95 (1.95, 18.1)	**0.002**
Antihypertensive Medicine (n,%)				
ACE inh	0.74 (0.26, 2.10)	0.57	0.58 (0.20, 1.72)	0.33
ARB	0.71 (0.25,2.04)	0.53	0.60 (0.19, 1.88)	0.38
Thiazide	2.18 (0.82,5.77)	0.11	1.77 (0.63, 5.01)	0.27
Furosemide	0.62 (0.14,2.76)	0.53	0.47 (0.10, 2.07)	0.32
Calcium channel blockers	0.92 (0.41, 2.04)	0.85	0.77 (0.33, 1.79)	0.54
Laboratory				
GLUCOSE (mg/dL)	1.00(0.99,1.01)	0.61	0,99 (0,98, 1.00)	0.70
BUN (mg/dL)	1.01 (0.99,1.02)	0.11	1.0 (0.99, 1.02)	0.38
CREATININE (mg/dL)	1.04 (0.90,1.21)	0.55	1.04 (0.88, 1.23)	0.60
SODIUM (mEq/L)	0.89 (0.82, 0.96)	**0.004**	0.90 (0.84, 0.97)	**0.001**
POTASSIUM (mEq/L)	1.27 (0.74, 2.18)	0.37	1.41 (077, 2.56)	0.25
CALCIUM (mg/dL)	1.02 (0.61,1.68)	0.93	0.96 (0.57, 1.6)	0.88
PHOSPHORUS (mg/dL)	1.42 (1.05, 1.92)	**0.02**	1.35 (0.99, 1.84)	0.05
ALBUMIN (g/dL)	0.63 (0.40,1.01)	**0.05**	0.76 (10.45, 1.26)	0.29
TOTAL PROTEIN (g/dL)	0.66 (0.40, 1.08)	0.10	0.73 (0.44, 1.24)	0.25
URINE DENSITY	0.99 (0.99, 1.00)	0.08	0.99 (0.99, 1.00)	0.28
HAEMOGLOBİN (d/dL)	0.86 (0.73, 1.01)	0.06	0.86 (0.72, 1.02)	0.09
WBC (uL)	1.00 (1.00, 1.00)	0.98	1.00 (1.00, 1.00)	0.28
LYMPHOCYTE (uL)	1.00 (0.99, 1.00)	0.60	1.0 0.99, 1.00)	0.59
C-REACTIVE PROTEIN (mg/L)	1.00(0.99,1.00)	0.21	1.00(0.99, 1.00)	0.39
FERRITIN (ng/mL)	1.00 (1.00, 1.00)	0.89	1.00 (0.99, 1.00)	0.34
FIBRINOGEN (mg/dL	1.00 (0.99, 1.00)	0.68	1.00 (0.99, 1.00)	0.89
Hyponatremia (NA<135 mEq/L)	3.85 (1.73, 8.53)	**<0.001**	3.58 (1.58, 8.1)	**0.002**

*ACE INH; Angiotensin-converting enzyme (ACE) inhibitors, ARB; Angiotensin-II receptor blockers, BUN; **Blood urea nitrogen**, WBC; White Blood Cell*
*Adjusted by age, gender, diabetes mellitus, coronary heart disease

Figure 2: Factors associated with overall mortality among the whole study population (univariate and multivariate cox regression analyses)

PP-76 Other

TUBERCULOSIS SNEAKING THROUGH NEPHROLOGY WARD: A CASE REPORT

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Introduction: Tuberculosis (TB) is an infectious disease caused by Mycobacterium tuberculosis, which remains a major global health problem in industrialized countries due to specific socioeconomic factors. It leads to malnutrition, and malnutrition can predispose to TB. Inadequate nutrition leads to protein-energy malnutrition and deficiencies of micronutrients lead to immunodeficiency. TB itself generates appetite reduction, malabsorption of nutrients, micronutrients and alteration of the metabolism that leads to loss of muscle mass. In addition, malnutrition is considered a risk factor for early mortality and failure to treat patients with TB. Early identification and treatment of individuals with latent TB, who are at high risk to develop active infection, is crucial for disease control. It can be hard to diagnose until systemic effects.

Methods: We report a case of a 29y/o female patient with signs and symptoms of urosepsis, admitted at the department of nephrology. Two months prior to admission she gave birth to her fourth child and was checked by a gynecologist prior to the admission on our ward. Her socioeconomic status and education level were anticipated as low. Symptoms included suprapubic pain, prostration, fever, hypotension, high heart rate, diarrhea and swelling of the lower extremities. No cough was present. Inflammatory markers were high – CRP of 200mg/L, WBC of 21*109/L; D-dimers 2700 and platelets (700/l). Active urinary sediment suggested urinary infection. The body mass index was indicative of malnourishment. Serum proteins and albumin levels were below normal range and severe anemia was present. The treatment included antibiotics, antimycotics, heparin, plasma and blood transfusion. Urine, blood and stool cultures were sterile. Hepatitis viral markers and HIV test was negative. Abdominal ultrasound showed presence of ascites, so abdominal CT scan was obtained and showed polyserositis including pericardial effusion, ascites and pleural effusions (all anticipated as part of malnutrition syndrome). Serology in respect of systemic disease was negative. Proteinuria was negative. Heart ultrasound excluded endocarditis. Pulmonal CT scan showed bilateral cystic bronchiectasis and consolidations. Patient was isolated. In consultation with a pulmonologist GENE-XPERT test for tuberculosis was performed and a positive result was obtained.

Results: The patient was discharged and transferred to a specialized institution.

Conclusion: Tuberculosis is an obscure disease that can be camouflaged with symptoms and signs issuing forth from affected organs. Multidisciplinary approach in diagnostic algorithms and treatment is advised. In addition to our focus on nephrological entities, when clinical presentation is suggestive, TB should be taken into consideration among different diagnoses.

Keywords: tuberculosis, urosepsis, malnourishment, polyserositis, multidisciplinary approach

SCREENING OF A HEMODIALYSIS CENTER FOR SARS-COV-2 PCR: TRANSMISSION RISKS AND OUTCOMES OF COVID-19 INFECTION

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Introduction: The novel type of coronavirus; Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is responsible for Covid-19 infection. Covid-19 transmission risk is very high in indoor crowded places such as hemodialysis centers. We aimed to investigate transmission risk and outcomes of Covid-19 in a hemodialysis center for both patients and medical/support personnel.

Methods: The hemodialysis center has 247 patients, and 45 personnel (22 healthcare workers, 23 supporting personnel). Hemodialysis patients and the personnel were screened with the SARS CoV-2 PCR test to detect Covid-19. The transmission risk of Covid-19 was investigated by determining the patient layout of infected patients in the dialysis rooms. The rate of Covid-19 infection mediated hospitalization, viral pneumonia, and mortality in the patients and personnel were determined.

Results: The rate of Covid-19 infection was 46,7% (n=21) among the personnel. Three of them had pneumonia, and need hospitalization. No mortality was observed. The incidence of Covid-19 was 16.5% (n=41) among the hemodialysis patients, the mean age of the patients was 61.6 years. Viral pneumonia was diagnosed in 36 (88%) of 41 patients. Hospitalization and mortality rate was very high; 78% and 14,6% respectively. The mean age of six patients with mortality was 67.8 years, while 60.1 years in the recovered patients (p=0.041). In the evaluation of the dialysis rooms; the busiest room of the center has the 28% of the total dialysis patients (n=70) and almost half of all cases of Covid-19 infections (n=19) were determined there.

Discussion: ESRD patients undergoing intermittent hemodialysis treatment and personnel in dialysis centers have a high risk of transmission regarding Covid-19 infection. Not the personnel but the dialysis patients have an increased rate of viral pneumonia, hospitalization, and most importantly, mortality than the general population. Strict measures and precautions are needed to reduce the risk of transmission in hemodialysis centers.

Keywords: covid-19, SARS-CoV-2, hemodialysis, ESRD

A MULTI-CENTER OBSERVATIONAL STUDY ON HYPERKALEMIA CLINICAL PRACTICE IN TURKEY (HK-TURK STUDY): PRELIMINARY FINDINGS

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Introduction: Hyperkalemia is a complication causing significant problems in the follow-up and treatment of chronic kidney disease (CKD). The current study aimed to determine the demographic/clinical characteristics, treatment model, and disease burden in CKD patients with normokalemia and hyperkalemia in the database of the study centers.

Methods: All patients (N=60,000) aged ≥18 years who had a glomerular filtration rate (GFR) of <60 and had serum potassium (sK) data were enrolled in the screening phase. From this sample, the data of hyperkalemic (N=224) and normokalemic (N=680) patients who met the study criteria were analyzed. Criteria for hyperkalemia were defined as ≥2 episodes of >5.5 mmol/l sK level and criteria for normokalemia were defined as ≥2 episodes of <5.1 mmol/l sK level. All patients were evaluated for demographic information, laboratory findings, concomitant diseases, and treatments.

Results: There was no significant difference between the hyperkalemia and normokalemia groups in terms of mean age (60±15 years and 60±15 years, respectively; p=0.630) and sex (female, 46% and 49.6%, respectively p=0.353). The GFR and hemoglobin, sodium, and bicarbonate levels were significantly lower and the creatinine level was significantly higher in the hyperkalemia group than in the normokalemia group (p<0.001 for all, Table 1). Furthermore, there was a significant difference between the hyperkalemia and normokalemia groups in terms of ratio of patients according to GFR stages (p<0.001; Figure 1). In all hyperkalemic patients, the rate of admission to the emergency department was 2.6%, where the most common treatment protocol was insulin/dextrose administration (1.8%), whereas the rate of admission to the nephrology outpatient clinic was 68.8%, where the most common treatment used was potassium-binding resin (53.1%). Evaluation of concomitant diseases revealed that the rate of patients with diabetes mellitus in the hyperkalemia group was significantly higher than in the normokalemia group (53.1% vs. 36.6%, p<0.001). Regarding concomitant treatments, the ratio of patients receiving beta-blockers (52.7% vs. 40.7%, p=0.002) and oral anti-diabetic treatment (32.6% vs 21.8%, p=0.001) in the hyperkalemia group was significantly higher than in the normokalemia group.

Conclusion: The preliminary data of the HK-TURK study have shown that hyperkalemic patients were high in advanced stages of CKD and in diabetic patients and that the use of beta-blockers was high due to the relative less frequent use of ACE inhibitors/ARBs.

Keywords: hyperkalemia, chronic renal diseases, glomerular filtration rate, disease burden

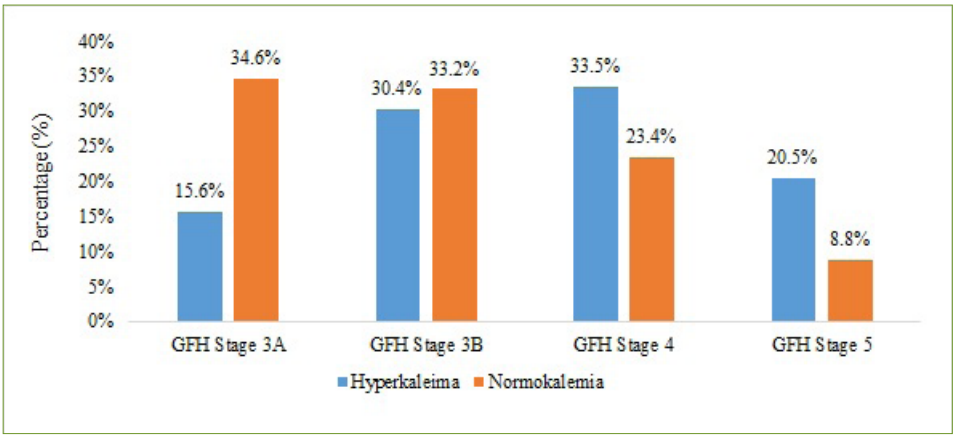

Figure 1: Prevalence of hyperkalemia and normokalemia at different glomerular filtration rate (GFR) stages

Tables :

	Hyperkalemia N=224	Normokalemia N=680	p
GFR, mL/min	28.13±14.07	36.55±14.3	<0.001*
GFR Phase			<0.001**
GFR Stage 3A	35 (15.6)	235 (34.6)	
GFR Stage 3B	68 (30.4)	226 (33.2)	
GFR Stage 4	75 (33.5)	159 (23.4)	
GFR Stage 5	46 (20.5)	60 (8.8)	
Serum Potassium level, mEq/L	5.9±0.38	4.44±0.39	-
Potassium level, mEq/L			-
Below 5.1	0 (0)	680 (100)	
5.5-5.99	156 (69.6)	0 (0)	
6-6.49	48 (21.4)	0 (0)	
Over 6.5	20 (8.9)	0 (0)	
Creatinine, mg/dL	2.94±2.03	2.13±1.25	<0.001*
Glucose (Blood), mg/dL	130.53±72.92	117.72±54.38	0.152*
HbA1c, %	6.68±1.49	6.38±1.75	0.116*
Hemoglobin, g/dL	11.7±1.99	12.5±2.77	<0.001*
Sodium, mEq/L	138.3±3.41	139.47±3.04	<0.001*
Bicarbonate, mEq/L	19.24±3.73	22.45±3.06	<0.001*

GFR: glomerular filtration rate, HbA1c: hemoglobin A1c. *Mann-Whitney U test, **Pearson Chi-Square test Data are presented as mean ± standard deviation and number (percentage) where appropriate

PP-79 Clinical Nephrology

CHRONIC INTERSTITIAL NEPHRITIS DUE TO COMMON VARIABLE IMMUNODEFICIENCY

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Introduction: Common Variable Immunodeficiency (CVID) is an immunodeficiency that causes impaired antibody response, manifested by frequent recurrent infections and hypogammaglobulinemia. CVID presents with recurrent bacterial infections, gastrointestinal and granulomatous diseases. Granulomatous lesions are primarily seen in the lungs and liver but also in other organ systems. We will present a case of renal failure secondary to granulomatous chronic interstitial nephritis and diagnosed as CVID following initiation of hemodialysis.

Case: Our patient, a 22-year-old male, presented to the nephrology department following diagnosis of uveitis and detection of elevated renal function tests. The laboratory workup of the patient at the time of application are shown in Table 1. Kidney biopsy was performed due to high creatinine and proteinuria levels, and the result was reported as chronic interstitial nephritis (Figure 1). Patient was started on 1mg/kg methyl prednisolone treatment, and a second renal biopsy had to be performed again due to the progressive increase in creatinine with aforementioned treatment. The biopsy result of the patient was reported as 'chronic interstitial nephritis with non-necrotic granulomas' (Figure 2). Tuberculosis and other granulomatous infectious agents were not detected. Immunoglobulin levels were sent because the patient who continued on hemodialysis treatment had a history of recurrent infection. Since the patient had frequent recurrent bacterial infections, had a sibling with a similar history, had granulomatous lesions in the kidney and liver, and had low levels of all immunoglobulins, he was accepted as CVID. The patient, whose infection frequency decreased after intravenous immunoglobulin thrapy and he is still being followed up as a hemodialysis patient in our clinic.

Conclusion: Our case developed end-stage renal disease secondary to interstitial nephritis and was subsequently diagnosed with CVID. The time elapsed between diagnosis of interstitial nephritis and diagnosis of CVID is two years. Young patients diagnosed with chronic interstitial nephritis and with a history of frequent recurrent infections should be examined for CVID.

Keywords: common variable immunodeficiency, end stage renal disease, chronic interstitial nephritis

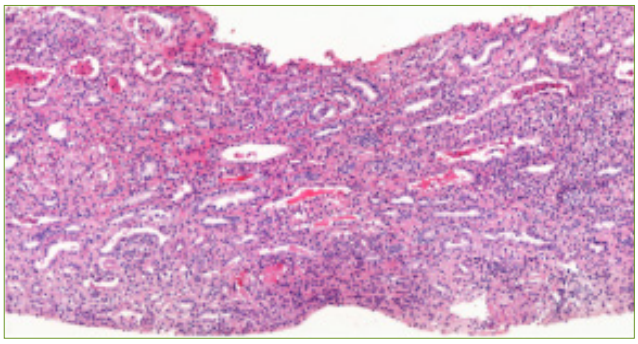

Figure 1: Chronic Interstitial Nephritis, intense inflammation

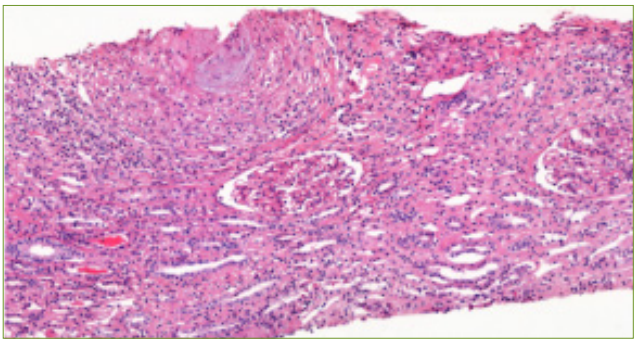

Figure 2: Chronic Interstitial Nephritis with non-necrotic granulomas

Table 1 :

	April 2017	February 2018
Hemoglobin (13.5-17.5 gr/dl)	12.1	13.7
White blood cell (4000-10300/mm3)	6200	10000
Platelet (156000-375000/mm3)	179000	171000
Blood urine nitrogen (8-23 mg(dl)	36	64
Creatinine (0.9-1.3 mg(dl)	2.65	5.82
Sodium (136-145 mEq/l)	137	137
Potasium (3.5-5.1 mEq/l)	3.88	5.5
Urine dipstick	E negative L negative	E negative L negative
24 hour proteinüria (0-300 mg/day)	1200	5360

PARVOVIRUS INFECTION-RELATED ANEMIA AFTER KIDNEY TRANSPLANTATION

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Introduction: Anemia is a disturbing condition that increases the morbidity and mortality of kidney transplantation patients. CMV, BK and parvovirus B19 have been reported to be the most common causes of anemia as a result of suppression of the immune system.We present a case report of profound anemia that developed within the first 6 months after kidney transplantation.

Case: 43-year-old woman with end-stage renal disease secondary to polycystic kidney disease was followed up with peritoneal dialysis for 7 months. She had a living-kidney transplant from her husband in June 2021. ATG was used as an induction therapy (8.5 mg/kg total dosage). She received immunosuppressive maintenance therapy that consisted of mycophenolate mofetil (MMF) 1000 mg twice daily, tacrolimus, and prednisone 5 mg daily. She admitted to the hospital with complaints of fatigue and palpitation 4 months after transplantation, kidney function tests were stable. Hemoglobin level was 5.8 g/dL that was normocytic and normochromic with normal morphology on the blood smear test. A complete anemia work-up showed that Ferritin: 1223 µg/L, B12 :1200µg/L, folic acid :23 µg/L. Bone marrow biopsy was performed. Bone marrow study showed that giant proerythroblast cells with prominent viral nuclear inclusions. PCR for Cytomegalovirus (CMV), BK virus, and Epstein-Barrvirus (EBV) was negative but Parvovirus B19 PCR was positive at that time(25x 106copies/ml). PB19 serology was repeated and showed negative IgG and IgM. Patient started on IVIG (100m g/kg/ day) for a total of 4 doses. MMF discontinued and patient discharge after completing IVIG therapy. On discharge, hemoglobin was 7.1 g/dL,creatinine 1.32. Patient followed weekly in posttransplant clinic, and hemoglobin normalized after 1 month ,12.5 g/dl. . PCR for Parvovirus B19 levels decreased to 8738 copies/ml. HBG level increased to 14.4 g/dl in the last outpatient control. There was no change in creatinine values.

Conclusion: We emphasize the importance of maintaining a high index of suspicion for PVB19 infection in patients with anemia in the posttransplant phase The treatment of Parvovisrus B19 relies on the reduction of immunosuppression and IVIG administration.

Keywords: parvovirus B19, anemia, kidney transplantation

THE EFFICACY OF ALEMTUZUMAB FOR ANTI-THYMOCYTE GLOBULIN RESISTANT ACUTE KIDNEY ALLOGRAFT REJECTION

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Introduction: Steroid-resistant renal allograft rejections are commonly treated with anti-thymocyte globulin (ATG). Alemtuzumab could be an effective treatment in acute rejection episodes refractory to ATG.

Methods: We administered alemtuzumab as salvage therapy to three patients who had been previously treated with ATG (Table 1). We assessed renal functions and infusion-related side effects and infectious complications.

Results: Two patients experienced early acute rejection (Table 2). Rejections were classified as borderline, Banff-IA and Banff-IIA. All patients responded to alemtuzumab therapy and kidney functions improved without graft loss. Renal biopsy was performed to Case-3 two weeks after alemtuzumab therapy, and no changes suggestive for acute rejection were observed (g1, i0, t0, v0, ptc0, ct0, ci0, cg1, C4d-). Our patients did not experience any infusion-related side effects. In Case-1, plasma BK virus-PCR increased from 583 to 7629 copies/ml after alemtuzumab therapy, BK virus-PCR negativity was observed in the follow-up without BK nephropathy.

Conclusion: Alemtuzumab is an effective salvage therapy for refractory acute rejection episodes.

Keywords: acute rejetion, alemtuzumab, renal transplantation

Table 1: Baseline Characteristics of Alemtuzumab-Treated Patients

Characteristic	Patient		
	1	2	3
Age at transplantation (years)	37	35	43
Gender	Male	Male	Male
Cause of ESRD	Glomerulonephritis	Glomerulonephritis	Glomerulonephritis
Number of transplants	2	2	1
Donor source	Living unrelated	Living related	Living related
Donor age (years)	37	54	58
HLA -A/-B/-DR mismatches	2/2/1	0/1/1	1/1/1
Pretransplant PRA, %	42	25	-
DSA	-	+ (B*18:01, MFI:1621)	-
Immunosuppression Desensitization Induction Maintanence	 PP (3), IVIG (20mg), RTX (700mg) ATG (500mg) CsA/mTORi/GC	 PP (4) ATG (500mg) TAC/MMF/GC	 - - TAC/MMF/GC

ATG, anti-thymocyte globulin; CsA, cyclosporin A; DSA, donor specific antibody; ESRD, end stage renal disease; GC, glucocorticoids; IVIG, intravenous immunoglobulin; MMF, mycophenolate mofetil; mTORi, mammalian target of rapamycin inhibitors; PP, plasmapheresis; PRA; panel reactive antibody; RTX, rituximab; TAC, tacrolimus.

Table 2: Biopsy Results, Antirejection Treatment and Outcome in Alemtuzumab-Treated Patients

	Patient		
	1	2	3
Time to rejection (days)	2100 (6 years)	19	3
TCMR Banff classification	Borderline (g1, i1, t1, v0, ptc1)	Grade Ia (g0, i2, t2, v0, ptc0)	Grade IIa (g2, i1, t1, v1, ptc2)
C4d	-	-	-
de novo DSA	-	-	-
Anti-rejection therapy before alemtuzumab	GC (875mg), ATG (500mg), PP (5), IVIG (40mg)	GC (1500mg), ATG (250mg)	ATG (450mg), PP (5), IVIG (25mg)
Time to alemtuzumab administration after biopsy (days)	42	10	12
Alemtuzumab total dose (mg)	30	30	30
Infusion-related side effects	None	None	None
Serum creatinine (mg/dl) Lowest posttransplantation At biopsy Before alemtuzumab 2 weeks after therapy 1 month after therapy Latest measurement	 1.31 2.75 2.50 2.80 2.00 1.69 (1st year)	 1.43 1.95 2.02 2.10 1.81 1.53 (3rd year)	 3.73 6.01 6.79 5.5 2.77 2.25 (2nd month)
Infectious complications	BK viremia	None	None
Graft loss	No	No	No
Need for further anti-rejection treatment	No	No	No

ATG, anti-thymocyte globulin; DSA, donor specific antibody; IVIG, intravenous immunoglobulin; PP, plasmapheresis; TCMR, T-cell mediated rejection.

THE OUTCOMES OF IMMUNOSUPPRESSIVE PROTOCOLS DURING DIFFERENT PHASES OF COVID-19 PANDEMIC IN KIDNEY TRANSPLANT PATIENTS

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Introduction: After the beginning of the Covid-19 pandemia due to initial reports of high mortality in patients with multiple comorbidities, ESRD and chronic immunosuppressive kidney transplant patients almost all transplant centers develop different immunosuppressive protocols according to their experience. In this study we revealed the outcomes of our alternative immunosuppressive protocols during the different phases of Covid-19 pandemic.

Method: In the first phase of Covid-19 due to high mortality risk of dominant variants until December 2021; the protocol was increased dose prednisolone (20 mg/day) and complete cessation of calcineurin and MMF, when the dominant variant became Omicron in the second phase, prednisolone 20mg/day, 50% dose reduction of tacrolimus and MMF cessation were applied. The data were evaluated retrospectively in terms of mortality, biopsy-proven rejection, allograft loss, and allograft functions.

Results: From the 592 follow-up patients of our center, 132 of them (13.2%) were infected with Covid-19. In the first phase, Covid-19 infection developed in 108 patients (mean age 47.07±12.9 years, 54.6% male, 49% one comorbidity, 9.3% three comorbidities). The mortality rate was 10.2%, Biopsy proven rejection was 3.7%, need of RRT was 1.9%, and allograft loss was 0.9%. Allograft functions of the patients were well preserved (64ml/min vs. 67.4ml/min GFR, 312.3±766.2mg/dl vs. 435.74±1302mg/dl proteinuria, p=NS). In the second phase of Covid-19 infection, 24 patients were infected (mean age 47±12.98 years, 45.8% male, 46% one comorbidity, 8.3% three comorbidities). Mortality was detected in only one of these patients (4.2%), while biopsy-proven rejection and temporary RRT were required in one patient (4.2%), allograft loss did not occur. Allograft functions of the patients were well preserved (60ml/min vs. 63.1ml/min GFR, 211.5±366.2mg/dl vs. 116.29±176 mg/dl proteinuria, p=NS)

Conclusion: In the first phase of Covid-19, with aggressive immunosuppressive reduction, lower mortality was achieved in kidney transplant patients than generally reported, while no significant problems were experienced in terms of allograft function and survival. In the second phase, which had a milder course, severe patient and allograft protection could be achieved with moderate immunosuppressive dose reduction.

Keywords: kidney transplantation, Covid-19, immunosuppressive

IS HEMODIALYSIS TREATMENT A DESTINY?

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Introduction: Chronic kidney disease (CKD) is common. Hemodialysis (HD) is a treatment option for end-stage kidney patients. The timing of initiation of HD treatment for CKD patients differs from patient to patient. In our study, we aimed to determine the awareness of CKD patients undergoing HD about their diseases.

Methods: Three hundred HD patients were invited to the study, 194 of them agreed to participate in the study. Consent was obtained from all participants. A questionnaire including 21 questions about socio-demographic characteristics and HD awareness was administered to the participants. Questions about HD awareness were scored from '1 (strongly disagree) to 5 (strongly agree)'.

Results: The mean age of the participants was 55.6 (18-90) and 115 (59.3%) were male. 138 of the patients (71.1%) knew the cause of CKD. Most of the participants thought that CKD did not show early symptoms and kidney failure patients in the family did not set an example for them. In correlation analyses, those who cared about CKD and those who payed attention the diet and treatment before and after HD treatment were positively correlated (p values were <0.05). Again, it was the same group who blamed themselves the least and thought that they had done everything they could for CKD. The most common response of patients to the question of whether you have a chance not to undergo HD was regular follow-up and diet-treatment compliance.

Conclusions: The majority of HD patients participating in our study know the cause of CKD. Not every HD patient are adapting to diet-treatment, and cannot showing adequate care and attention to their disease. However, the common opinion of all of them and the most important result of our study is that HD patients should be aware of diet-treatment compliance necessity and pay attention to the warnings of their doctors in order for their diseases to go well.

Keywords: chronic kidney disease, hemodialysis, awareness

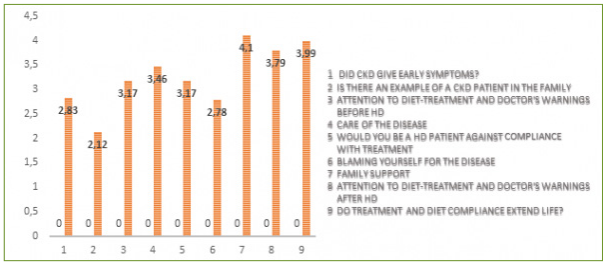

Figure: Evaluation of questions related to HD awareness

Table 1: Sociodemographic characteristics of the patients

Sociodemographic properties	Values
Age, years	55.6 (18-90)
Gender, male	115 (59.3%)
Educational level, went to school	103 (53,1%)
Living place, rural	132 (68%)
Co-morbidities	
o Diabetes mellitus	75 (38.7%)
o Hypertension	122 (62.9%)
o Heart disease	74 (38.1%)
o Lung disease	32 (16.5%)
Hemodialysis duration, years	5.56 (0.5-30)
Family history, yes	49 (25.3%)
Awareness about their disease, years	8.6 (0,5-46)
Cause of kidney failure, knowing	138 (71.1%)
Duration of undergo hemodialysis, after learning cidney disease, years	3.06 (0.5-44)
Regular follow-up before hemodialysis, yes	151 (77.8%)

PROGNOSTIC NUTRITIONAL INDEX PREDICTS RENAL OUTCOME IN PATIENTS WITH CRESCENTIC GLOMERULONEPHRITIS

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Introduction: Rapidly progressive glomerulonephritis (RPGN) is a rare clinical syndrome characterized by acute nephritic syndrome and progressive loss of renal function, often leading to end-stage renal disease (ESRD) within weeks or months. Knowledge of prognostic factors is critical for early diagnosis and treatment of RPGN. However, it is difficult to identify patients who will develop ESRD. The systemic immune-inflammation index (SII) and prognostic nutritional index (PNI) have come into focus as potential new inflammatory markers. In this study, we investigated the relationship between two inflammatory indices and the risk of ESRD in patients with type-1 [antiglomerular basement membrane (anti-GBM)] and type-3 (pauci-immune) crescentic glomerulonephritis.

Methods: In the present study, the records of 48 patients diagnosed with type 1 and type 3 crescentic glomerulonephritis by kidney biopsy in our nephrology clinic between 2012 and 2020 were retrospectively analyzed. The study was continued with 40 eligible patients. Age, sex, presence of diabetes mellitus, hypertension, and hemoptysis were recorded. Hemoglobin, white blood cell count, neutrophils, lymphocytes platelet count, creatinine, e-GFR, albumin, C-reactive protein, erythrocyte sedimentation rate, cytoplasmic and perinuclear antineutrophil cytoplasmic antibodies (C/P-ANCA), anti-GBM antibodies, SII and PNI levels at the time of diagnosis were recorded. After a follow-up period of 12 months, the rate of development of ESRD was determined.

Results: The mean age of the study population was 53.0 ± 15 years and 42.5% were female. 12.5% were diabetic. Anti-GBM positivity was detected in 5 (12.5%) patients, C-ANCA positivity in 10 (25%), and P-ANCA positivity in 25 (62.5%) patients. ESRD developed in 12 of the patients during the one-year follow-up period. The demographic, clinical, and laboratory parameters of all patients are shown in Table 1. There was no significant difference between the two groups in clinical and histopathological findings at diagnosis. However, SII was significantly higher (p = 0.05) and PNI was lower (p = 0.03) in the ESRD group. Multivariate analysis showed an independent protective effect of PNI against the development of ESRD (Table 2).

Conclusion: This study demonstrated a strong and independent predictive effect of PNI on the development of ESRD in cases of crescentic glomerulonephritis. Prospective and multicenter studies with a larger number of patients are needed to confirm our findings. Knowledge of prognostic factors could prevent futile and intensive immunosuppressive therapy.

Keywords: crescentic glomerulonephritis, prognostic nutritional index, systemic immune-inflammation index, end-stage renal disease

Table 1: Demographic, clinical and laboratory data of patients

	Study population (n = 40)	Patients did not developed ESRD (n = 28)	Patients developed ESRD (n = 12)	P
Age at diagnosis (years)	53.0 ± 15.2	54.39 ± 13.72	49.75 ± 18.32	0.44
Male gender (n, %)	23 (57.5)	17 (60)	6 (50)	0.72
Arteriel hypertension(n, %)	27 (67.5)	18 (64.3)	9 (75)	0.71
Diabetes mellitus (n, %)	5 (12.5)	2 (7.1)	3 (25)	0.14
Hemoptysis (n, %)	12 (30.0)	7 (25)	5 (41.7)	0.45
Laboratory results (IQR)				
White Blood Cell (103/µL)	9900(5700 – 20500)	9500(7400 – 12575)	10300(7550 –15050)	0.531
Neutrophil (103/µL)	7190(2800 – 8400)	7000(5675 – 9667)	8300(6022 – 12500)	0.451
Lymphocyte (103/µL)	1285(300 – 3750)	1385(762 – 2055)	1250(925 – 1590)	0.673
Hemoglobin (g/dL)	9.4(5.9 – 11.6)	9.5(9.0 – 10.4)	8.0(6.8 – 9.4)	0.012
Platelet (103/µL)	277500(101000 - 887000)	277500(215000 - 386500)	281500(213250 - 461000)	0.694
Creatinine (mg/dL)	4.9(0.9 – 17.3)	4.02(2.27 – 6.01)	8.13(5.97 – 10.50)	0.002
Albumin (g/dL)	3.1 (1.8 – 4.5)	3.26 (2.71 – 3.61)	2.42 (2.14 – 3.30)	0.024
eGFR (mL/min/1.73 m^2)*	10.0 (3.0 – 91.0)	13 (9 – 31.25)	5.50 (4.25 – 10.50)	0.002
Sedimentation rate (mm/h)	57.5 (21.0 -120.0)	58.0 (41.0 – 75.75)	54.50 (45.75 – 68.50)	0.942
CRP (mg/dL)	56.4 (5.4 – 461.0)	60.66 (14.73 – 103.15)	39.93 (16.57– 133.50)	0.873
SII	1.65(9.32-3.16)	1.28(7.184-29.73)	2.66(1.61-3.71)	0.05
PNI	36.77(31.30-44.65)	38.87(32,32-47,22)	30.92(26.22-40.37)	0.03

Abbreviations: ESRD; end-stage renal disease, eGFR; estimated glomerular filtration rate*, CRP; C-reactive protein. SII; systemic immune inflammation index, PNI; prognostic nutrition index. *Calculated according to "Chronic Kidney Disease Epidemiology Collaboration" formula.

Table 2: Factors Associated with End Stage Renal Failure (univariate and multivariate analysis)

	UNIVARIATE		**MULTIVARIATE**	
	OR (%95 CI)	p	OR (%95 CI)	p
SSI	1 (1-1)	0.756		
PNI	-0.89 (0.84-0.92)	0.035	*0.89 (0.80-0.99)	0,03
			**0.88 (0.77-0.96)	0.02
CRP	1.04 (0.99-1.01)	0.35		
WBC	1(1-1)	0.39		
SED	1(0.97-1.03)	0.92		
Albumin	-0.22 (0.06-.81)	0.02	*-0.200 (0.05-.798)	0.02
			**-.141 (0.02-0.73)	0.02

Multivariate Model, *adjusted by CRP,sedimentation , ** adjusted by age, gender (variables are restricted with total number of three since total ESRD event was 12)

VERTEBRAL DESTRUCTION FROM BROWN TUMOR DUE TO SECONDARY HYPERPARATHYROIDISM, IN A HEMODIALYSIS PATIENT IN ALBANIA

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[3]*Regional Hospital of Korca, Albania*

Introduction: Secondary hyperparathyroidism represents a common complication in renal failure patients. It results from the increased secretion of PTH due to parathyroid hyperplasia caused by hyperphosphatemia, hypocalcemia or decreased active vitamin D. Brown tumor, also known as osteitis fibrosa cystica is an uncommon bone lesion in hyperparathyroidism. It is caused by a reparative cellular process, rather than a neoplastic process, although of the benign nature, it can cause a devastating fracture due to spinal compression. In cases of spinal vertebrae involvement, brown tumors can cause neurologic symptoms such as paresthesia, paresis, or paralysis due to spinal compression.

Case: We present a case of a 62 year old male, with renal failure who has been on dialysis for 11 years and developed severe secondary hyperparathyroidism and brown tumor in the eighth thoracal vertebrae. The patient was treated for secondary hyperparathyroidism with Vitamin D, phosphate binders and calcimimetics. The patient had thoracic pain for over 3 months and was unable to move. In September 2021 a spinal cord MRI was performed, where a pathological fracture of T8 was detected. A total body CT scan showed no other evident lesions. After the radiological examinations the patient underwent vertebrae fixation surgery and a biopsy was taken from the lesion. The pathology report revealed a brown tumor. Despite the pharmacological treatment the levels of PTH was increasing, until 2519 pg/dl, with phosphate serum of 8.37 mg/dl (normal range 2.7-4.5 mg/dl) and serum calcium of 10.22 mg/dl (normal range 8.4-10.2 mg/dl). In June 2022 the patient underwent a total parathyroidectomy. This was followed by a dramatic fall in serum PTH levels and normalization of serum calcium and phosphate levels.

Conclusions: Brown tumor is a rare complication that occurs due to increased osteoclastic activity in secondary hyperparathyroidism. In symptomatic cases it is recommended to perform tumor resection, spinal decompression and stabilization, along with medical or surgical parathyroid intervention to control the underlying cause. Therefore, an early diagnosis and parathyroidectomy in a medically resistant hyperparathyroidism is essential.

Keywords: brown tumor, secondary hyperparathyroidism, renal failure, spinal cord

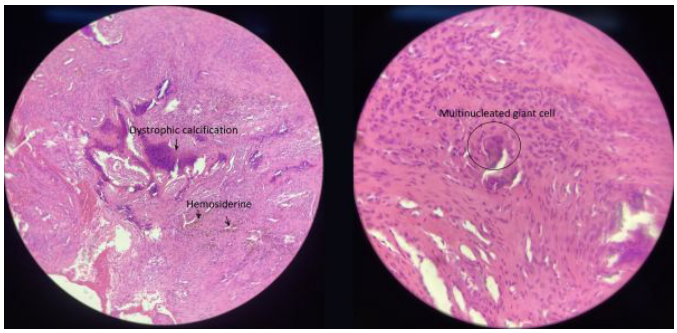

Figure: Histopathology

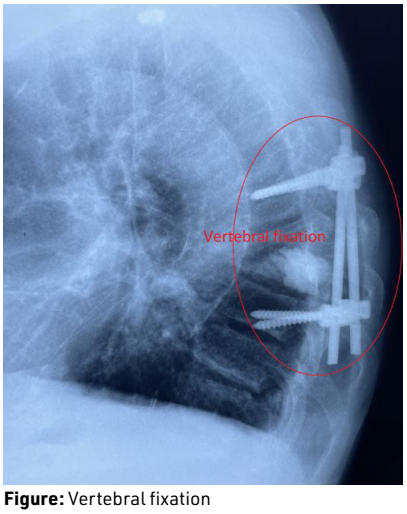

Figure: Vertebral fixation

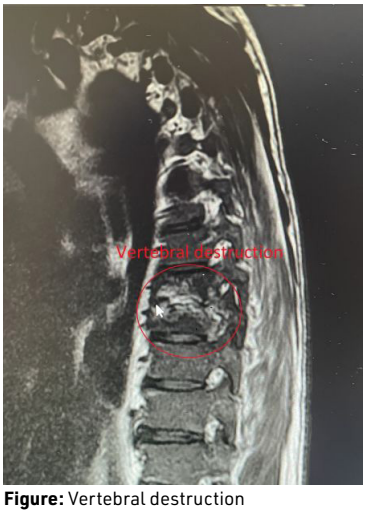

Figure: Vertebral destruction

SECONDARY HYPERTENSION IN A PATIENT WITH BILATERAL RENAL ARTERY STENOSIS AND LEFT KIDNEY CANCER

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Introduction: Renal artery stenosis (RAS) is the most common cause of secondary hypertension. It accounts approximately 1–3% of all causes of hypertension. Over 90% of RASs are caused by atherosclerosis, the remainder by fibromuscular dysplasia. Atherosclerotic RAS is increasingly with aging, particularly elderly people with diabetes, hyperlipidaemia, aortoiliac occlusive disease, coronary artery disease or hypertension.

Case: We present here the case of a 63 years old male presented in emergency with headake, dessenis and heigh value off arterial pressure (up 210/100 mmHg) thought he was taking a lot of antihipertensiv medications. During visiting him an abdominal murmur on both sides were heard. His examinations resalted: Cardiac echo: Septal hipertrofi with normal LVEF. Laboratory finding: creat 1,22 mg/dl, creatinine clearence 48 ml/mim, the other findings were normal. In abdomimal echo was seen a formation inside left kidney. So the patient had abdomimal ct with contrast underwent and the result was: right artery 50% stenosis, left artery 45-50% stenosis and in inferior side of left kidney was seen a tumor 55x56 mm. The patient underwent left nefrectomi for tumor which resulted cancer. He made 6 antitumoral cikles and 1 year after, no meta were seen. The patient was planed for the reminder renal artery stenting. On the routine control the patient was better.

Conclusion: Knowing the severe and lifethreatening complications of RAS is important its early diagnosis and correct treatment.

Keywords: bilateral renal artery stenosis, kidney cancer, secondary hypertension

THE IMPACT OF FRAILTY IN HEMODIALYSIS DURING COVID PANDEMIC

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Introduction: Frailty is a state of increased vulnerability to physical stressors. It is common in patients with kidney failure who are on hemodialysis (HD). Recent studies have suggested that other dialysis outcomes are compromised in frail individuals. The determinants of COVID-19 mortality are well-characterized in the general population, but less numerous and inconsistent data are among the HD patients. The aim of this study was to determine the impact of frailty on mortality in HD patients during the Covid pandemic.

Methods: For the frailty assessment the Frailty Phenotype by Fried et al. was used, where frailty was reported if three of the following criteria were met: unintentional weight loss, self-reported exhaustion, weakness, slow walking speed, and low physical activity. Of 281 HD patients included in the study, the frailty prevalence was 44.8%, whereas the rest were pre-frail (20.6%), and robust (34%). The patients were followed up for three years also monitoring their covid infection rate. The primary outcome in this retrospective cohort study was all-cause mortality.

Results: Patients who were on HD longer than 60 months have more characters of frailty (p=0.019). The relative risk of dying for frail patients during the three years follow-up is 1.42 (time to death: 14.81+ 11.96; p=0.002). A difference was noticed in survival between distinct types of the frailty score (p=0.05). A relationship between the presence of frailty and time to death was assessed [hazard ratio (HR)=1.17, 95% CI: 1.055– 1.378, p=0.043) (figure 1). Also, a difference was noticed between patients with Covid infection, with a relationship to the time to death [hazard ratio (HR)=1.787, 95% CI: 1.333– 2.396, p=0.043). (Figure 2)

Conclusion: Frailty is a strong indicator of all-cause mortality in hemodialysis patients, who are already at substantial risk for bad outcomes. This is especially present during the Covid pandemic where every infection can worsen their clinical condition and therefore accelerate their death. In order to fully understand those relations, further research studies with a larger number of patients need to be conducted.

Keywords: hemodialysis, covid, frailty phenotype

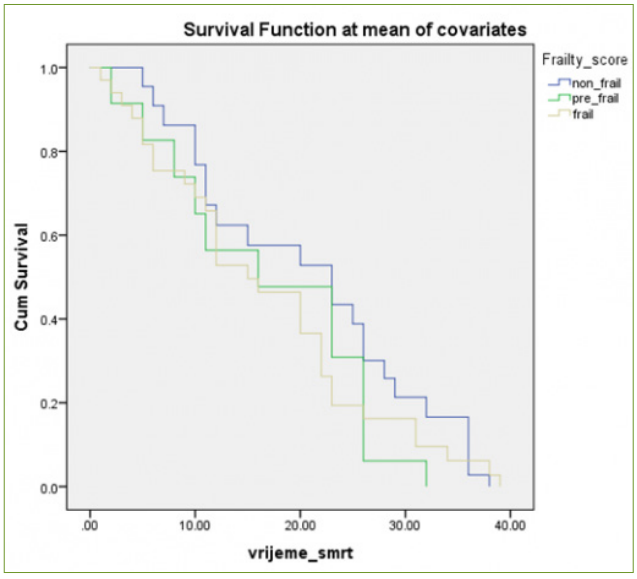

Figure: Kaplan Mayer survival curve of frailty score in HD patients

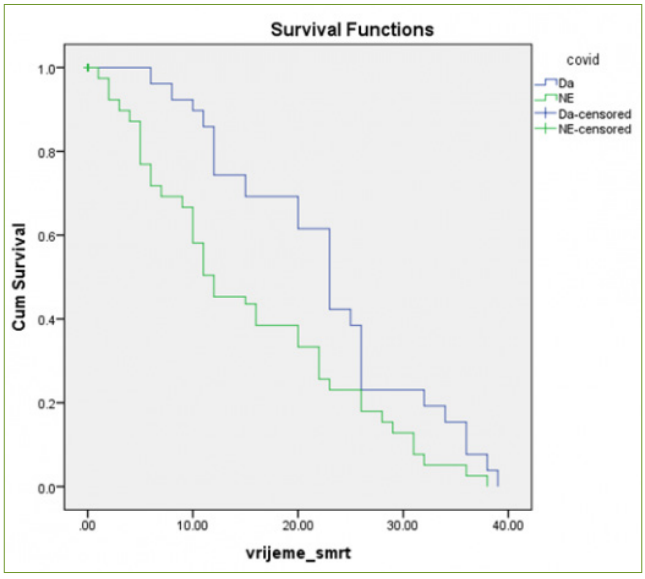

Figure: Kaplan Mayer survival curve of Covid infection in HD patients

PP-88 Other

ENUREZIS AND FATIGUE, FAMILIAL HYPOKALEMIA –HYPOMAGNESEMIA SYNDROME

Bedriye Nuray Alpman[1]

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Case: 10- year- old male presented to pediatric nephrology with short stature and nocturnal enuresis for the first time. He had enuresis every day upon awakening since he was three years old. He consumed three liters of fluid daily and his urine volume was around 2500 ml. He had dry mornings when he restricted fluid before bedtime. He had one urinary tract infection before hypospadias and an inguinal hernia operation at 1 year. His parents had first-degree consanguineous marriage and one of his 12 -year-old sisters had the same symptoms and numbness in her hands and legs and fatigue when she was diagnosed with tubulopathy 2 years ago. He also had fatigue and numbness in his legs. He had no other complaints, and no hearing problems were indicated.

PE: Weight: 23.4 kg (3 percentile) Length: 126 cm (3 percentile)
BMI: 14 Blood pressure: 101/62 mm Hg
The Physical exam was otherwise normal.

His blood tests showed hypokalemia (K: 2.63 meq/lt) hypochloremia (Cl: 95meq/lt)and hypomagnesemia (Mg: 1.7 meq/lt)

Aldosterone : 196 pg/ml Plasma renin activity: 22.9 ng/ml/hour
BUN: 18 creatinine: 0.45 üa: 2.7 Na: 136 Ca: 10.1 P: 3.04 T. Protein: 7.73 alb: 4.66 ALT: 19 AST: 30 ALP: 201
CBC: Hb: 13.9 Wbc: 6600 Mcv: 77 Platelet: 271.000/mm3
Blood gas analysis: ph: 7.42 PCO2: 36.5 HCO3: 23.5 BE: -0.1

His urine showed a density of 1010, ph: 7, negative for glucose, nitrite, and protein with 1 erythrocyte and 1 leukocyte. Spot urine protein/ creatinine: 0.25 Calcium /creatinine: 0.012

Mg/ creatinine. 0.17
24 -hour urine Ca excretion: 0.47 mg/kg

Fractioned Mg excretion in 24 -hour urine: %12
Urinary system ultrasound: Normal
His molecular genetic test showed a homozygous mutation in the SLC12A3 gene.

Keywords: hypokalemia, hypomagnesemia, enuresis, short stature

HYPERDYNAMIC HEART FAILURE DUE TO ARTERIOVENOUS FISTULA AFTER KIDNEY TRANSPLANTATION; PRESENTATION OF TWO CASES

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Introduction: Hyperdynamic heart failure is a rare but important complication of (Arteriovenous Fistula) AVF, which causes a typical heart failure clinic despite increased cardiac output while the left ventricular functions are normal. In this report, two cases who developed AVF-induced hyperdynamic heart failure after kidney transplantation and benefited clinically from its closure are presented.

Case 1: A 55-year-old male, ESRD due to diabetic nephropathy, 9 years HD from brachio-radial AVF, kidney transplant from a cadaveric donor was performed in 2019. For three years, he had no clinical problems but for the past several months he had dyspnea, diffuse edema, and severe hypervolemia despite a well-functioning allograft. On physical examination, he was hypertensive (165/90mmHg), had bilateral lung rales and 3+ pretibial edema. He had acute coronary syndrome during his hospitalization, non-critical lesions were detected in his coronary angiography. While EF was 65% in his ECHO, PAP:65 mmHg was detected. Hyperdynamic heart failure secondary to AV fistula was considered. In Doppler, the neck section of the AV fistula was 7.9 mm, and the flow rate was 2500-3400 ml/min. AVF was closed in June 2022 and in less then two weeks his dyspnea and edema disappeared, and full clinical recovery was achieved.

Case 2: A 68-year-old female had ESRD secondary to hypertension,she had radio-cephalic AVF for three years, kidney transplant was performed in November 2021, since then she had a well-functioning allograft. However in May 2022, dyspnea, orthopnea, and pretibial edema developed. While there was an increase in creatinine, there was no albuminuria/proteinuria. Cardiology did not consider systolic heart failure due to normal echocardiography (EF: 55%, PAP: 35 mmHg). Hyperdynamic heart failure was considered in the patient. AVF doppler; The diameter of the fistula boot was 8.3 mm and the flow rate was >2500 ml/min, and the AVF was closed. After fistula closure, dyspnea and orthopnea complaints regressed, and creatinine levels returned to basal levels.

Conclusion: High-output cardiac failure secondary to arteriovenous fistula is a condition with rapid clinical response to treatment, which should be considered in the case of clinical heart failure in kidney transplant patients. Ideally, in kidney transplant patients with well-functioning allografts, routine early closure of the AVF may be recommended.

Keywords: end stage renal disease, kidney transplantation, heart failure, arteriovenous fistula

DIFFICULT DECISIONS IN KIDNEY TRANSPLANTATION; ATYPICAL HUS AND PREOPERATIVE HIGH SENSITIZED PATIENT

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Introduction: In kidney transplantation, highly sensitized patients due to donor-specific antibodies (DSA) or ESRD etiology such as aHUS that will cause high post-transplant recurrence and allograft loss are at high risk for early allograft loss. In this case report, a patient who had both of the mentioned risks and the approach for a successful kidney transplant is described.

Case: A 27-year-old woman had a one and a half year history of using eculizumab due to aHUS diagnosed during pregnancy. She applied for preemptive kidney transplantation from a living donor partner. Pretransplant immunologic tests revealed, Complement dependent cytotoxicity (CDC) B cell cross border negative, Flow Crossmatch B-cell positive and DSA against 3/6 HLA antigen was detected in Single Ag test of the patient (HLA-A*01 3867 MFI, HLA-B* 37 vs. 1716 MFI, HLA-DRB1*10 vs. 4192 MFI). Rituximab 375 mg/m2 was added to the protocol 14 days before kidney transplantation due to DSA. Also transplantation was planned with eculizumab prophylaxis, preoperative eculizumab 900 mg was administered the day before the operation and kidney transplantation was performed. The patient, whose allograft functioned very well in the follow-up, was discharged one week later with an additional dose of prophylactic 900 mg eculizumab and basal creatinine of 0.9mg/dl. Routinely, 900 mg eculizumab every 15 days was recommended. Allograft functions remained stable in the outpatient clinic controls (last creatinine 0.85mg/dl). After three months DSAs were controlled, single Ag Class 1 and 2 tests were negative.

Conclusion: With the terminal complement inhibition provided by eculizumab, two-way benefit was achieved in both aHUS and acute antibody-mediated rejection prophylaxis. On the other hand, rituximab successfully suppressed DSA production in the long term. Combined use of current monoclonal antibodies may increase kidney transplant success and allograft survival in selected cases with multiple risks, as in the case presented here.

Keywords: kidney transplantation, aHUS, donor specific antibody, eculizumab, rituximab

RECURRENT GOODPASTURE SYNDROME WITHOUT CIRCULATING ANTI-GBM ANTIBODIES 18 YEARS AFTER KIDNEY TRANSPLANTATION: CASE REPORT

Gizem Korkut[1], Nebil Havvat[2], Aygül Çeltik[1], Ozan Salman[2], Banu Sarsık Kumbaracı[3], Sait Şen[3], Akın Çinkooğlu[4], Devrim Bozkurt[5], Gülay Aşçı[1], Hüseyin Töz [1]

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Introduction: Anti-GBM disease is a small vessel vasculitis that presents with rapidly progressive glomerulonephritis and/or alveolar hemorrhage, often resulting in end-stage kidney disease. Recurrence after kidney transplant is rare, especially in the late period. We present a case of recurrent anti-GBM disease eighteen years after kidney transplantation.

Case: Graft dysfunction, hematuria and proteinuria were detected in the routine follow-up of a 44-year-old male patient who underwent a kidney transplant due to Goodpasture's syndrome. Graft biopsy showed cellular crescents, segmental proliferation and immunofluorescence revealed linear staining for IgG. Anti-GBM antibodies were not detected. Patient was diagnosed recurrence of anti-GBM disease and treated with intravenous pulse methylprednisolone, low dose oral cyclophosphamide and plasma excahenge with albumin substitution. During the treatment, diffuse alveolar hemorrhage developed. Patient underwent plasma exchange with substitution of fresh frozen plasma. At the end of the treatment, computed tomography showed regression of alveolar hemorrhage but graft functions did not improve. Anti-GBM antibodies was still negative.

Conclusion: The incidence of recurrent linear IgG staining is high in recipients who undergone kidney transplantation secondary to anti-GBM disease, but most patients remain clinically asymptomatic. Symptomatic patients typically present with microscopic hematuria, proteinuria and graft dysfunction, graft loss is common. The relatively low rate of significant recurrence of anti-GBM disease may be due to delaying kidney transplantation and administration of maintenance immunosuppressive therapy. To our best knowledge, this is the latest recurrence of anti-GBM disease after kidney transplantaion reported in literature. The absence of anti-GBM antibody may be associated with various technical and immunological reasons. Careful examination in long-term follow-up of kidney transplant patients is important in terms of recurrence of primary disease and rejections. Kidney biopsy is one of the most important tools for early detection and treatment of acute rejections and recurrent glomerular disease.

Keywords: goodpasture syndrome, renal transplantation

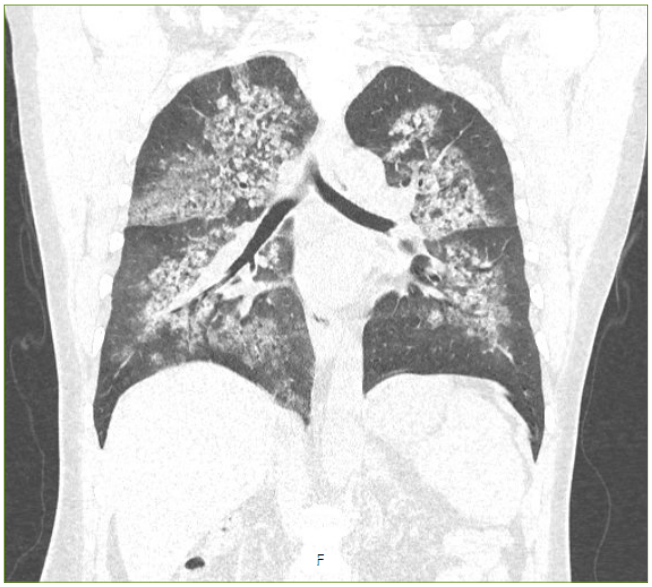

Figure: Computer Tomography, Active Alveolar Hemorrage

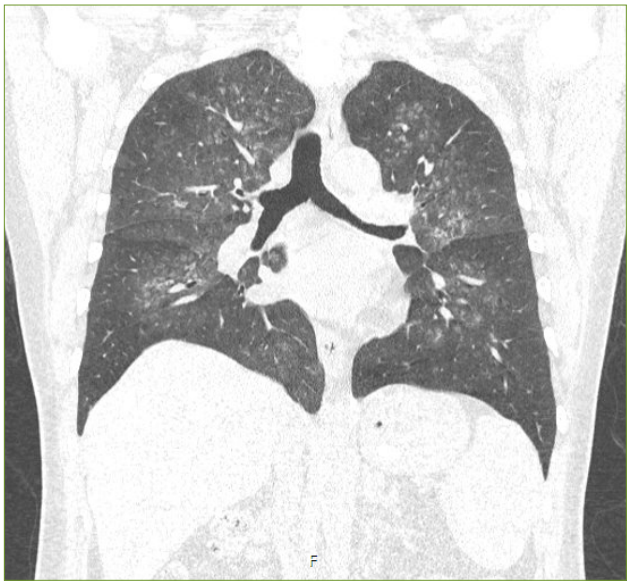

Figure: Computer tomography, End of the Treatment

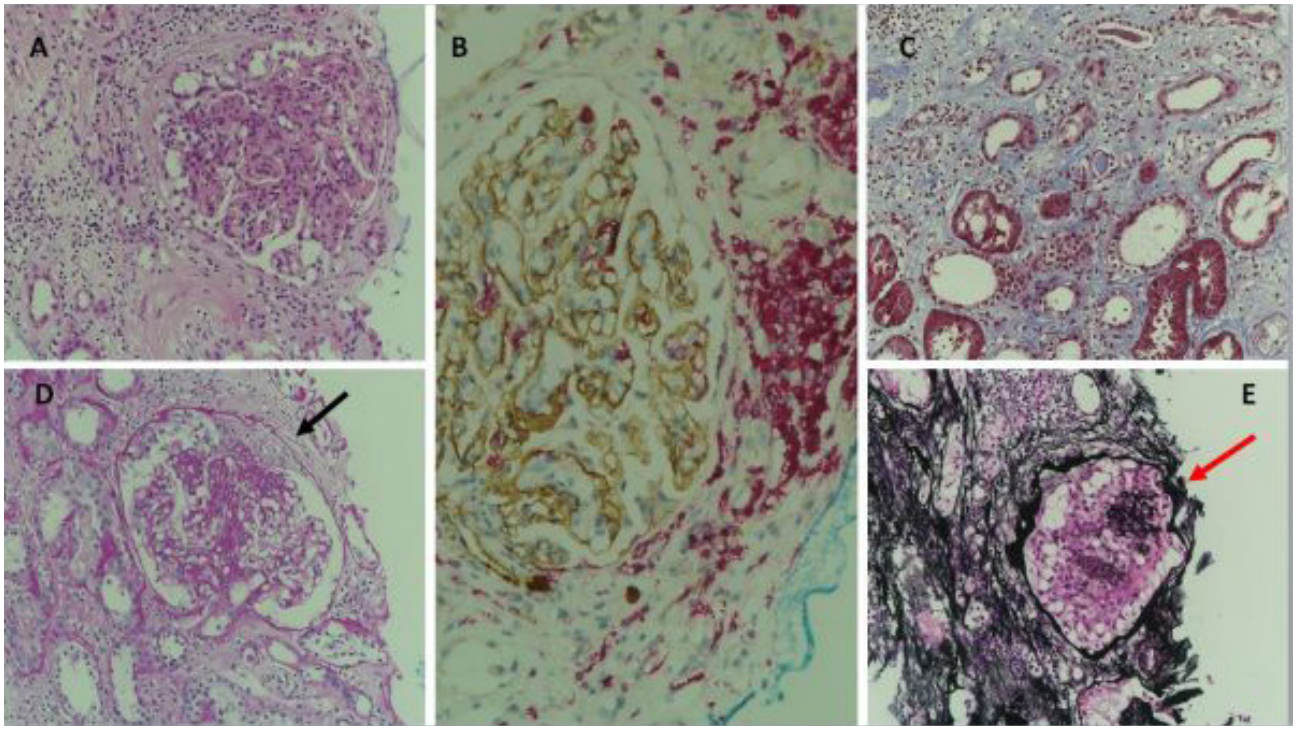

Figure: Histopathological features of antiglomerular basement membrane disease. Endocapillary proliferation in the glomerular clump (A; Hematoxylin&Eosin X200). By immunohistochemical examination of glomerular basement membranes; C4d deposition (brown), and LCA positivity of inflammatory cells (red) (B). Interstitial fibrosis and tubular atrophy (C, Masson trichorm X200). Segmental sclerosis of the glomerular clump (D, PASX200). Extracapillary proliferation (crescent) and ball obliteration in the glomerular ball (E, Methenamin SilverX200)

MONOCLONAL GAMMOPATHY OF RENAL SIGNIFICANCE: CHALLENGES IN DIAGNOSIS, TREATMENT AND MANAGEMENT

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Introduction: Monoclonal gammopathy of renal significance is a hematologic disorder characterized by the secretion of a monoclonal immunoglobulin that can damage the kidneys. Frequently , the clonal B-cell expansion and the M protein can not be identified, nevertheless, the progressing renal failure urges for appropriate diagnostic and treatment measures to prevent end stage kidney disease. This paper presents the first case of MGRS diagnosed and treated in the Republic of Kosovo, the kidney biopsy showed both features of immunotactoid glomerulopathy and cryoglobulinemic glomerulonephritis. Bortezomib based treatment regimen was commenced and a successful renal recovery response was achieved.

Case: A62 - year - old male patient was admitted in our clinic because of subnephrotic range proteinuria, hypoalbuminemia, ascites and renal failure. The initial laboratory work up showed high erythrocyte sedimentation rate, increased serum urea, creatinine and cholesterol levels, hypoproteinemia, hypoalbuminemia and decreased C3 complement levels. Urinealysis in the beginning of disease course showed subnephrotic range proteinuria, then an active urine sediment consisting of erythrocytes, leukocytes and amorphous crystal casts was noted. SPEP showed increased level of alfa 2 protein and decreased level of gamma globulins. Free light chains were in reference range, with a slight increase in their ratio. UPEP and immunofixation assays were without any significant finding. On immunohistochemistry of bone marrow biopsy, increased staining for CD20+ B-cells, CD 138+ positive plasma cells was detected otherwise the pathology report from the bone marrow biopsy concluded a reactive bone marrow. The aspirate smears from the bone marrow showed less than 10% of plasma cell population. We strongly suspected that a monoclonal gammopathy of renal signifinace was the explanation of the renal failure in our patient, and in collaboration with our colleagues from the Hematology Clinic, UCCK, we decided to initiate a Bortezomib, Cyclophosphamide, Dexamethasone containing chemotherapeutic treatment regimen, the efficacy of which was to be measured with a renal response, as no monoclonal immunoglobulin was detected. In the very first weeks of treatment with CyBorD chemotherapy regimen marked improvements were noted, no ascitic fluid was detected on abdominal ultrasound, urea and creatinine decreased and proteinuria was less than 5 g/24 h. A kidney biopsy was performed. The diagnosis of Focal Segmental Glomerulosceloris was made. The findings from electron microscopy correlate more with an immunotactoid glomerulopathy.

Discussion: The inability to isolate the M protein in the face of progressing renal failure and severe hypoalbuminemia did present the main obstacle in solving our case. In the search of a glomerular disease with a secondary cause, bone marrow biopsy showed less <10% plasma cell population. However, the increasing population of CD+20 B-cells, and CD138+ plasma cells on the IHC stain of the bone marrow specimen suggested that MGRS would be the cause of our patient's clinical deterioration. Conclusion: For a developing and newborn country such as the Republic of Kosova, MGRS is a rare concept and disease. By this case report, we hope to raise awareness for these group of disorders and hopefully begin to establish our own experience in diagnosing, treating and managing MGRS.

Keywords: MGRS, Immunotactoid glomerulonephritis, M protein

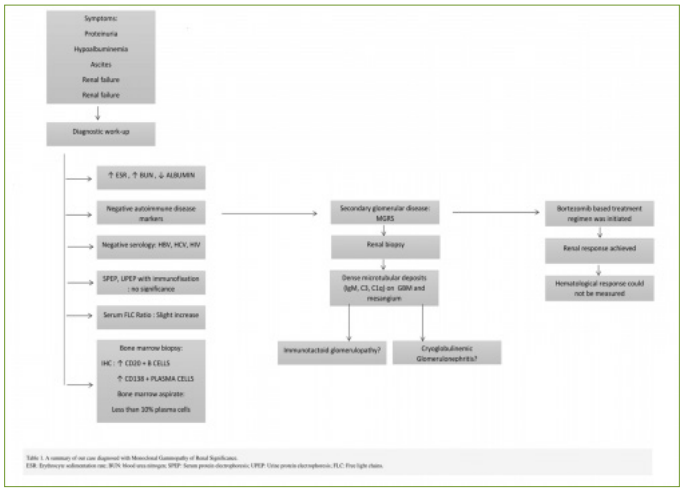

Figure: diagnostic algorithme

DE NOVO IMMUNE COMPLEX GLOMERULONEPHRITIS IN KIDNEY ALLOGRAFT AFTER SARS-COV-2 INFECTION

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Introduction: Acute kidney injury is a common complication of COVID-19. Other COVID-19 associated kidney diseases and the most common indications for native kidney or allograft biopsy are proteinuria, hematuria, allograft failure and nephrotic syndrome (NS). The most common pathohistological diagnosis were acute tubular injury (ATI) and collapsing nephropathy in native kidney and allograft rejection and ATI in allograft biopsies. We present a unique case of de novo immune complex glomerulonephritis (ICGN) in kidney allograft after SARS-CoV-2 infection.

Case: A 72-year-old woman with a history of cadaveric kidney transplantation 12 years prior due to multicystic kidney disease presented with new onset edema 2 weeks after discharge from a COVID hospital. She was tested positive for SARS-CoV-2 following 4 days of fever and cough, received casirivimab/imdevimab monoclonal antibody as an outpatient, but after 2 days developed acute respiratory insufficiency and was hospitalized and treated for bilateral pneumonia with antibiotics, oral corticosteroid and oxygen and made a complete recovery. Her maintenance immunosuppression, consisting of tacrolimus, mycophenolate mofetil (MMF) and prednisone was adjusted during hospitalization and reinstated after discharge. Two weeks after discharge bilateral pitting leg edema appeared and she was admitted for further workup. Her laboratory results showed hypoproteinemia, hypoalbuminemia and nephrotic range proteinuria (3,65 g/24h). A kidney allograft biopsy was performed. Light microscopy showed a membranoproliferative pattern of glomerular injury (MPGN). Immunofluoresent (IF) microscopy showed granular membranous deposits of IgG (3+), IgA (3+), IgM (3+), C3 (2+), C4 (0), fibrinogen (0). A diagnosis of de novo ICGN was made. De novo GN is a new onset GN in a transplant recipient with a different type of original kidney disease. It is associated with an increased risk of allograft failure. MPGN is a rare type of de novo GN, mostly secondary to viral infections, rejection, autoimmune disease, calcineurin inhibitor (CNI) toxicity and thrombotic microangiopathy (TMA). In our case viral serologies for chronic hepatitides and HIV were negative, cytomegalovirus viral load insignificant, cytotoxic antibodies were negative. Antinuclear antibody IF was mildly positive on centromere, without clinical signs of CREST and considered irrelevant. The biopsy had neither the characteristics of allograft rejection, TMA nor CNI toxicity, leaving COVID - 19 as the most likely cause of the de novo GN. There is no consensus on therapy. After an initial corticosteroid pulse and an increased dose of oral corticosteroids, complicated by new onset diabetes and no reduction in proteinuria, she was taken off MMF and started on cyclophosphamide pulses (500 mg) every two weeks. Before the planned 5th pulse the patient was admitted to surgery with a perforated colon due to diverticulitis. Despite rectosigmoid resection, diffuse stercoral peritonitis, sepsis and multiorgan failure developed, with lethal outcome. According to our literature search this is a unique case of de novo ICGN, with one similar case of post-COVID native kidney ICGN in a young female with genetic focal segmental glomerulosclerosis and hemolytic uremic syndrome.

Conclusion: De novo ICGN is a rare cause of post COVID nephrotic syndrome, with significant risk of allograft loss, increased mortality and currently without clear guidelines concerning therapy.

Keywords: glomerulonephritis, membranoproliferative, SARS-CoV-2, kidney transplantation

IS A NEW ERA BEGINNING IN UNDERSTANDING THE PATHOPHYSIOLOGY OF IGA NEPHROPATHY?

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Introduction: IgA nephropathy (IgAN) is the most common form of glomerulonephritis in many parts of the world and remains an important cause of end-stage renal disease. Current evidence suggests that IgA nephropathy is not due to a single pathogenic insult, but sequential pathogenic "hits". One determined risk in IgAN pathophysiology has been associated with gut dysbiosis, intestinal membrane disruption, and translocation of bacteria into blood. The glutathione S-transferases (GSTs) are a multigene family of enzymes largely involved in the detoxification of chemicals. In animals, enhanced expression is mediated by products of gut fermentation. IgAN is also an oxidative-stress activated disease. With this study we aimed to identify GST-sigma staining pattern in kidney biopsy of IgAN patients and clarify any existing clinical correlation.

Methods: We screened biopsy proven IgAN patients retrospectively between 2017-2022. In the study, we included patients with minimum 6 months follow-up. 127 patient's biopsy material re-analyzed regarding pathological findings, MEST-C score and GST-sigma staining pattern. We also analyzed clinical findings at the time of kidney biopsy and at 6 months during the follow-up. We also calculated IgA progression risk score from the patient's records. The immunohistochemical staining characteristics of glutathione-S-transferase (GST)-sigma was examined by light microscopy, and distribution and localization. After GST-sigma staining 62 patients' records were finalized for the analysis.

Results: From the 62-kidney biopsy material, 76.7% sample were positive (+) for GST-sigma expression. From GST-sigma (+) samples, 56.7% sample were (+) for podosit expression (Figure). Only 23.3 % were (+) for mesangial staining (Figure). GST-sigma staining was correlated with segmental sclerosis (r=0.433, p=0.001), arteriosclerosis (r=0.286, p=0.027) and IgA prediction risk score which is calculated at the time of biopsy (r=0.316, p=0.016).

Conclusion: IgA nephropathy is a heterogeneous disease with underlying pathophysiological diversions. Mesangial deposits of IgA activate intracellular signaling mostly results in oxidative stress, as detected in mesangial cells. With this study we showed that GST-sigma staining in mesangial area, podosits, both in mesangial area and podosits are important for clarifying the dominated areas oxidatively effected in IgA patients. We showed that IgAN is not only a mesangial disease, podosits are also affected with a solid increased disease progression risk.

Keywords: Iga, oxidative stress, Glutathione-S-Transferase, staining, pathology

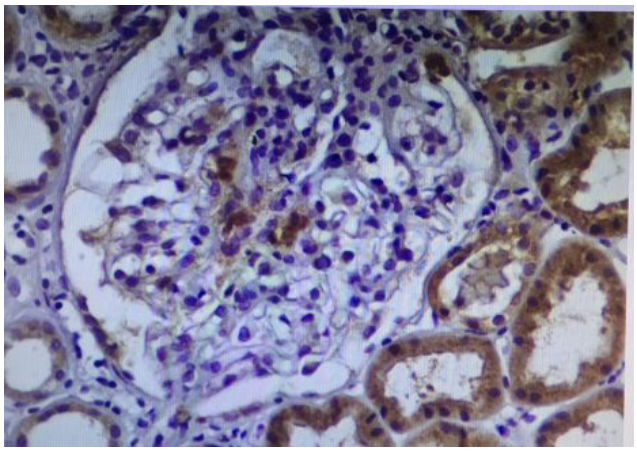

Figure: Mesengial staining with GST-si

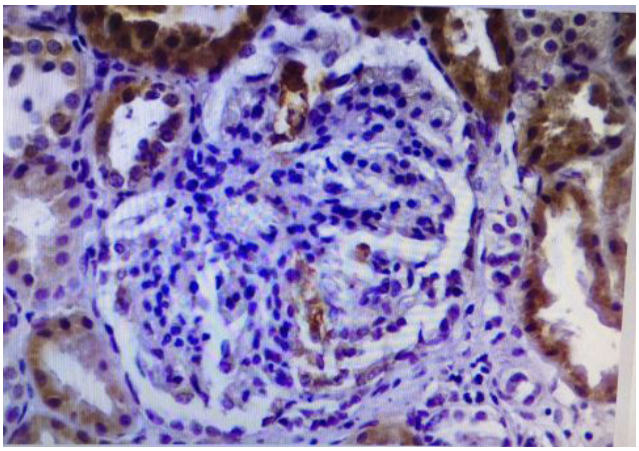

Figure: Podosit staining with GST-si

PP-95 Other

THE DIAGNOSTIC VALUES OF PSA, PROSTATIC VOLUME AND NE/LY RATIO IN PREDICTING PROSTATIC CANCER

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Introduction: Prostatic cancer is one of the most frequently diagnosed cancers and a main cause of cancer deaths in men. Screening of prostate-specific antigen (PSA) has contributed to the detection of prostate cancer at an early stage, but prostate cancer is still frequently diagnosed for the first time already at an advanced stage. The neutrophil-to-lymphocyte ratio (NLR) is one factor that has been widely reported to be a prognostic factor not only in prostate cancer but also in some solid cancers NLR inflammation markers in prostatic cancer and benign prostatic hyperplasia are also reported as marker for diagnosis of prostatic cancer.

Methods: In order to find the diagnostic values of PSA, prostatic volume and Ne/Ly ratio in predicting prostatic cancer, we have evaluated 113 men, mean age 67,9+/-5,85 years, all of them with symptoms for prostatic enlargement. The patients had frequent urination, disuric problems, difficulty starting urination, a weak or slow urinary stream, feeling of incomplete bladder emptying, urgency to urinate and getting up frequently at night to urinate. The patients who have PSA above 4 ng/ml were included in the study. In all of the patients, prostatic biopsy was performed. We have analysed prostatic volume and PSA in all of them, but after that we have divided them in 2 groups depending histopathologic finding from the biopsy. First group were patients with benign prostatic hyperplasia (BPH) and the second one was patients with prostatic cancer (PC).

Results: 68 out of 113 patients were with BPH, mean age 66,9+/-5,8years and 45 patients were with carcinoma prostatae, mean age 69,3+/-5,5years. There is statistically significant difference between the groups (p=0.034). The values for PSA were also statistically different: in patients with BPH were 30,8 +/-38,4 and in patients with PC 53,6+/-59ng/ml (p=0.014). The volume calculated with echosonography is also statistically different: in patients with BPH 65,3+/-28,8 and in patients with CP 45,9+/-21,3 (P=0.000). For Ne/Ly ratio, we found difference between the 2 groups, but it was not statistically significant (p=0.678).

Conclusion: The authors confirmed the diagnostic values for PSA and prostatic volume for predicting prostatic cancer, but the value for Ne/Ly ratio is not predictive for diagnosis of prostatic cancer.

Keywords: prostatic volume, PSA, Ne/Ly ratio, prostatic cancer

PP-96 Other

ERDHEIM-CHESTER DISEASE: A CASE REPORT

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Introduction: Erdheim-Chester disease is a rare non-Langerhans histiocytic multisystem disease.It presents with multifocal sclerotic lesions of the long bones with foamy histiocytes on biopsy.Most patients have bone involvement at the time of diagnosis,most of them also have at least one extra-bone involvement.ECD cells express CD14,CD68,CD163.Some of the patients are asymptomatic.Patients with multisystemic involvement may show a rapidly progressive clinical course.Vemurafenib is recommended for patients with BRAF-V600E mutation,steroids are usually given to patients with mild symptoms.

Case: A 55-year-old female patient, diagnosed with hypertension, had been using irbesartan hydrochlorothiazide for 10 years. She came to the emergency department with complaints of nausea, vomiting, high fever and swelling in the legs for 2 months. She had acute renal failure,high fever and pyuria. There was no hematuria or proteinuria in the complete urinalysis. There were bilateral pleural effusion, interstitial edema findings in non-contrast chest tomography. The patient was followed up in the nephrology service. Renal artery doppler ultrasonography revealed right renal artery stenosis and right kidney atrophy. The serum C3-C4 which was sent with a prediagnosis of vasculitis was found to be normal, ANA and ANCA negative. Intravenous furosemide treatment was started to the patient. There was no growth in blood and urine cultures. IGRA, brucella, syphilis tests were negative. Echocardiography was performed with the suspicion of infective endocarditis, vegetation was not detected. Spinal MRI with contrast was performed due to low back pain. Multiple sclerotic in cervical, thoracic, lumbar, pelvic bones lesions were detected. No focus of infection was found. Endoscopy and colonoscopy were performed. Mammography and cervicovaginal smear were taken. No malignancy was detected. There was no focus of infection in cranial MR, dural metastasis? interpreted as. Fundamental examination was performed,there was no papilledema. Lumbar puncture was performed, cytology was benign. Contrast-enhanced thoracoabdominal tomography revealed diffuse wall thickness increase in the aortic arch, descending abdominal aorta, stenosis at the infrarenal level, celiac, SMA, bilateral renal artery and the level of the IMA orifice. With the prediagnosis of Takayasu's arteritis, IV methylprednisolone 1 mg/kg/day was started. The dose was gradually reduced. PET/CT was performed due to vertebral multiple sclerotic lesions. At L4 vertebra level, two focal hypermetabolic foci in the small intestinal loop adjacent to the iliac vascular system, two distal femurs and sclerotic lesions with moderate/increased FDG uptake in the tibia were observed. Bone biopsy was taken from the right tibia anterior surface of the patient. Pathology was consistent with Erdheim Chester disease; CD14, CD163, CD68 were positive, BRAF V600E were pale positive. BRAF-V600E was positive in the blood sent to the medical genetics laboratory. Vemurafenib treatment was started by consulting the hematology. Two weeks after the treatment, the patient had newly developed epigastric pain,nausea and vomiting. Contrast-enhanced abdominal tomography showed suspicion of colonic perforation and the patient was taken to an emergency laparotomy. Perioperative jejunal perforation was detected. In resected bowel pathology CD14, CD163, CD68, histiocytic cells were positive. The patient died due to sepsis in the postoperative period on the 10th day of the intensive care follow-up.

Keywords: Acute kidney injury, hypertension, Erdheim-Chester disease, BRAF V600E, vemurafenib

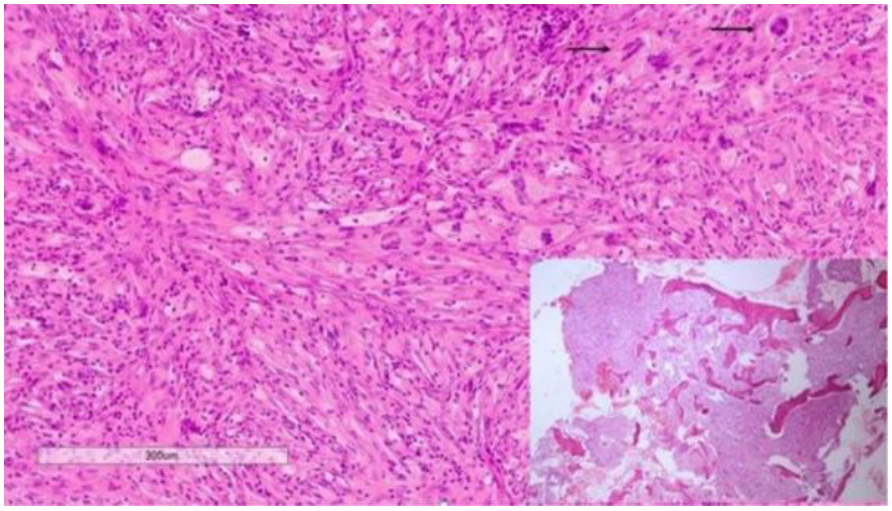

Figure: Infiltration with foamy (xanthomatous) histiocytes, Touton type multinuclear giant cells (arrow) and lymphocyte, plasma cells filling bone marrow areas. (Inside picture: Areas where it infiltrates bone) (Hematoxylin Eosin)

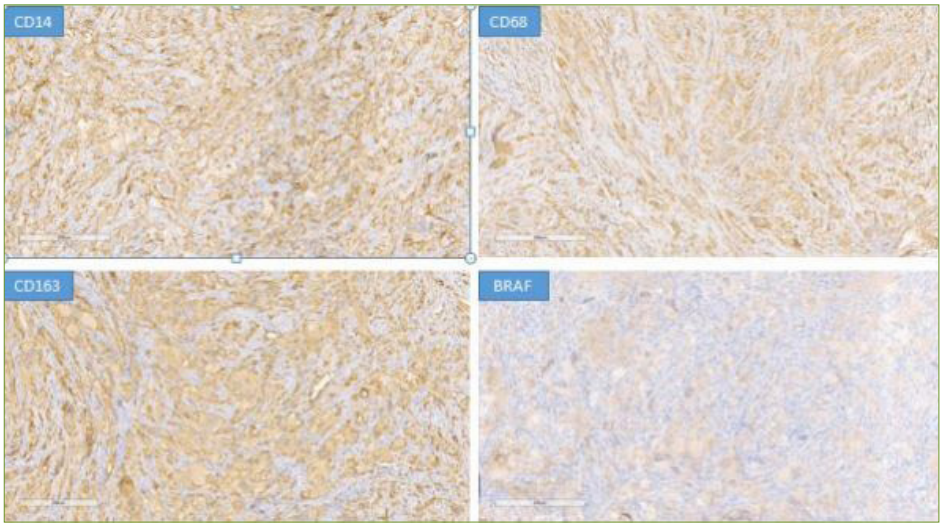

Figure: Remarkable positivity with CD14, CD68, CD163 even in areas where the infiltration is spindle-shaped in immunohistochemical examination. BRAF is observed as paler

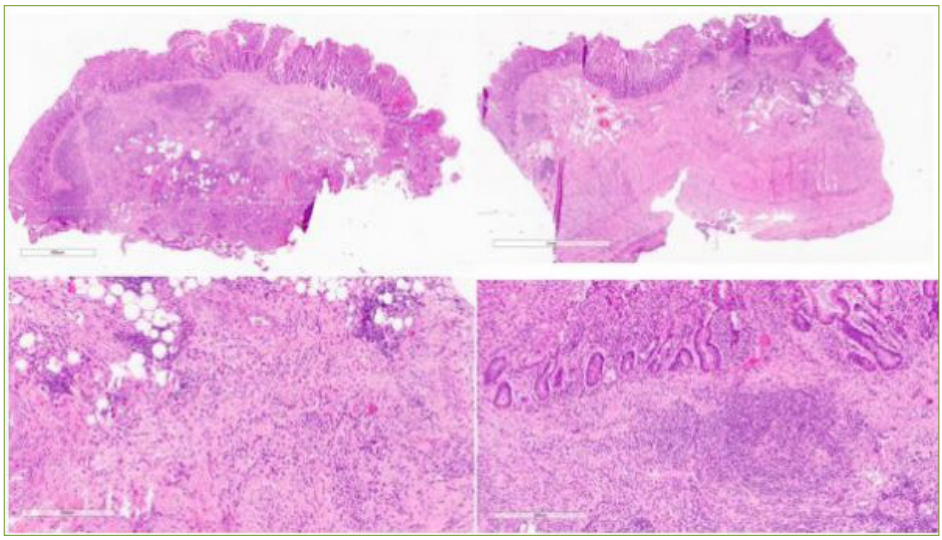

Figure: In the gastrointestinal tract, lymphoid aggregates, plasma cells in the mucosa and submucosa, and histiocytic cells in the interstitial distribution

PP-97 Other

CARDIORENAL SYNDROME IN A PATIENT WITH KIDNEY TRANSPLANT

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Introduction: Cardiorenal syndrome (CRS) is defined as a pathophysiologic disorder of heart and kidneys where acute or chronic dysfunction of one organ leads to acute or chronic dysfunction of the other. In our case report, we will present a complex patient with a kidney transplant who developed CRS type 1.

Case: 38-years-old female patient was admitted at our Clinic with a clinical picture of Diabetic ketoacidosis and suspicion of a possible septic condition. Symptoms such as chest pain followed by persistent vomiting occurred the day before the admission. The patient in our case has had diabetes mellitus type 1 since 1998, with consequent complications in the form of diabetic nephropathy, retinopathy and polyneuropathy (she was using insulin therapy and since 2019 she has been implanted with external portable insulin pump). In 2013 the patient had kidney transplantation, since then she has been regularly monitored by a nephrologist, using corticosteroid therapy, mycophenolate mofetil and cyclosporine. During her regular follow-ups, a gradual deterioration of the functions of the transplant was verified and a percutaneous kidney biopsy was performed (February 2022). Pathohistological result of biopsy confirmed the chronic active antibodies-mediated rejection of transplant. 2 months before the admission values of kidney function parameters were pointing towards the third stadium of chronic kidney disease. From the comorbidities this patient has Hashimoto's thyroiditis, chronic obstructive pulmonary disease, arterial hypertension, she had a myocardial infarction in 2012 with the implantation of 5 stents, ischemic cardiomyopathy (EF 45% per at the last check-up by a cardiologist). Immediately after admission the patient suffered NSTEMI (non-Q acute myocardial infarction) which was complicated by development of CRS with new-onset of transplant function impairment and development of oliguria, along with deterioration of liver function and pituitary-thyroid axis disorder. Multidisciplinary treatment was carried out, conservative therapy was applied without the indication for surgical revascularization of the myocardium and without starting active treatment with hemodialysis procedures. She was given the therapy according to the protocol for treating diabetic ketoacidosis, dual antiplatelet therapy, along with antibiotics, hepatoprotective therapy, intermittent use of Henle´s loop diuretics. After the appropriate therapy was applied, the patient cardiological status was improved following with establishment adequate diuresis and gradual decrease of kidney function parameter values. Patient was discharged in a stable general condition. Two months after the hospital discharge, the renal function parameters were approximately the same as before the hospitalization.

Conclusion: In this case, the acute coronary incident led to an exacerbation of chronic transplant rejection. A multidisciplinary approach, early diagnosis and adequate therapy are essential and important in the treatment of such complex cases and contribute to the positive final outcomes.

Keywords: cardiorenal syndrome, kidney insufficiency, kidney transplatation, diabetic ketoacidosis, myocardial infarction

Table 1: laboratory results at admission, after NSTEMI and at discharge.

Parameter	at admission	after NSTEMI	at discharge
Blood glucosae (mmol/l)	72,2	41,3	10,6
C reactive protein (mg/l)	3,7	50,5	2,0
Procalcitonin (ng/ml)	18,0	83,8	0,18
Troponin HS (ng/l)	605,5	>40000	5002,1
Creatine kinase-MB (U/l)	27	97	20
Urea (mmol/)	29,5	50,8	26,1
Creatinine (umol/l)	438	534	256
Sodiumm (mmol/l)	125	133	137
Potassium (mmol/l)	6,0	6,2	5,5
Chloride (mmol/l)	88	100	104
pH	7,280	7,320	7,421
Aspartate aminotransferase (U/l)	32	1150	32
Alanine aminotransferase (U/l)	25	1436	89
Gamma glutamyltransferase (U/l)	47	27	34

DIURESIS AND HEMODIALYSIS AS RISK FACTORS ON SHORT-TERM OUTCOME IN ELDERLY PATIENTS WITH ACUTE KIDNEY INJURY

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Introduction: The incidence of AKI in elderly population (≥ 65 years) is up to 10 times higher compared to patients under 65 years of age. The structural and functional changes that occur during the aging process are disposing factors that increase the risk of AKI in elderly population and make elderly population more prone to develop acute kidney injury. Also, the elderly with AKI have an increased requirement for dialysis treatment and an elevated risk of short-term and long-term mortality. Aim: The objectives of this study were to examine the effect of treatment of short-term outcomes and mortality in elderly patients with AKI.

Methods: 101 elderly patients (≥ 65) with AKI, that filled one of the criteria of AKI definition and had hospitalization over 24 hours, were enrolled in the study. Regarding treatment patients were divided into two groups, one group underwent hemodialysis and the other group who received conservative treatment. Patients were divided into groups of survivors and non-survivors based on their survival status at 10 days of diagnosis of AKI.

Results: The most common causes of AKI in our population were pre-renal, and it was noticed in 78 patients (77.23%), and renal causes was registered in only one patient (0.99%). According to our results the difference among the causes of ABO had no significant influence on survival within 10 days of AKI diagnosis (p=0.08). Deceased patients more often than the survivors had a prerenal cause of AKI (91.3% vs 73.08%). The majority of patients (78.22%) were classified at stage 3 of AKIN, 19,8% of patients were classified at stage 2, followed by stage 1 with only 1.98%. There was no significant difference in term of AKI stage relative to 10-day mortality between surviving and deceased patients. (p=0.32) According to the method of treatment, the patients were divided into 2 groups, group with conservative treatment and a group in which hemodialysis treatment was applied. 50% of survivors were conservatively treated and 21.74% of deceased patients, while intermittent hemodialysis was used in 50% of surviving and 78.26% of deceased patients. The method of treatment of AKI had a significant influence on hospital mortality (p=0.016). After 10 days from the diagnosis of AKI, significantly more often hemodialysis patients died. Deceased patients had a significantly lower diuresis on admission (p=0.0012). A diuresis of less than 500 ml was measured in about twice the number of deaths (73.9% vs 35,53%). Cox regression analysis confirmed diuresis as significant predictor of survival in patients with ABO (p=0.007). HR values from 2.245 95% CI (1.251– 4.029) indicates that the risk of fatal outcome is about 2.2 times higher in the group of patients with diuresis lower than 500ml compared to those with diuresis higher than 500 ml.

Conclusion: In our study hemodialysis treatment and decreased urine volume are associated with lower survival in elderly patients with acute kidney injury at ten days of diagnosis of AKI.

Keywords: elderly, acute kidney injury, hemodialysis, diuresis

SUCCESSFUL TREATMENT OF POST-COVID SEVERE ANCA ASSOCIATED VASCULITIS' CASE; COULD FASTER TREATMENT BE BETTER PROGNOSIS?

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Introduction: Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) results with a high degree of morbidity and mortality since its appearance in late 2019. Antineutrophil cytoplasmic antibody (ANCA) associated vasculitis (AAV) is a systemic disease that causes vasculitis in various organs and although the exact mechanism for development of the disease is not clearly understood, infection has been reported to be a triggering factor especially by cytokine storm.

Case: A 51-year-old man with a no prior comorbidity referred to our hospital with AKI, anuria and hemoptysis. The patient, who had two doses of biontech mRNA vaccine (last one 8 months ago), was positive for COVID-PCR test about 2 months ago due to complaints of runny nose, fever and fatigue. No hospitalization or medical treatment was required during the COVID-19 infection and the patient became PCR-negative. However, fifteen days after the PCR negativity, the patient started to complain of weakness, joint pain and nausea. Hemoptysis started with coughing almost every day. In the last ten days, the patient's urine output gradually decreased, He was admitted to the local hospital with these complaints. Chest computed tomography (CT) showed cavitary lesion with central opacification in the right pulmonary apex and ground-glass shadowing in the lungs bilaterally (Figure 1). Bacterial and fungal infection of lungs were ruled out. Also, Tuberculosis culture of sputum, asido-resistance bacilli (ARB) staining and immunological tests including PR3-ANCA and MPO-ANCA, ANA, anti-GBM were all negative. The patient, whose creatinine level increased progressively is referred to our hospital because of his worsening clinic, need of hemodialysis and evaluation for pulmonary renal syndrome. On admission, the patient was tachypneic and hypoxic. Within two hours of admission, he was urgently intubated due to respiratory failure secondary to sudden developed massive pulmonary hemorrhage. The clinical appearance was so devastating that treatment with IV pulse steroid 1000 mg and plasmapheresis was started immediately without serologic and/or tissue diagnosis by kidney biopsy. However, re-examination of serologic tests revealed positive result for PR-3-ANCA. Then, 500 mg intravenous pulse cyclophosphamide applied, and plasmapheresis treatment was completed to 5 sessions. After induction with 1000 mg pulse steroid for three days, steroid dose decreased gradually to 80 mg intravenous prednisolone as maintenance dose. The patient was taken to intermittent hemodialysis due to uremia and anuria. Tracheostomy was performed in the intensive care unit for the patient since being intubated for a long time. The patient's hypoxia regressed day by day, urine output gradually increased, his tracheostomy was closed, kidney functions improved, and he was discharged with recovery after a 50-day intensive care hospitalization. (Figure 2, Figure 3)

Discussion: Herein, we present a case of a severe ANCA vasculitis who presented with AKI which requiring hemodialysis and DAH after SARS-CoV-2 infection. To our knowledge, this is the first case of post-COVID PR3-ANCA positive vasculitis in the literature, presenting with massive hemoptysis and renal failure requiring dialysis, who fully recovered and survived.

Conclusion: AAV is a serious disease and prompt treatment is one of the most important factors in patient survival.

Keywords: AKI, ANCA, COVID-19, cresentic glomerulonephritis, pulmonary-renal syndrome

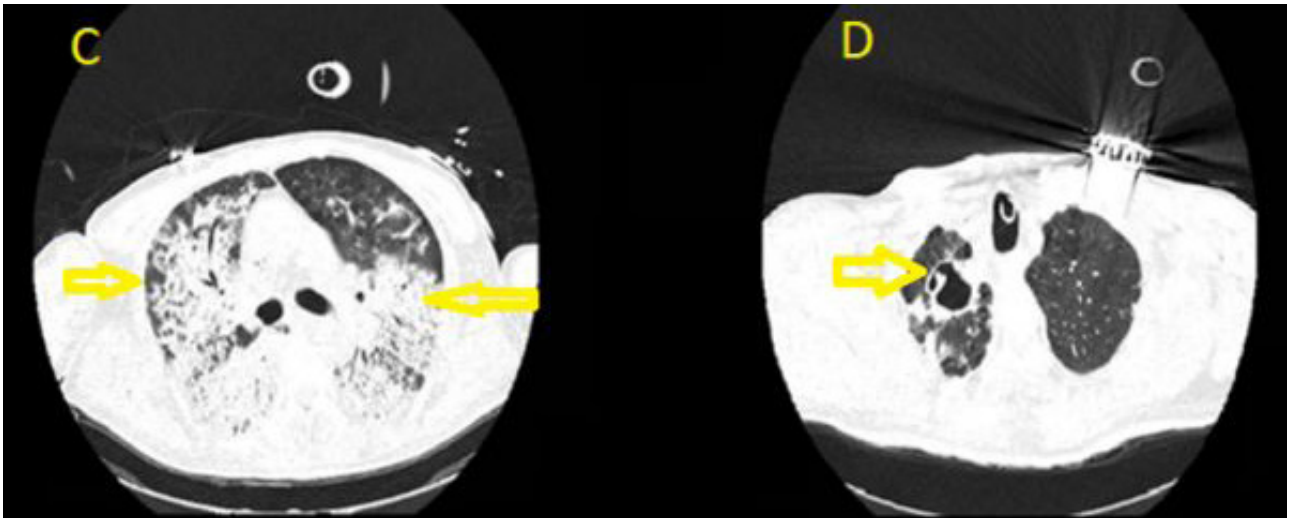

Figure 1: Thoracic computed tomography images showing a widespread consolidation with central and peripheral distribution bilaterally, These findings are suggested of diffuse alveolar hemorrhage (C), also a cavitary lession seen in right pulmonary apex (D).

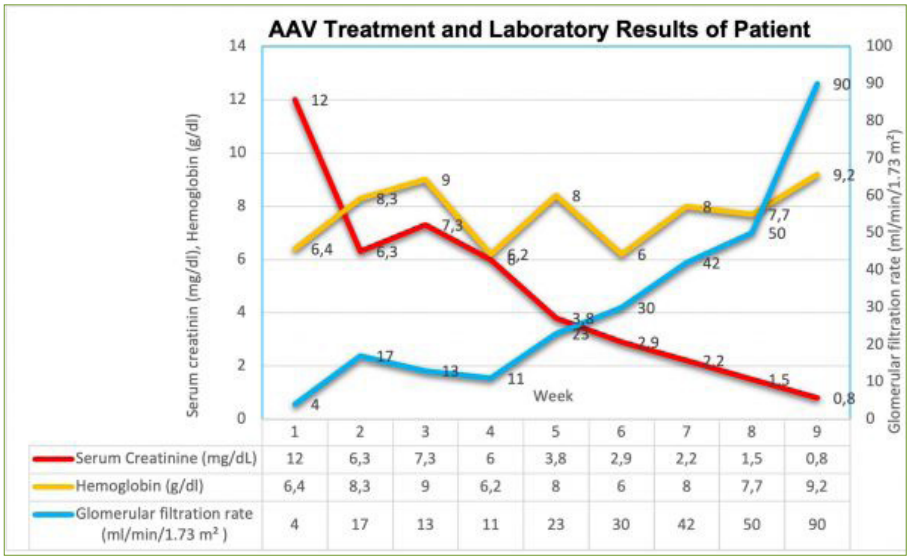

Figure 2: IV pulse steroid 1000 mg and plasmapheresis was started immediately. Then, 500 mg intravenous pulse cyclophosphamide applied, and plasmapheresis treatment was completed to 5 sessions. After induction with 1000 mg pulse steroid for three days, steroid dose decreased gradually to 80 mg intravenous prednisolone as maintenance dose. In his follow-ups, urine output gradually increased, and there was no need for hemodialysis. The decrease in hemoglobin stopped and serum creatinine value decreased from 12 mg/dl to 0.8 mg/dl. GFR increased to 90 ml/min/1.73m². Abbreviations: AAV: Anca-associated vasculitis; GFR: Glomerular filtration rate

PP-100 Glomerular Diseases

A TEENAGER FEMALE WITH FULMINANT WEGENER'S GRANULOMATOSIS

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Introduction: Granulomatosis with polyangiitis (GPA), previously named Wegener's granulomatosis, is a small-medium vessel disease characterized by necrotizing and granulomatous vasculitis that affects predominantly the respiratory tract as well as the kidney. GPA comprises a triad of upper respiratory tract (sinusitis, crusting rhinitis, saddle nose deformity, mastoiditis, hearing loss, otitis media) and lower respiratory tract (lung nodules, alveolar hemorrhage); systemic (pauci-immune) vasculitis; and renal involvement (glomerulonephritis).

Case: We presented a female patient aged 16 years with generalized arthralgia, anorexia, weight loss, myalgias, and fatigue six months before admission to our hospital. When the patient was hospitalized to our clinic, she referred fever, poly-arthritis, ear pain and dark colored urine. Laboratory and imaging examinations showed: leukocytosis, thrombocytosis, and a normochromic, normocytic anemia; increased ESR, and CRP, positive c- ANCA (PR3), negative RF, normal C3 and C4, normal kidney and liver test, proteinuria, hematuria. Renal ultrasound was normal. Sinus and Lung CT scan detected pansinusitis, diffuse bilateral ground glass and consolidative opacities. The treatment started with methylprednisolone 500 mg/d i.v. infusion for three consecutive days, cyclophosphamide 1125 mg/d i.v. and concomitantly administer mercaptoethanesulfonate MESNA. The disease ran an aggressive course, she presented acute and fulminant alveolar hemorrhage with respiratory failure, the patient died on the day 11 of hospitalization.

Conclusion: The diagnosis of GPA is very intriguing because it mimics many other disease processes. Undiagnosed GPA may have devastating consequences. Prompt diagnosis and therapy, on the other hand, may alter the grim prognosis of this disease which is regarded as a great masquerader.

Keywords: C-ANCA, Wegener'granulomatosis, alveolar hemorrhage

PP-101 Clinical Nephrology

VIEWS AND PRACTICES OF NEPHROLOGISTS ABOUT DIET FOR PATIENTS WITH CHRONIC KIDNEY DISEASE: A SMALL QUALITATIVE STUDY

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Introduction: Recent renal research has placed a significant emphasis on developing therapeutic approaches, such as dietary intervention, to slow the course of chronic kidney disease (CKD) in patients who do not require dialysis (CKD stages 1-4). Therefore, nephrologists, as critical stakeholders, play an essential role in the nutritional management of CKD patients. This study aimed to investigate the views of nephrologists concerning the part of the diet in managing CKD stages 1-4 and the followed practices for dietary counselling.

Methods: Nephrologists from the Mediterranean region (Antalya, Burdur and Isparta) participated in this qualitative research by completing a questionnaire consisting of 24 items sent via the professional renal WhatsApp network. After particular adaptations regarding nephrology practices in Turkey, the questionnaire developed by Notaras et al. is used to collect data only for nephrologists, excluding other renal health professionals, like renal nurses and dieticians. Therefore, in this study, categorical data were analysed to identify associations between referral frequency, demographic characteristics, and views of the role that diet plays in the treatment of CKD by nephrologists only.

Results: Overall, 16 nephrologists, 70% of practising nephrologists across three cities, completed the survey. 75 % of nephrologists ranked the value of diet as very-extremely important in the treatment of CKD stages 1-4. Despite this, 30% of nephrologists recommended renal dietetic care to patients with CKD stage 3 in 0–25 % of the time. Opinions that nephrologists are qualified to provide nutritional guidance were among the factors that contributed to the decision not to refer patients to a dietitian, as concerned that patients would not follow the renal diet recommendations and a want to ease the burden of patient visits. According to the results of this limited study, 68% of nephrologists provide dietary guidance to all of their patients. Time restraints, patients' health literacy and motivation to change were the most challenging aspects of providing dietary advice to CKD patients.

Conclusion: One of the top ten research uncertainties prioritised by patients living with CKD is the diet to prevent the progression of kidney disease. The participation of patients in the process of determining priorities for the treatment of chronic kidney disease may result in a shift in those priorities, which eventually leads to a greater degree of harmony between patients and nephrologists. Even though the evidence of benefit for non-pharmacological therapies such as dietetic intervention in managing CKD patients, individual beliefs, patient-related factors, and a lack of specialised renal dieticians appeared to have a significant impact on the decision-making processes of nephrologists when it came to referral practises.

Keywords: chronic kidney disease, diet, qualitative study

PP-102 Glomerular Diseases

ANTI-PR3 ANTIBODY POSITIVE RPGN IN A 52 YEAR OLD MALE – CASE PRESENTATION

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Introduction: Patients with rapidly progressive glomerulonephritis (RPGN) have evidences of glomerular disease (proteinuria, hematuria) which goes along with rapid loss of kidney function through days or weeks. Mortality rate among RPGN patients is high without treatment, and in that case it often results in kidney failure. Identification of anti-GBM antibodies and anti-neutrophil cytoplasmic antibodies (ANCA) can be useful in establishing a diagnosis in patients with RPGN.

Case: 52 years old patient was admitted to the Nephrology and clinical immunology department of University clinical center of Vojvodina with the symptoms of arthralgia, myalgia, and severe weight loss – 20 kilograms in past three months, subfebrile body temperature and distinct feeling of weakness and fatigue. In the past ambulatory laboratory analysis high inflammatory markers, abnormal urinary findings, pronounced anemic syndrome and elevated urea and creatinine concentration in blood were noted. Patient did not have a history of past chronic diseases. 2 months prior to admission, the patient was treated initially for supposed pneumonia, and after that for suspected pyelonephritis with antibiotics. After no improvement was achieved patient was referred to immunologist. Following the admission, relevant diagnostics including immunoserology and kidney biopsy were performed. High titter of anti-PR3 antibodies was noted accompanied by further rise in serum urea and creatinine. On immunofluorescence microscopy observed changes in kidney parenchyma were consistent with changes found in crescentic glomerulonephritis. Electromyography showed presence of sensoral polyneurophaty. On the basis of the results of performed diagnostics, it was concluded that that the patient was affected by systemic necrotizing vasculitis (granulomatosis with polyangiitis) in which the kidney was affected in the form of rapidly progressive glomerulonephritis. The cyklophosphamide and a three day corticosteroid pulse was given followed by the dosis of 1mg/kg of mehtylprednisolone. Following the therapy, partial remmision was achieved, with patient having subjective improvement and the fall in serum creatinine concentration.

Conclusion: In case of elevated inflammatory markers, weakness and fatigue, elevated blood temperature, rise in serum urea and creatinine, accompanied by abnormal urinary findings rapidly progressive glomerulonephritis should be also taken in concideration so no precious time would be waisted.

Keywords: rapidly progressive glomerulonephritis, granulomatosis, anti-neutrophil cytoplasmic antibodies,

PP-103 Hemodialysis

ADJUSTMENT OF IRON THERAPY IN HEMODIALYSIS PATIENTS: HOW SHOULD FERRITIN LEVELS BE INTERPRETED?

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Introduction: Anemia is one of the major problems of hemodialysis patients. Erythropoiesis stimulating agents (ESA) are the cornerstones of anemia management for this group. However ESAs are not equally effective for all and iron deficiency is the leading cause of ESA hypo-responsiveness. KDIGO anemia managemenet guidelines recommend a trial of iron supplementation for anemic hemodialysis patients when transferrin saturation is below 30% and ferritin level is below 500 ng/mL. However the utility of ferritin levels to guide iron treatment is not very clear for hemodialysis patients. This study aimed to analyze the relation between ferritin and hemoglobin levels of hemodialysis patients and to make inferences for adjustment of iron therapy.

Methods: A cohort of maintenance hemodialysis patients were evaluated retrospectively. Those who had a history of malignancy, gastrointestinal bleeding, who used immuno-suppresive drugs in previous six months and those who had documented acute infection were excluded from the study. One hundred and twenty patients were included in the final analysis. Demographic characteristics, dialysis related parameters, dialysis vintage, calcium-phosphorus leves, serum albumin, C-reactive protein, parathormon, ferritin, vitamin B12, folate levels and transferrin saturation of patients were extracted from patient files and electronic health records. Firstly, the relation between ferritin and hemoglobin levels were computed. As a second step, subgroup analysis was carried out for patients who had hemoglobin levels below or over 10 g/dL.

Results: Patients were 58,2 ± 15,3 years old and they were on dialysis for 56,9 ± 52,7 months. Average hemoglobin level of the cohort was 10,6 ± 1,4 g/dL. For all hemodialysis patients, ferritin and hemoglobin levels were found to be negatively correlated. (r=-0,235, p=0,01). Thirty of the patients didn't require any ESA therapy. While they had higher hemoglobin levels than others who were using ESAs (11,7 ± 1,2 vs 10,1 ± 1,1, p=0,000), ferritin levels were not significantly different for both. In comparison of patients who had hemoglobin levels below or over 10 g/dL (n=35 vs 85), serum albumin levels were found higher in those with higher hemoglobin levels (3,9 ± 0,2 vs 3,5 ± 0,3 g/L; p=0,000). Other laboratory values and dialysis related parameters were comparable. For patients who had hemoglobin levels below 10 g/dL, serum ferritin levels were found to be significantly negatively correlated with hemoglobin levels (r=-0,420, p=0,012). However this negative correlation disappeared for patients who had hemoglobin levels over 10 g/dL. ESA therapy is more frequently prescribed in patients with lower hemoglobin levels.

Conclusion: Iron therapy should be used cautiously for anemic dialysis patients who had hemoglobin levels below 10 g/dl. Higher ferritin levels might not always contribute to better ESA responsiveness. They may even have a negative effect. Further studies are needed to shed light on this negative correlation.

Keywords: anemia, hemodialysis, ferritin, ESA

PP-104 Clinical Nephrology

LITHIUM TOXICITY AND RENAL IMPAIRMENT: A CASE REPORT

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Introduction: Lithium was the first mood-stabilizing medication introduced for the treatment of mania. It remains widely prescribed and a cornerstone in the long-term treatment of Bipolar Disorder. Despite its clinically proven efficacy, it is associated with a host of severe side effects including confusion, delirium, tremor, hyperreflexia, dysarthria, ataxia, nystagmus, seizures, nephrotoxicity, nephrogenic diabetes insipidus, chronic kidney disease, life-threatening arrhythmias, hypothyroidism and hyperparathyroidism. Based on the serum lithium levels, lithium toxicity can be classified as mild (serum concentration 1.5-2.5 mmol/L), moderate (serum concentration 2.5-3.5 mmol/L) and severe (serum concentration more than 3.5 mmol/L). Renal lithium toxicity is mainly attributed to the development of nephrogenic diabetes insipidus (NDI), leading to dysfunction of the renal concentrating capacity, polyuria and polydipsia. Moreover, current literature suggests that prolonged, lithium exposure can elicit permanent damage, potentially due to chronic tubulointerstitial nephritis, giving rise to chronic kidney disease (CKD) and ultimately, end-stage renal disease (ESRD).

Case: A 54-year old female patient presented to the Emergency Department with a two-week history of malaise, nausea, drowsiness, confusion, difficulty speaking and upper-limb tremor. The symptoms had developed insidiously over the course of two-weeks and had progressively worsened five days prior to presentation in the ED. Her past medical history was significant solely for Bipolar Disorder and she had been on maintenance therapy with Olanzapine and Lithium for the past 17-years. She denied other pre-existing comorbidities and her family history was unremarkable. Significant disorientation and fine resting tremor of the upper extremities were noted in the neurological assessment. The rest of the physical examination was otherwise unremarkable. A head MRI was normal, with no presence of pathological lesions. A comprehensive metabolic panel revealed impared renal function, elevated TSH and PTH levels and her serum lithium levels were found to be 3.23 mmol/L (normal range - 0.6-1.2 mmol/L). A diagnosis of moderate lithium toxicity, associated with lithium-induced chronic kidney disease (CKD), hypothyroidism and hypercalcemia was made. She was started on intravenous and oral fluid therapy to enhance renal elimination of lithium. A second serum lithium level of 2.31 mmol/L was obtained six hours later, showing a considerable decrease that was associated with an improvement of her neurological symptoms. During her hospital stay, she received continuous intravenous and oral fluid therapy, as well as close monitoring of her vitals, urine output and electrolyte levels. She was discharged, following a significant improvement in both her clinical status and laboratory findings.

Conclusion: While there is no definitive consensus on the ability of lithium to induce chronic kidney disease, patients on lithium therapy, with concomitant renal impairment are at an increased risk of lithium toxicity. Close monitoring of renal function and dosage modifications are crucial in preventing both short and long-term adverse side effects.

Keywords: lithium toxicity, chronic kidney disease, bipolar disorder

PP-105 Renal Transplantation

EVALUATION OF PROGNOSIS AND RENAL FUNCTION LOSS IN RENAL TRANSPLANT PATIENTS WITH COVID-19 INFECTION

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Introduction: Studies on covid-19 infection since the beginning of the pandemic reveal the relationship between the depth of lymphopenia, which is frequently seen in the course of the disease, and the severity of the disease, and that improvement in lymphopenia is important for recovery. This study is aimed to reveal the prognostic factors related to permanent renal function loss by evaluating the relationship of renal function loss with clinical and laboratory parameters in kidney transplant patients with Covid-19 infection.

Methods: The data of 211 patients who were hospitalized in Ankara City Hospital between March 2020 and December 2021 for Covid-19 pneumonia, had a previous kidney transplant and are still using immunosuppressive therapy, were retrospectively analyzed, and 181 patients were included in the study. Patients with an absolute lymphocyte count <1000/mm3 at the time of diagnosis of Covid-19 infection or a decrease of more than 50% compared to the pre-disease level were grouped as lymphopenic at admission, and other patients as non-lymphopenic at admission. According to the time of improvement in lymphopenia, the patients were divided into two groups as temporary lymphopenia group (those whose lymphocyte count increased above 1000/mm3 within 30 days from diagnosis) and permanent lymphopenia group (those whose lymphocyte count remained below 1000/mm3 within 30 days or until death).

Results: The median age of the patients included in the study was 51.5 years, 72% of them were male. Diabetes was diagnosed in 33% and hypertension in 68% of the patients. The mortality rate and the frequency of admission to the intensive care unit were higher in the lymphopenic group at admission ($p<0.05$). In the group that developed permanent lymphopenia, the frequency of male gender, death, total length of hospitalization and the frequency of hospitalization in the intensive care unit were higher ($p<0.05$). In addition, the need for invasive respiratory support, corticosteroid use due to covid was higher in patients with persistent lymphopenia ($p<0.5$), hemodialysis frequency was higher but not significant ($p>0.05$). There was no difference in renal outcome between those with and without persistent lymphopenia ($p>0.05$).

Conclusion: The course of lymphopenia that developed during the course of the disease in kidney transplant patients, a group of patients with particularly severe Covid-19 pneumonia, was found to be closely related to length of stay, need for hemodialysis, invasive respiratory support, intensive care hospitalization and death. There was no difference in the course of lymphopenia and other prognostic indicators among patients who received different immunosuppressive therapies, which are frequently used in kidney transplantation.

Keywords: kidney transplant, lymphopenia, covid-19 pneumonia

PP-106 Clinical Nephrology

TUBULOINTERSTITIAL INFLAMMATION AND IT'S RELATIONSHIP WITH SYSTEMIC INFLAMMATION IN DIABETES MELLITUS AND AA AMYLOIDOSIS

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Introduction: Systemic inflammation and tubular injury are associated in many ways. Tubular cells are involved in the response to inflammatory mediators in ischemic and septic kidney injury. Also, loss of tubular cells can lead to progression to chronic kidney disease. On the other hand, tubular epithelium can actively contribute to the production of inflammatory mediators locally in response to any irritant condition. This clinical picture has been described for sepsis and ischemic kidney injury. In chronic inflammatory conditions two factors can affect tubulointerstitial region; one is systemic inflammatory process and the second is local inflammation caused by local irritation of end products. The relationship between systemic inflammation and tubular cells in chronic inflammatory diseases is not clear. In this study, we aimed to evaluate the relationship between systemic inflammation markers at the time of diagnosis and tubular findings in kidney biopsy pathologies in AA amyloidosis and diabetes mellitus (DM), two common chronic inflammation-causing diseases.

Methods: A total of 91 patients diagnosed with pure AA amyloidosis (38 male, 18 female; total 56 patients, mean age: 50.7 years) or pure diabetic nephropathy (26 male, 9 female, total 35 patients, mean age: 56.7 years) in biopsies performed in our clinic between 2014 and 2022 were included in the study. Laboratory parameters and pathological findings of the patients were recorded. Tubulointerstitial inflammation was classified as none, mild, moderate, or severe.

Results: In the statistical analysis, tubulointerstitial inflammation was positively correlated with the creatinine value at admission in the DM group (p=0.002). There was no statistically significant relationship between sedimentation value, CRP and interstitial fibrosis/tubular atrophy (IFTA) and tubulointerstitial inflammation in this group. In the AA amyloid group, tubular inflammation was associated with IFTA (p<0.001), admission creatinine value (p=0.002), admission sedimentation value (p=0.003), and statistically significant correlation was not observed with CRP. Tubulointerstitial amyloid deposition was not found to be associated with tubulointerstitial inflammation in this group (p=0.297).

Conclusion: In our study, tubular inflammation was not associated with systemic inflammation in the DM group, but it was more associated with systemic inflammation rather than local amyloid deposition in the AA amyloid group. In this case, it can be interpreted that local factors (advanced glycation products…) may be more associated with inflammation in the tubulointerstitial area in the DM, while systemic inflammation may be more related to the course of the disease and kidney functions in AA amyloidosis. Studies suggest that CRP values in patients with AA amyloidosis are high in attack periods and normalize in intermediate periods, while sedimentation rate reflects basal inflammation and is observed to be high in patients with high basal inflammation burden after diagnosis in AA amyloidosis. The lack of correlation of tubulointerstitial inflammation with CRP in this patient group may be related to this phenomenon.

Keywords: amyloidosis, diabetes mellitus, tubulointerstitial inflammation

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